

Amendment C109 Manningham Planning Scheme - Land Subject to Inundation Overlay and Special Building Overlay - Consideration of Submissions and Request for a Panel Hearing

File Number:	IN17/63
Responsible Director:	Director Planning and Environment
Attachments:	<ol style="list-style-type: none">1 Flood Mapping Catchments, 20152 Development of the Special Building Overlay Technical Report, Cardno September 20153 Planning Scheme Amendment C109 Amendment Documentation4 Consultation Report and Summary of Issues in Submissions5 Officer Response to Issues Raised in Submissions6 Template and Criteria7 Cardno Report February 20178 Peer Review, Water Technology July 20169 Summary of Submissions, Officer response and Recommendation10 Table of Recommended Changes to Submitter Properties11 Value Impact Assessment, Charter Keck Cramer, November 201612 Table of Recommended Changes to Non-submitter Properties

EXECUTIVE SUMMARY

The purpose of this report is to consider all submissions received to Amendment C109 to the Manningham Planning Scheme.

Amendment C109 to the Manningham Planning Scheme proposes to introduce and/or revise the application of the Land Subject to Inundation Overlay (LSIO) and the Special Building Overlays (SBO) in relation to 10,300 properties in Manningham. These overlays are proposed to apply to land that has been identified by Melbourne Water and Council as being liable to inundation from an open watercourse or subject to either overland flows exceeding the capacity of the underground drainage system, during a severe storm event (1 in 100 year Average Recurrence Interval (ARI)). The overlay relating to the open watercourses is the LSIO. The overlays relating to the drainage system (Melbourne Water main drains and Council local drains) are the SBOs.

The key strategic drivers for Council to undertake the flood mapping of its local drainage catchments and to introduce or revise Planning Scheme overlays include State Government and Melbourne Water strategies, recommendations of the State

Auditor General in relation to flood risk, Council's own Drainage and Residential Strategies and the most recent Planning Scheme review.

The Amendment was exhibited for six weeks from 12 November 2015 to 24 December 2015. Submissions have continued to be received up until the time of preparation of this report and a total of 523 have been received.

Fourteen key issues have been identified in relation to the submissions received and a response has been prepared for each submission. 104 changes affecting 154 properties are recommended to the exhibited amendment in relation to such matters as changes to the flood shape, changes to the overlay designation; and removal of the exhibited overlay. A minor text change to the controls is also recommended.

As changes to the Amendment as requested in submissions are not proposed in relation to all submissions, Council can either abandon the Amendment or refer the submissions to an Independent Planning Panel for review. This report recommends that Council requests the Minister for Planning to appoint an Independent Planning Panel to review all submissions received.

1. RECOMMENDATION

That Council:

- A. Receives and considers all written submissions made to Amendment C109 to the Manningham Planning Scheme.**
- B. Requests that the Minister for Planning appoint an Independent Planning Panel to review the submissions received to Amendment C109, in accordance with Part 8 of the Planning and Environment Act, 1987.**
- C. Refers all submissions, including any late submissions received, to the Independent Planning Panel to be appointed by the Minister for Planning.**
- D. Endorses the recommended response to issues raised in submissions outlined in Attachments 5, 9, 10 and 12, as the basis for Council's submission to the Independent Planning Panel.**
- E. Notes other actions outside of this Amendment that relate to drainage management such as Council's ongoing maintenance and education programs and the current review of Council's Drainage Strategy.**
- F. Writes to all submitters, informing them of Council's decision.**

1. BACKGROUND

- 1.1 Over the past few years Council has undertaken flood modelling in several of its drainage catchments which has culminated in the preparation of Amendment C109 to the Manningham Planning Scheme to introduce or make changes to those overlays which relate to managing risk of flooding in the municipality.
- 1.2 The key strategic drivers for the modelling and Planning Scheme amendment are described more fully in Section 3 of this report and include State Government and

Melbourne Water strategies, recommendations of the State Auditor General in relation to flood risk, Council's own Drainage and Residential Strategies and the most recent Planning Scheme review.

Flood modelling

- 1.3 In 2011, Council engaged consultants to undertake flood modelling for local catchments for the municipality. The purposes of that work included to:
 - Review the extent of the SBO (and by implication, the LSIO); and
 - Assess the flooding impacts of climate change.
- 1.4 Flood mapping was completed for the following catchments (Refer map at **Attachment 1**):
 - Bulleen North
 - Ruffey Creek
 - Koonung Creek
 - Mullum Mullum Creek
 - Andersons Creek
- 1.5 Three smaller urban catchments abutting the Bulleen North catchment and the Jumping Creek and Brushy Creek catchments are yet to be mapped.
- 1.6 The flood mapping was undertaken in accordance with Melbourne Water's specifications and Melbourne Water was either engaged in the flood model calibration or, in the case of Bulleen North and Ruffey Creek, managed the consultancy contracts, to ensure robust and consistent results.
- 1.7 The mapped flood extents were filtered in accordance with best industry practice to delete flooding which is less than 50mm in depth and where the flood velocities are low. The data filtering process removed areas of the flood extent considered as low risk as set out in the '*Development of the Special Building Overlay Technical Report for Manningham City Council (Cardno) September 2015*' report, included at **Attachment 2**. This filtering process included modification of the extent of areas displaying flooding which are isolated from the flood extent and remote from underground drainage assets, which were less than 500 square metres in area.
- 1.8 A total of 10,300 properties (approximately) are affected by the modelling of the flood extent for the 1 in 100 year ARI flood event, and in turn by the proposed amendment to the Manningham Planning Scheme.
- 1.9 The flood mapping data generated in the study was used by Council and Melbourne Water to develop and agree on a revised flood extent to be covered by the LSIO and SBO. The mapping also has implications for the Melbourne Water main drains, hence the need for Melbourne Water to also amend its existing LSIO and SBO.

Planning Scheme Amendment C109

- 1.10 At the Council meeting on 29 September 2015 it was resolved:

"That Council:

- A. *Resolves to prepare Amendment C109 to the Manningham Planning Scheme to implement the review of the Special Building Overlay and Land Subject to Inundation Overlay, thereby better informing the community of flood risk and protecting proposed development from inundation, by:*
1. *Updating the planning scheme maps to reflect the revised flood-shape generally in accordance with the Maps at Attachment 4.*
 2. *Introducing new schedules to the Special Building Overlay (Clause 44.05) generally in accordance with Attachment 3.*
 3. *Amending the MSS at Clause 21.12 and 21.16 to include reference to the 'Flood Management Plan for Manningham Council and Melbourne Water June 2011' and the 'Development of the Special Building Overlay Technical Report for Manningham City Council (Cardno) September 2015'.*
- B. *Requests the Minister for Planning's authorisation under section 8A of the Planning and Environment Act 1987 to prepare and exhibit Amendment C109 to the Manningham Planning Scheme which proposes to revise the existing Special Building Overlay (SBO) and Land Subject to Inundation Overlay (LSIO), include additional properties in the SBO and LSIO and amend the MSS, generally in accordance with Attachment 3.*
- C. *Advises the Minister for Planning that:*
- *Pursuant to Section 19 (1A) of the Planning and Environment Act, 1987, Council considers it impractical to notify all owners and occupiers individually of Amendment C109 and will limit direct notification to property owners.*
 - *Council will give notice of the amendment in accordance with Section 19(1B) of the Act (including giving notice in a paper circulating within the affected areas inviting submissions to be made) and will also undertake a range of non-statutory consultation measures to ensure awareness of the proposed amendment amongst occupiers of affected properties.*
- D. *Subject to authorisation being granted by the Minister for Planning, resolves to place Amendment C109 on public exhibition for a period of six weeks."*
- 1.11 The request for authorisation to prepare the amendment was submitted to the Department of Environment, Land, Water and Planning (DELWP) on 1 October 2015. The Amendment was deemed to be authorised on 15 October 2015.
- 1.12 The exhibited amendment documentation is included as **Attachment 3**. The exhibited Planning Scheme maps are available for viewing in the Council Chamber.
- 1.13 In general, the following changes to the Manningham Planning Scheme are proposed by Amendment C109 to implement the outcomes of the flood modelling work:
- Modification of the existing LSIO and SBO boundaries and introduction of new LSIO and SBO areas on planning scheme maps to reflect the revised and new flood shapes agreed by Melbourne Water and Council.
 - Changes to the Municipal Strategic Statement (MSS) at Clause 21.12 Infrastructure and 21.16 Key References to include reference to:

- The 'Flood Management Plan for Manningham Council and Melbourne Water June 2011' which provides the strategic framework for establishing the appropriate Planning Scheme overlays in respect of the results of the flood mapping project and;
- The 'Development of the Special Building Overlay – Technical Report for Manningham City Council (Cardno) September 2015', which provides an overview of the methodology used in the flood mapping of the five local catchments.

Land Subject to Inundation Overlay and Special Building Overlays

- 1.14 Inclusion of Planning Scheme overlays relating to flooding ensure that drainage issues are addressed at the start of the development process and that buildings and works are properly designed.
- 1.15 One of the key aims of overlays is to minimise the effects of overland flows and mainstream flooding on new buildings. It is also to ensure that new development does not adversely redirect the flow paths into neighbouring properties.
- 1.16 These overlays are based upon the extent of flooding that would result from a 1 in 100 year ARI flood event. The 1 in 100 year flood relates to a storm event of such intensity that, based upon historical rainfall data, it has a probability of occurring once in every one hundred years or a 1% chance of occurring in any given year.
- 1.17 The Land Subject to Inundation Overlay (LSIO) applies to land affected by mainstream flooding associated with waterways and open drainage systems. Such areas are commonly known as floodplains. Mainstream flooding is caused by heavy rainfall which produces surface run-off which flows into streams and rivers. When there is a large amount of run-off, water overflows the river banks on to adjacent low-lying land causing flooding. Under this overlay, a planning permit is generally required for buildings and works.
- 1.18 The Special Building Overlay (SBO) identifies areas prone to overland flooding and overland flow from the urban drainage system. The purpose of this overlay is to set appropriate conditions and floor levels to address any flood risk to developments; to ensure that new development is designed to maintain the free passage and temporary storage of floodwaters; to minimise flood damage and not cause any significant rise in flood level or flow velocity that may adversely affect existing properties. Under this overlay a planning permit may be required for buildings and works if permit exemption criteria are not met.
- 1.19 The effect of the LSIO and SBO is not to prevent new development. Implementation of the LSIO and SBO can however, influence the siting of buildings and set appropriate conditions, such as raised floor levels, in order to address any flood risk to new development.
- 1.20 The LSIO was first introduced into the Manningham Planning Scheme by Melbourne Water in June 2000 when the 'new planning schemes' were first introduced.
- 1.21 The SBO was first introduced into the Manningham Planning Scheme in 2003 (Amendment C13) to cater for main drains (Melbourne Water). Melbourne Water

is the responsible drainage authority for relevant development applications within the existing SBO.

- 1.22 The LSIO in the Victoria Planning Provisions (VPP) includes fewer exemptions than the SBO, and they relate to works such as flood mitigation works and the laying of underground sewerage, water and gas mains.
- 1.23 The SBO in the VPPs includes standard exemptions for planning permits for common urban developments, such as minor extensions to dwellings, replacement fencing, carports, pergolas and in-ground swimming pools, unless a 'schedule' applies which proposes to refine these exemptions.
- 1.24 Apart from the standard exemptions for buildings and works in the overlays, the schedules to the overlays can be used to exempt certain buildings and works from the need for a permit. Exemptions in schedules are used to respond to local conditions, taking into account specific types of development and local needs, and can be used to streamline the planning permit application process.
- 1.25 The existing Melbourne Water LSIO and SBO do not include a local schedule specifying additional permit exemptions.
- 1.26 Amendment C109 proposes to introduce three local schedules to the SBO which distinguish between areas subject to inundation in relation to the 'main' drainage system (Melbourne Water drains) and the 'local' drainage system (Council drains).
- 1.27 The Schedules will be referred to as SBO1, SBO2 and SBO3 respectively. The SBO maps define the area/properties to which each schedule applies. The Schedules define permit exemptions and nominate the authority responsible for drainage. **Table 1** explains the delineation between the three SBO schedules and the LSIO.
- 1.28 SBO1, SBO2 and SBO3 are proposed to replace and expand the existing Special Building Overlay in the Manningham Planning Scheme which currently relates to overland flooding from Melbourne Water's main drains only.
- 1.29 More specifically, Amendment C109 proposes to:
 - Remove the existing LSIO and SBO from approximately 230 properties (2% of total properties affected) which are no longer expected to be at risk of flooding;
 - Make minor changes to the extent of the LSIO and SBO (and change to SBO1, 2 or 3) in relation to approximately 900 properties (9%) which remain subject to inundation.
 - Apply the LSIO and SBO1 to an additional 380 additional properties (4%) which have a potential risk of being flooded as a result of Melbourne Water assets (natural watercourses and main drains);
 - Apply the SBO2 to approximately 3,860 properties (37%) which are potentially at risk of being flooded as a result of flows in excess of the capacity of City of Manningham assets (local drains) in a major storm event; and
 - Apply the SBO3 to approximately 4,930 properties (48%) which are at risk of being affected by small and shallow areas of flooding (up to 100mm in

depth) as a result of flows in excess of the capacity of City of Manningham assets (local drains) in a major storm event.

Table 1: Amendment C109 - LSIO and SBO Schedules 1, 2 and 3

Drainage Network	Planning Permit Exemptions	Responsible / Referral Authority
LSIO Approx. 500 properties (5% of all properties affected)		
Land adjacent to a creek or river that is known to be subject to inundation i.e. a natural watercourse.	The State-wide LSIO control includes a number of exemptions to allow for minor buildings and works by Council and other authorities (e.g. the laying of underground sewerage, water and gas mains) that can occur without the need for a planning permit. No schedule to the LSIO is proposed as part of this amendment.	Melbourne Water would be the Determining Referral Authority. All applications for development would be referred to Melbourne Water for assessment and for appropriate conditions and floor levels.
SBO1 (7% of properties affected by the SBO)		
Melbourne Water main drains.	The SBO triggers the need for a planning permit for buildings and works in most instances. The State-wide SBO provisions include a number of exemptions to allow for minor buildings and works that can occur without the need for a planning permit. No additional exemptions over those specified in the State-wide provisions are proposed to be included in the schedule.	Melbourne Water would be the Determining Referral Authority. All applications for development would be referred to Melbourne Water to determine if a planning permit should be issued and provide the appropriate conditions and floor levels.
SBO2 (41% of properties affected by the SBO)		
Manningham City Council local drains (maintained by Council). The schedule would apply from the upstream most point where flow depths exceed 100mm in depth, to the junction between the Council and Melbourne Water drainage system.	The SBO triggers the need for a planning permit for buildings and works in most instances. The State-wide SBO provisions include a number of exemptions to allow for minor buildings and works that can occur without the need for a planning permit. No additional exemptions over those specified in the State-wide provisions are proposed to be included in the schedule.	Council would be the Responsible Authority Council would assess all applications for development and provide appropriate permit conditions and floor levels.
SBO3 (52% of properties affected by the SBO)		
Manningham City Council local drains (maintained by Council). The schedule would apply in areas upstream of the SBO2	Council is the Responsible Authority. Council assesses all applications for development and provides appropriate permit conditions and floor levels.	A more extensive range of exemptions would be included in SBO3 because of the reduce depth of flooding, for example, a permit will not be required where proposed new dwelling floor levels are at

Drainage Network	Planning Permit Exemptions	Responsible / Referral Authority
where the flow depth is less than 100mm.		least 400mm above the natural surface level.

1.30 As outlined in **Table 1**, permit exemptions would apply to 95% of the properties where the SBO 1, 2 or 3 is proposed to apply if certain conditions are met, such as a minimum building floor level height above the ground.

Exhibition of the Amendment

1.31 Amendment C109 was placed on public exhibition for six weeks between 12 November and 24 December 2015 using the following combination of statutory and non-statutory notification:

- Direct notification (letters) to affected property owners (approximately 10,000), prescribed authorities and key stakeholder groups/agencies;
- Public notices in the *Manningham Leader* on 9 November 2015 and the *Government Gazette* on 12 November 2015 and again on the 26 November 2015;
- The Amendment documents made available for viewing and download (website/offices and libraries and DELWP website);
- An 'Interactive Map' which was searchable via property address was available on Council's web site showing the application of the proposed amendment;
- Article in *Manningham Matters* November 2015 edition;
- Fact Sheet and FAQs pamphlet made available on Council's website, information was further provided in response to the need for additional clarification;
- Six drop in Information sessions – (appointment based) for each of the affected catchments, where specific individual property information was made available;
- Melbourne Water webpage (in addition to CoM web page) included information; and
- Telephone enquiry numbers (at both Melbourne Water and CoM) were advertised

1.32 The exhibition of the Amendment resulted in the following responses:

<i>Webpage hits</i>	<i>4,220</i>
<i>Interactive map hits</i>	<i>2,788</i>
<i>Phone calls</i>	<i>1,000</i>
<i>Counter enquiries</i>	<i>120</i>
<i>Attendees at Info sessions</i>	<i>150</i>
<i>Written submissions</i>	<i>523</i>

- 1.33 At the request of Council, a follow up letter was sent to all submitters on 12 May 2016, explaining the process for the review of submissions and the type of information that would be considered in the review. That correspondence also offered the opportunity for addendums to original submissions to be submitted.
- 1.34 In addition, at the request of Council, letters were also sent on 23 May 2016, to those properties affected by an identified communication ambiguity (58 private properties and 50 government properties), clarifying that the existing LSIO along the Yarra River would continue to apply in addition to the proposed controls. Those property owners were given an opportunity to lodge a submission or to submit addenda to existing submissions over a further period of six weeks.
- 1.35 The web based communication tool was also amended to include the existing LSIO in the 'Proposed Overlay' view.
- 1.36 For the wider community, a separate dedicated advertisement was included in the Manningham Leader in the week beginning 16 May 2016 advising that Council officers were still considering submissions in relation to Amendment C109 and that further updates were being provided on the Your Say Manningham webpage.

2. DISCUSSION / ISSUE

Submissions Received

- 2.1 A total of 523 submissions have been received, including 163 submissions which were received after the initially advertised exhibition period.
- 2.2 The specific overlays and catchment areas to which those submissions relate are identified in **Table 2** below, together with the position of the submission in relation to the Amendment.

Table 2: Amendment C109 – Summary of Submissions

Summary of Submissions	%
Catchments	
Andersons Creek	7%
Bulleen	5%
Koonung Creek	18%
Mullum Mullum Creek	29%
Ruffey Creek	41%
Overlays	
Melbourne Water's drainage areas - LSIO & SBO1	13%
Council's drainage areas – SBO2	38%
Council's drainage areas – SBO3	44%
Dual controls	5%
Nature of Submissions	
Objections seeking removal of property from the Amendment (475)	92%
Objections seeking modification to the Amendment (5)	1%
Objections but no reasons given (5)	1%
Requesting other changes not directly related to the Amendment (17)	3%
No position (despite a follow up letter) to the Amendment (14)	3%
Submissions in support of the Amendment (2)	<1%
No objection (Parks Victoria) (1)	<1%
Property not affected (1)	<1%

2.3 The 'Consultation Report and Summary of Issues in Submissions' at **Attachment 4** outlines the consultation process undertaken in detail, provides statistics on the location and number of submissions received and summarises the main issues raised in the submissions. The issues raised will also be discussed later in this report.

Review of Submissions

2.4 A rigorous review of the submissions received for Amendment C109 has been undertaken by officers from both Melbourne Water and Council.

2.5 Officers undertook a Further Technical Review (FTR) where submitters have questioned the inclusion of their property in the LSIO and SBO due to:

- the accuracy of the modelling;
- where flooding has not been experienced in the past; and
- where the extent of coverage over the subject land is minimal.

2.6 The objective of that review was to determine if the exhibited flood shape is accurate, and if any changes to flood shapes should be considered.

- 2.7 The FTR included:
- a review of the site (either via desktop analysis, or if considered necessary, a site visit); and
 - a review of existing drainage infrastructure, terrain and contours and existing flow paths, against Council's information.
- 2.8 **Attachment 6** includes a more detailed explanation of the criteria applied to review the submissions and a copy of the template used for the FTR which has been completed for every submission where the accuracy of the modelling has been questioned. The completed FTRs will be made available to individual submitters upon request.
- 2.9 The FTR has resulted in several recommended refinements to the flood shapes that have been modelled, and in some instances, the removal of proposed overlays from properties and therefore removal from the Amendment.
- 2.10 Fourteen (14) submissions were referred back to Cardno for a full technical review. Cardno has completed the reviews for these submissions and has recommended a number of changes in response to submissions.
- 2.11 A number of submissions relate to proposed overlays under the control of Melbourne Water (LSIO and SBO1). Melbourne Water has reviewed these submissions and 29 changes are recommended to the exhibited Amendment. Refer to **Attachment 10**.
- 2.12 In addition, a peer review has been undertaken by an independent consultant (Water Technology) who considered the methodology used for the catchment mapping and translation to the planning overlays. The peer review report is attached at **Attachment 8**.
- 2.13 This type of peer review is common in processes such as these as part of due diligence and transparency.
- 2.14 The Water Technology review concluded that:
- *"The methods and outputs for the 5 catchment areas comprising the Amendment are appropriate for urban flood mapping.*
 - *Appropriate checks and validation have been made in each study such that the design flow estimates are considered robust.*
 - *A consistent and appropriate method has been applied to the processing of model results to produce mapping outputs that are relatively consistent across the Municipality.*
 - *It is considered that a number of small, isolated areas of inundation that are not expected to represent any significant threat to life or property could be removed from the SBO3 layer without compromising the appropriate management of flood risk within the area".*

Key issues Raised in Submissions

- 2.15 Fourteen key issues have been identified in relation to the 523 submissions received, the categorisation of which has assisted the review and analysis of the submissions. A summary of these issues and a general officer response is

provided in **Table 3** below. Note that many submissions raised more than one issue.

- 2.16 A more detailed officer response to each of these issues is provided in **Attachment 5: 'Officer Response to Issues Raised in Submissions'**. The attachment also includes relevant commentary from previous Independent Planning Panel reports where the issue has been previously considered.

Table 3: Summary of submissions by issue with general response

GENERAL RESPONSE	% OF SUBMISSIONS
1. Individual properties have not experienced flooding in the past	
<p>The lack of historical evidence about flooding on a particular site does not mean the property may not be inundated by overland or riverine flooding in the future.</p> <p>The SBO and LSIO maps are based on the forecasted overland stormwater flows associated with a 1 in 100 year ARI storm event, meaning that there is a 1 per cent chance that such an event could occur in any given year.</p> <p>In many cases, the 1 in 100 year ARI storm event may only result in inundation for a short period of time, but it is capable of causing damage.</p>	34%
2. The modelling is inaccurate	
<p>The proposed changes to the SBO and LSIO are based on the best available information, best practice modelling and techniques, developed over many years by experts in this field.</p> <p>The use of computer modelling is acknowledged as the only practical method to reliably map the extent of changes to the flood shape across the municipality.</p> <p>Where the accuracy of the modelling has been questioned, a further technical review (peer review) has been undertaken to check the accuracy of the modelling against agreed criteria.</p>	68%
3. Council and/or Melbourne Water drainage works have already addressed any potential flooding impacts	
<p>Drainage pipe upgrades that occurred prior to the undertaking of the modelling were generally considered as part of the flood mapping exercise.</p> <p>The further technical review process involved a review of the drainage pipe GIS data in the surrounding area to the submitters' properties, to ascertain if an upgrade had taken place recently which may not have been reflected in the data underpinning the flood model.</p> <p>The capital works records from the last few years were also reviewed to identify possible upgrades that may not have been reflected in the GIS data and model.</p> <p>Possible scenarios are:</p> <ul style="list-style-type: none"> • The drainage upgrade has been included in the modelling but the upgraded drains will not have the capacity to remove surface runoff entirely during a 1 in 100 year ARI event; or • The upgrade was modelled but the submission property is upstream and 	15%

GENERAL RESPONSE	% OF SUBMISSIONS
<p>does not benefit; or</p> <ul style="list-style-type: none"> The upgrade was not modelled because it was undertaken after the modelling was done; <p>Where the upgrade was not modelled but should have been as it was upgraded after the modelling was undertaken, it is expected that there will need to be some adjustments to the flood mapping in the future.</p>	
<p>4. Council/Melbourne Water drains have not been properly maintained and/or are inadequate</p>	
<p>The modelling was based on the assumption that the drainage network is clear and working at 100%. In reality, however, this is not always the case.</p> <p>Submissions that have raised specific issues about drains not being properly maintained and blocked with leaves and other litter, or specific problems with the design of the local drainage network, have been logged in Council's customer request system. Actions taken will include cleaning out the relevant drain and/or marking it for future special attention.</p> <p>Maintenance issues do not have any direct bearing on the proposed Amendment C109 noting, however, the organisation's broader obligation to respond to these matters.</p>	<p>8%</p>
<p>5. Council and Melbourne Water should review and upgrade the drainage system to cope with overland flow and flooding from the one in 100 year ARI flood event</p>	
<p>The majority of the public drainage system in Manningham was constructed well before consideration of overland flows from 1 in 100 year ARI flood events (which became the minimum requirement in 1975).</p> <p>The drainage system in Manningham has been generally constructed and maintained to a 1 in 5 year ARI standard.</p> <p>Upgrading the entirety of the drainage system in Manningham to a 1 in 100 year standard is not economically feasible and in some areas the prevention of flooding from 1 in 100 year flood events may not even be practically achieved without substantial changes to the layout of streets and blocks.</p> <p>Council has over the last fifteen years committed up to \$2 million annually to the upgrade of its underground drainage system where dwellings are subject to inundation in a 1 in 100 year ARI storm event.</p> <p>It is also important to note, that even with an extensive upgrade to all infrastructure, this does not mean that all flooding will be eradicated, as some areas will still be subject to overland flows.</p> <p>Council has a strategic resource plan item for 2016/2017 to review the current Drainage Strategy. This will use detailed flood mapping as a key input to understand the magnitude of and risk posed by flooding. This will enable a systematic approach to develop and prioritise management responses and interventions.</p>	<p>23%</p>
<p>6. New development and the increase in density across Manningham has increased the level of overland flow and flooding.</p>	
<p>With increased urban consolidation, drainage services are being placed under increased pressure, affecting the quality, quantity and rate of flow of water emanating from new or intensified development and potentially causing flooding.</p>	<p>10%</p>

GENERAL RESPONSE	% OF SUBMISSIONS
<p>Planning controls can address drainage issues resulting from increased densities by requiring a multi-unit development, for example, to provide a drainage system that promotes the on-site retention and re-use of stormwater run-off and regulates overland flow to better manage flooding. These measures aim to avoid intensifying the impacts of flooding through inappropriately located uses and developments.</p>	
<p>7. Property values and property resale will be impacted, accordingly, Council rates should decrease or may increase as a result of the overlays and compensation should be payable.</p>	
<p>The flood prone nature of some land is an existing fact. Application of the SBO and LSIO ensures that existing owners and prospective purchasers are aware of affected properties and can make informed decisions about the property and about planning for future flood events.</p> <p>Property values are also influenced by many factors.</p> <p>Past planning panels have not found evidence that the LSIO and SBO impacts on property values and have also determined this would not be reason to avoid application of the control.</p> <p>In November 2016, Council appointed Charter Keck Cramer ('Charter') to provide advice on what, if any impact the SBO will have on the values of those properties affected in the short and long term. The report is found at Attachment 11.</p> <p>The report concluded the following:</p> <p><i>"In undertaking this assessment Charter has not been able to establish that the application of the SBO will negatively impact the values of those properties to be affected. This is consistent with the findings of the study undertaken by Charter for the City of Stonnington in 2004.</i></p> <p><i>Though concern over value impacts is regularly expressed in submissions to amendments to introduce the SBO, there has been no evidence provided through the Independent Panel process to establish this. This outcome is reinforced through numerous studies that have found that while actual flood events can impact property values, flood related policies and controls have no noticeable effect. This is further reaffirmed in the analysis of sales in the City of Manningham, undertaken by Charter, which shows there is no evidence that the Special Building Overlay has had an adverse impact on property values.</i></p> <p><i>For the reasons outlined, it is Charter's opinion that the SBO will not negatively impact property values in the City of Manningham."</i></p> <p>Council rates are relative to property value, which as noted above, is influenced by many factors.</p> <p>With respect to whether compensation will be payable, Melbourne Water has advised that the <i>Planning and Environment Act 1987</i> clearly sets out the circumstances where compensation is payable and is essentially limited to where land is reserved or required for a public purpose or where access is to be denied by the closure of a public road. It does not cover situations where controls such as the LSIO/SBO are imposed.</p>	<p>35%</p>
<p>8. Insurance costs/premiums will be impacted</p>	
<p>Previous planning panels have consistently determined that the potential impact on insurance premiums is not a matter that should have a bearing on</p>	<p>33%</p>

GENERAL RESPONSE	% OF SUBMISSIONS
<p>the application of the LSIO or SBO.</p> <p>The application of the LSIO and SBO does not cause or change the likelihood of flooding but recognises the existing condition of land.</p> <p>The Insurance Council of Australia has advised Melbourne Water that most insurance policies provide coverage for storm damage, including cover for damages resulting from overland flows (noting that this needs to be confirmed by the property owner's individual insurer).</p> <p>The Insurance Council of Australia's Property Risk and Exposure Program (PREP) allows risks to be further considered at an individual address level. Developed as an affordability initiative the PREP was developed to allow the calculation of premiums to take into account depth of flooding and where it was able to be demonstrated that on-site controls were in place to reduce flood risk.</p>	
<p>9. Buildings or structures on a property are unaffected by the proposed overlays, and therefore the overlay will impact the site unnecessarily</p>	
<p>It is important to note that future buildings or development may not necessarily be in the same location as existing buildings or structures.</p> <p>The function of the LSIO and SBO is therefore to ensure that any future development within an affected portion of the site is designed appropriately in response to the identified flood potential.</p> <p>The removal of the LSIO or SBO could result in inappropriate development that increases flood risk to adjoining properties, or has an insufficient floor level or basement entrance that would be at risk of flooding.</p>	<p>2%</p>
<p>10. There will be a financial or administrative burden for future development – including additional costs associated with seeking planning permission and raising floor levels</p>	
<p>A planning permit is only triggered if the proposed buildings and/or works fall within the area of land covered by the LSIO or SBO. In a significant amount of cases (45% of affected properties), a planning permit would already be required under other provisions of the Planning Scheme.</p> <p>Costs associated with redevelopment in LSIO and SBO areas will vary depending on the site context, how the overlay affects the site and the proposed design of the development.</p> <p>Any additional costs of increasing floor levels should be considered as a safeguard against the cost incurred as a result of potential flood damage to new buildings.</p> <p>Having access to relevant data early in the building planning phase of a development allows designers to consider the most cost effective manner in which to respond to site constraints.</p>	<p>10%</p>
<p>11. The proposed overlay will only have a minor impact on the property due to a minimal incursion or the overlay falling over an existing easement or driveway, and should therefore be removed.</p>	
<p>The extent of the proposed flood shapes affects properties differently. Some properties may only have 0.01% of their area affected by the flood shape, whereas other properties may be 100% affected. People will also have different opinions about what is considered to be a minor impact.</p> <p>Due to the flood mapping methodology, the flood extents generated from the flood model results may encroach slightly onto properties. As part of the development of the overlays, in cases where the flood area of a property was</p>	<p>13%</p>

GENERAL RESPONSE	% OF SUBMISSIONS
<p>entirely within 5 metres of a roadway and the percentage of the property affected was less than 10%, those areas were removed from the proposed overlay flood shape, prior to exhibition. Those adjustments were considered appropriate given the low level of benefit associated with retention of those encumbrances in controlling future development.</p> <p>Several submitters have objected to the Amendment on the basis that their properties are only impacted by minor incursions. The City of Port Phillip Planning Scheme amendment proposed that in cases where incursions of 6% and 15m² or less of the property area applied, the planning extents be removed from affected properties. Similar criteria has been developed as part of the Further Technical Review of submissions made to Amendment C109. In the case of Manningham, as the properties are generally significantly larger than the properties in Port Phillip (700sqm versus 300sqm), where the incursion is less than 30m² and represents less than 6% of the property area and is not considered to be significant, a recommendation may have been made to delete the overlay in the subject location.</p> <p>The further technical review of submissions undertook further assessment of whether an incursion was minor and whether it could be removed without creating a disconnect or a significant impact on the connectivity of the flood shape.</p> <p>Consideration was also given to whether the minor flood shape incursion was associated with flow into or out of the property, based on the topography of the land. If the flood shape is associated with flow into the property, the flood shape is recommended to be retained.</p> <p>Finally, consideration was given to the length of the incursion into the property. Incursions greater than 5 metres into properties are recommended to be retained.</p> <p>These requirements are in keeping with the adopted criteria for removal of minor incursions along the frontages of properties as part of the original filtering process, precedent associated with prior Independent Planning Panel processes and flood risk management principles.</p> <p>Even small incursions onto property may become significant after a site is re-developed. For example, significant flood impact could occur if a basement was proposed and the driveway entrance connected with a substantial flooded area.</p>	
<p>12. Built features (such as existing floor levels, on site drainage, retaining walls etc.) on the subject property and adjoining properties may currently divert water away or prevent water from entering a property. Therefore the relevance of the overlay is questioned.</p>	
<p>It is correct that built features on adjoining properties, or on the property itself, may currently divert water away or prevent water from entering a property. These built features, however, are private assets and can be removed at any time.</p> <p>The overland flow path projected in the model is based on a terrain that contains no structural barriers such as fences, houses and brick walls and is based on 'Lidar*' data which is an accepted approach for understanding the contours of the land. The modelling relies on 'roughness factors' to account for such obstructions as houses, walls and soft and hard landscaping features.</p> <p>Using the general contours as the basis for the modelling means that, at any point in the future, Council can make sure new buildings, wherever they are</p>	<p>19%</p>

GENERAL RESPONSE	% OF SUBMISSIONS
<p>built, will be appropriate for the flood shapes and overland flow depths.</p> <p>*LiDAR (Light Detection and Ranging) is a remote sensing technique similar to radar where the time taken for reflected laser to return from a surface is used to measure terrain elevation.</p>	
13. Consultation process and information provided was inadequate	
<p>Exhibition of the Amendment exceeded the statutory requirements specified under section 19 of the <i>Planning and Environment Act, 1987</i>.</p> <p>Exhibition of the Amendment also included non-statutory communication measures including:</p> <ul style="list-style-type: none"> • Interactive web tool • Information sessions • FAQs • Information on Council's web site <p>The Amendment was exhibited for six weeks compared to the statutory requirement of four weeks under the <i>Planning and Environment Act, 1987</i>.</p> <p>Council received over 1000 phone calls during exhibition; attended to over 120 counter enquiries and every person who wished to speak to a Council officer directly had the chance to do so.</p> <p>Submissions were still being submitted after the closing date and can be received up until the Independent Planning Panel hearing to consider submissions.</p>	3%
14. Other issues	
<p>A range of other site specific issues were raised in addition to the issues and responses provided above. Responses to the site specific issues raised can be found in Attachment 9.</p>	14%

Response to Submission

- 2.17 A summary of each individual submission received based on the 14 identified issues, an officer response to each submission (based predominantly on the FTR) and an officer recommendation to retain, modify or delete the exhibited overlay as appropriate, is provided at **Attachment 9**: 'Summary of Individual Submissions and Officer Response'.
- 2.18 104 changes affecting 154 properties are recommended on the basis of the review of submissions including the further technical reviews undertaken by Council, Cardno and Melbourne Water. These changes are listed in the table at the **Attachment 10**.
- 2.19 If Council resolves to endorse these recommended changes, they will form the basis of the Council submission to the Independent Planning Panel.
- 2.20 The recommended changes to the exhibited amendment at this stage include:

- 10 changes to the exhibited flood shape;
 - 25 changes to the overlay designation;
 - Removal of the flood shape (proposed overlay) in response to 69 submissions;
 - 673 changes affecting 801 properties which have not made submissions to remove/reduce or change the designation of the overlay from the property predominantly in response to the application of the minimal incursion criteria as detailed at Section 2.26. The reason these figures differ is because in several cases one incursion change will affect multiple properties;
 - 1 change to remove the UFZ from properties in Carbine Street, Donvale; and
 - 1 minor text change to controls.
- 2.21 The majority of recommended changes are in response to situations where the flood extent incursion into the property is considered to be minor in nature and will not result in a break or discontinuity of the flood shape.
- 2.22 A minor text change to the Schedule to SBO3 is also recommended, in response to several submissions, to address some potential ambiguity with the controls.
- 2.23 Specifically, in Schedule 3 to the Special Building Overlay, it is recommended to change the last dot point under Clause 1.0 Permit requirement as follows:
- *“New fencing with at least 25% openings or with a plinth at least 400mm above the natural surface level”.*
- 2.24 Two additional changes are recommended to the exhibited Amendment which are not directly related to submissions.
- Minor incursions*
- 2.24.1 Consideration has been given to the impacts of the minor incursion criteria as set out under Item 11 in Table 3 above, if applied to all properties. A total of 2,224 properties, including submitter properties, were identified as potentially being subject to minor incursions. Each was assessed against the criteria and a determination made as to whether the flood extent should be modified. Properties which were not submitters but where changes to the proposed controls are recommended are listed in Attachment 12.
- 2.24.2 The recommended changes to the flood shape include 660 minor incursions. The remaining 13 changes relate to changing the designation of the overlay or resolving boundary issues.
- 2.24.3 Further potential changes to non-submitting properties affected by the LSIO or the SBO1 have been referred to Melbourne Water for consideration with a final decision resting with Melbourne Water as to whether to change the Amendment as suggested.
- 2.24.4 It is recognised that the proposed changes based on this assessment impact a significant number of properties. However, as determined through the peer review of the flood mapping for the five catchments (Items 2.12 to 2.14 of this report), the modelling undertaken is still considered robust and appropriate for urban flood mapping. The proposed amendments to the

flood shape based on the minor incursion criteria do not undermine the integrity of the flood maps for the subject catchments but respond to community concerns that the filtered results appropriately manage the risk associated with major flood events for the control of future development.

Rezoning of Urban Floodway Zone in Donvale

- 2.24.5 Removal of the Urban Floodway Zone from five properties (Nos 13, 15, 19, 20 and 25) in Carbine Street, Donvale, with a rezoning to General Residential Zone 3. Following discussions with Melbourne Water, it has been ascertained that, with the introduction of the SBO1, these properties no longer need to be included within the Urban Floodway Zone. Melbourne Water therefore, has no objection to the removal of the Urban Floodway Zone and its replacement with the General Residential 3 Zone, which is the prevailing zone in this area.

Council's obligations under the Planning and Environment Act, 1987

- 2.25 Once Council has considered all written submissions received in respect to Amendment C109, it must determine whether to:
- make changes to the Amendment as requested in the submissions;
 - refer the submissions to an Independent Planning Panel (to be established by the Minister for Planning) for further review; or
 - abandon the Amendment or part of the Amendment.
- 2.26 Making every change to the Amendment as requested in the submissions is not supported for the reasons set out in **Attachment 9** to this report. A number of changes, however, are recommended to be made to the Amendment, where it can be clearly shown that the criteria for removing or changing an overlay have been met.
- 2.27 Resolving to abandon the amendment is not recommended and would likely expose Council and the community to unnecessary risk in relation to flooding.
- 2.28 In addition, a failure to implement appropriate flood mapping (based on Planning Practice Note 12), could give rise to a finding that Council has failed to adequately perform its statutory functions and duties as a planning authority.
- 2.29 Inclusion of flood information in the Planning Scheme will enable landowners, developers and purchasers to have immediate access to this critical information in the early stages of the development approval process, thereby ensuring that new development is designed with flood mitigation in mind.
- 2.30 It is therefore recommended that the Amendment (together with the suggested changes as set out in **Attachment 10**) be progressed to the next step in the planning scheme amendment process and that the submissions be referred to an Independent Planning Panel for further review.

3. COUNCIL PLAN / STRATEGY

Council Plan and Strategies

- 3.1 Under the Council Plan 2013-2017 Strategic Objective 4 Planning for Where We Live, the Annual Initiatives for 2014-2015 included, "*Identify further land subject to flooding in the Manningham Planning Scheme to improve management of future catchment flood levels.*"
- 3.2 In addition, there have been a number of other strategies which have necessitated that Council undertake flood mapping of its local catchments and support the implementation of flood mapping through the introduction of planning scheme overlays.

State Government Strategy

- 3.3 Most recently, the Victorian Government has developed the *Victorian Floodplain Management Strategy* (2016) to help communities be better prepared for future floods. The strategy clarifies the roles and responsibilities of government agencies and authorities involved in flood management. It aims to improve the evaluation and communication of flood risks so communities and relevant agencies can take better-informed action to manage floods.
- 3.4 That Strategy also states that in order to avoid or minimise future risks, the use of planning controls to manage the potential growth in flood risk should be endorsed. It also sets accountabilities in land use planning to avoid increased stormwater runoff from new developments.

Auditor General's Report

- 3.5 The Auditor General released the '*Managing Storm Water Flooding Risks in Melbourne*' report (2005), following widespread flooding of the Melbourne metropolitan area between December 2004 and January 2005. The Auditor General formed the view that Victorian Councils were not effectively managing flooding risks associated with significant storm events and recommended that Councils provide a higher level of flood protection, carry out reliable flood mapping and include the results in their planning schemes.
- 3.6 In 2007, Melbourne Water released its '*Port Phillip and Westernport Region Flood Management and Drainage Strategy*', in response to the Auditor General's report. One of the key themes of that strategy was improved collaboration and communication between Councils and Melbourne Water. A key action involved the joint development of Flood Management Plans to improve the flood knowledge base and for the organisations to work collaboratively to better address flood risk. Accurate flood mapping is considered to be a critical foundation for the development of sound drainage and flood management activities.
- 3.7 In June 2011, Council and Melbourne Water adopted a joint Flood Management Plan for the municipality which aims to facilitate a coordinated approach to flood management within Manningham. Section 11 of the Flood Management Plan sets out a list of actions for Council and Melbourne Water to reduce flood risk and flood impact severity for Manningham. One of the actions identified in the

improvement plan includes completion of flood mapping for Manningham Council's local catchments.

Council Strategies

- 3.8 Council's Drainage Strategy 2004-2014 recognised the need for buildings and other vulnerable assets to be above flood levels and not to be surrounded or isolated by deep or fast flowing waters and recommended 'a municipal wide study be carried out and an overlay be introduced for overland flow path areas which prevents any development which may occur in the flow path'.
- 3.9 The *Manningham Residential Strategy (2012)* includes an action (Action 4.4 – short term) to "*complete floodway mapping and progress appropriate planning controls on the affected properties*"
- 3.10 Recommendation 6 of the *Manningham Planning Scheme Review (2014)* is to amend the Planning Scheme to apply the Special Building Overlay or Land Subject to Inundation Overlay where mapping of local drainage catchments has confirmed that land is subject to flooding.

State and Local Planning Policy Frameworks

- 3.11 The proposal to apply the LSIO and SBO is consistent with the following Clauses of the State Planning Policy Framework:
- Clause 11 Settlement seeks to anticipate and respond to the needs of existing and future communities through the provision of zoned and serviced land for housing, employment, recreation and open space, commercial and community facilities and infrastructure.
 - Clause 13 Environmental Risks Planning should adopt a best practice environmental management and risk management approach which aims to avoid or minimise environmental degradation and hazards. Planning should identify and manage the potential for the environment, and environmental changes, to impact upon the economic, environmental or social well-being of society.
- 3.12 In particular Amendment C109 will implement the following objectives of Clause 13.02-1 Floodplain management:
- To assist the protection of:*
- *Life, property and community infrastructure from flood hazard.*
 - *The natural flood carrying capacity of rivers, streams and floodways.*
 - *The flood storage function of floodplains and waterways.*
- 3.13 The relevant strategies in Clause 13.02-1 are to:

'Identify land affected by flooding, including floodway areas, as verified by the relevant floodplain management authority, in planning scheme maps. Land affected by flooding is land inundated by the 1 in 100 year flood event or as determined by the floodplain management authority'

and

'Avoid intensifying the impacts of flooding through inappropriately located uses and developments.'

3.14 The Amendment is also consistent with the following clauses of the Local Planning Policy Framework incorporating the Municipal Strategic Statement and Local Planning Policies:

- Clause 21.05 Residential, Clause 21.06 Low Density and Clause 21.07 Green Wedge and Yarra River Corridor all recognise that areas within the municipality are susceptible to flooding and that any proposals to subdivide or develop land need to have regard and respond to identified land constraints including flooding.
- Clause 21.12 Infrastructure recognises that Council is responsible for providing drainage for the local street network and local catchment areas. Council also encourages developments to design and upgrade drainage infrastructure to reduce the occurrence of inundation and flooding, and improve safety and enhance the amenity of the municipality. Further, it recognises that Council will continue to identify land which has drainage and flood constraints.

Planning Practice Note 12

3.15 Practice Note 12 (PN12): Applying the flood provisions in planning schemes (revised June 2015) provides guidance about applying the flood provisions in planning schemes and identifying which flood overlay should apply.

3.16 PN12 states, relevantly:

"In general, it is not practical or economical to provide land use planning or flood protection up to the 'probable maximum flood (PMF)'. A lesser flood standard, known as the 'design flood event' (DFE), is adopted for land use planning purposes and is the area applicable for planning schemes. The area defined by the DFE will be referred to as 'land subject to inundation' and can be divided into its relevant UFZ, FO, LSIO and SBO components as the case requires. In Victoria, the DFE for land use planning and building purposes is the 100-year ARI (average recurrence interval) flood, which occurs on average once every 100 years. This is the basis for declaring flood levels and flood areas under the Water Act 1989 and for setting minimum building floor levels under the Building Act 1993."

4. IMPACTS & IMPLICATIONS

Community

- 4.1 Approximately 10,300 properties across five urban catchments of Manningham are liable to inundation by overland flows from the urban drainage system and mainstream flooding, which are proposed to be included in the SBO and LSIO.
- 4.2 Approximately 45% of the affected properties already have other planning scheme controls that trigger the requirement for a planning permit.
- 4.3 As noted earlier in this report, the majority (59%) of properties will have minimal impacts from the proposed amendment, as they will either have their existing flooding overlay removed completely, they will have minor changes made to the boundary of their existing flooding overlay, or permit exemptions will ensure that planning permit approval is not required if certain conditions are met (such as minimum height of proposed building floor level above the ground).
- 4.4 Existing houses or buildings will not retrospectively be required to obtain planning permit approval (only new development will require a planning permit where planning permit exemptions are not met).
- 4.5 The proposed flooding overlays only affect small parts or sections of properties in most instances, and therefore new development will only need a planning permit if it is located within the overlay itself (where planning permit exemptions are not met).
- 4.6 Flood mapping within Manningham's local catchments supports an integrated approach to managing the impacts of stormwater runoff. The key function of the application of the SBO and LSIO to identified land is to ensure that drainage issues are considered at an early stage of the development approvals process. Consideration of flooding also seeks to ensure that detrimental impacts to life and new buildings are minimised.
- 4.7 The identification of properties within overland flow paths can also enable community education and communications to be better directed, to enable residents to best prepare for flood events. The flood mapping will also inform the prioritisation of future drainage improvement works, to protect habitable floor areas and address community safety risks.

Sustainability

- 4.8 The proposed amendment is likely to have positive social and economic effects. Benefits include better management of land liable to flooding and reduced incidence of flood damage to habitable floor areas over time.
- 4.9 By more accurately identifying land within the SBO and LSIO, the amendment will assist council to provide timely and more accurate advice when new development is proposed on land that is potentially subject to inundation.
- 4.10 Increasing the awareness of flood potential and thereby minimising the potential impacts of flooding will also have public safety benefits.

- 4.11 The economic impact of flooding on individuals and communities will be minimised through reduced flood risk. Design requirements arising from the application of the SBO and LSIO may result in some increase in development costs. However, having access to information early in the planning phase will allow appropriate, cost effective strategies to be implemented by developers.
- 4.12 After re-development of a site, costs associated with future flood damage should be reduced. This benefit would be specific to individual properties.

5. IMPLEMENTATION

Finances and Resources

- 5.1 Melbourne Water has shared the costs associated with exhibition of the amendment and would also share the costs associated with a panel hearing.
- 5.2 In order to reduce the number of planning permit applications to Council, and the related costs of considering those applications, Amendment C109 has been structured to include additional planning permit exemptions in SBO3, which cover 57% of properties within the SBO. If the application complies with a number of conditions (e.g. the proposed floor level is set a minimum of 400mm above the existing ground surface level at the building and the proposed building does not exacerbate overland flows), then a planning permit will not be triggered.

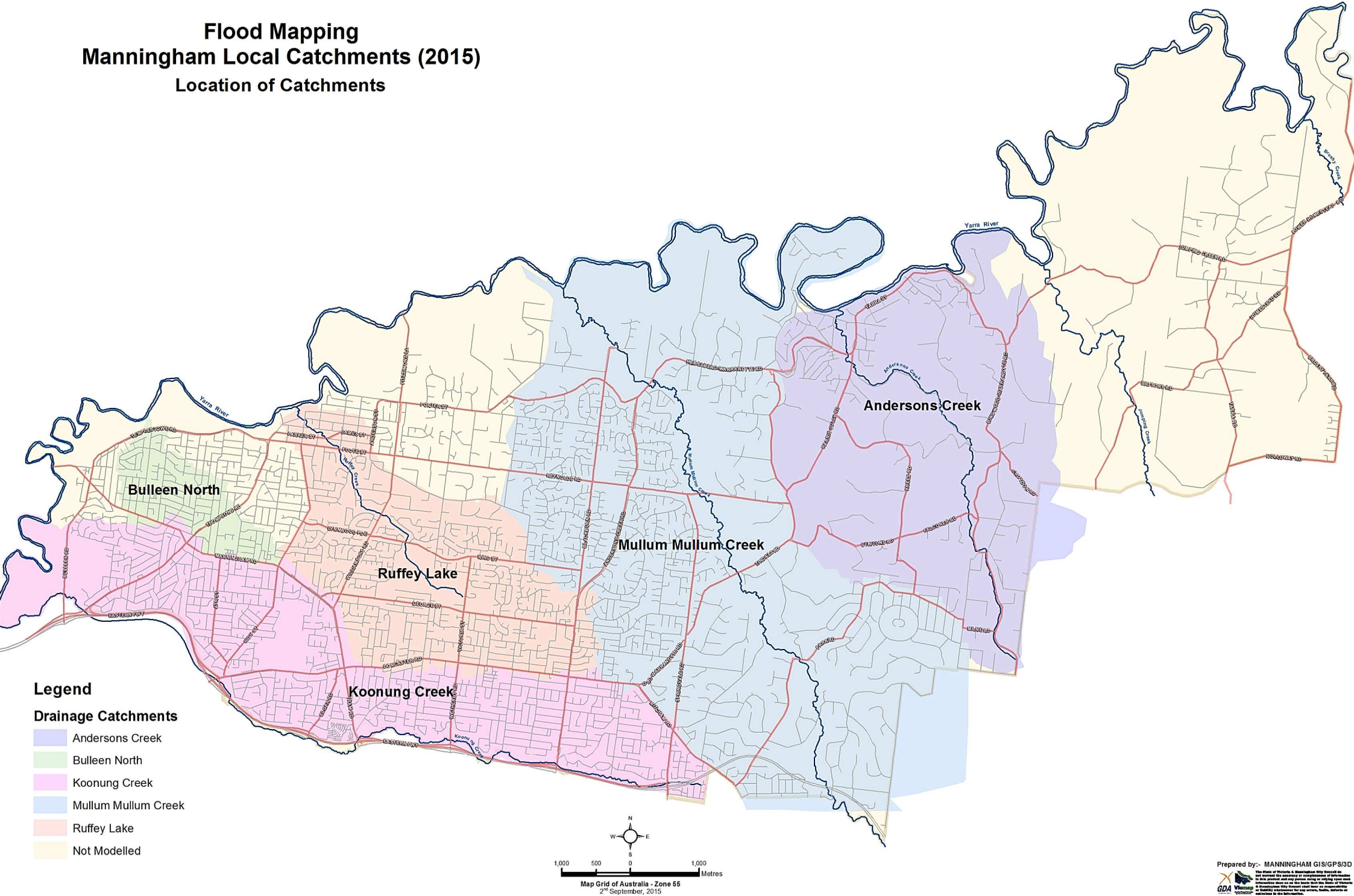
Timelines

- 5.3 Ministerial Direction No. 15 sets the timeframe for completing the various steps in the Planning Scheme amendment process.
- 5.4 Pursuant to Clause 4(3) of the Ministerial Direction, Council must request the appointment of an Independent Planning Panel within 40 business days of the closing date for submissions unless a Panel is not required.
- 5.5 As submissions closed on 24 December 2015, it was necessary to seek a Ministerial exemption with respect to requesting the appointment of a Panel.
- 5.6 This exemption was granted by the Minister on 3 March 2016.
- 5.7 Should Council decide to refer the submissions to an Independent Planning Panel, a formal request to appoint a Panel will be made.

6. DECLARATIONS OF CONFLICT OF INTEREST

No Officers involved in the preparation of this report have any direct or indirect conflict of interest in this matter.

Flood Mapping Manningham Local Catchments (2015) Location of Catchments



Development of the Special Building Overlay

Technical Report

NA49913512

Prepared for
Manningham City Council



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Table of Contents

1	Background	1
1.1	Introduction	1
1.2	Flood Modelling Studies	1
1.2.1	Overview	1
1.2.2	Bulleen North	1
1.2.3	Ruffey Creek	2
1.2.4	Mullum Mullum Creek, Koonung Creek, Andersons Creek	2
2	Applicable Flood Planning Controls	4
2.1	Land Subject to Inundation (LSIO)	4
2.2	Special Building Overlay (SBO)	4
2.3	Schedule to the SBO (SBO1)	4
2.4	Schedule to the SBO (SBO2)	5
2.5	Schedule to the SBO (SBO3)	5
3	Planning Extent Development	6
3.1	Overview	6
3.2	Inclusion / Exclusion Criteria	6
3.2.1	Criteria 1: Properties adjacent to flooded roads	6
3.2.2	Criteria 2: Isolated ponding	7
3.2.3	Criteria 3: Connecting Disconnected Extents	7
3.2.4	Criteria 4: Differentiating between LSIO and SBO 1	7
3.2.5	Criteria 5: Differentiating between SBO 2 and SBO 3	7
3.2.6	Smoothing	8
3.2.7	Other Minor Amendments	8
3.3	Separating MW and Council Flood Extents	8
3.4	Eastern Golf Course – Doncaster	8
4	Proposed Amendments to Planning Overlays	12
4.1	Overlays Supplied	12
4.2	Properties included in the Proposed Planning Extents	12

Tables

Table 1-1	Properties Flooded, Bulleen North Catchment	2
Table 1-2	Properties Affected by flooding (Ruffey Creek catchment)	2
Table 1-3	Properties Affected by flooding (Mullum, Andersons and Koonung catchments)	3
Table 1-4	Buildings Affected by flooding (Mullum, Andersons and Koonung catchments)	3
Table 4-1	Properties affected by the flood overlays	12

Figures

Figure 3-1	Trimming of Flood Extent along Roads	6
Figure 3-2	SBO Extent Development, Areas Removed	9
Figure 3-3	SBO Extent Development, Areas Connected	10
Figure 3-4	SBO Extent Development, SBO2 and SBO3 Delineation	11

1 Background

1.1 Introduction

This document has been prepared at the request of the City of Manningham to provide the background information and methodology used to amend the existing Special Building Overlay (SBO) for the Manningham Planning Scheme and to identify properties flooded within areas under Council's jurisdiction (i.e. local catchment flooding). The review of the overlay is a key aspect of floodplain management in the City and enables the appropriate control of development in areas subject to overland flow.

The amended overlays build on hydraulic modelling undertaken on behalf of Council and Melbourne Water by various consultants over the last five years.

1.2 Flood Modelling Studies

1.2.1 Overview

Flood mapping seeks to identify areas at risk of flooding from various storm event and reduce those risks. It is a vital component of land use planning in the development of the SBO. The flood extents determined from engineering investigations are used to amend the SBO.

The areas included in the amended SBO have been generated as a result of engineering investigations undertaken by Council and Melbourne Water. The flood extents used to amend the SBO have been developed for flooding that is in excess of 50mm flood depth. The projects identified flood prone areas in the City of Manningham and included consideration of all local and Melbourne Water main drainage lines and major creeks within the five subject catchments.

Separate consideration of the Yarra River and Koonung Creek were outside the scope of the flood mapping projects. Flooding associated with the Yarra River and Koonung Creek would normally be designated under the Flood Zone, Floodway Overlay or Land subject to Inundation Overlay provisions of the Manningham Planning Scheme. The specific areas covered by the overlays are discussed below.

1.2.2 Bulleen North

This project was undertaken as a collaboration project between the City of Manningham and Melbourne Water.

The Bulleen North drainage network is a branched and highly modified network that commences near the corner of High Street and Manningham Road and discharges at the Yarra River near the corner of Templestowe Road and Sheahans Road. It services the suburb of Bulleen. The total catchment area of the highly urbanised catchment is approximately 225 hectares, consisting of medium and high density residential and commercial developments.

The drainage system consists primarily of reinforced concrete pipes that ultimately discharge into the Yarra River. Throughout the entire catchment, a council maintained drainage network exists that flows into the Melbourne Water Main Drain at various locations. The Melbourne Water Drain commences at Rose Avenue and traverses the catchment in a north-west direction, discharging near the Yarra River at Templestowe Road.

1.2.2.1 *Properties and Buildings Flooded*

In a large storm event, significant flooding occurs throughout the catchment. Numerous properties are inundated and many floors are potentially flooded. Table 1-1 provides an indication of the number of properties affected and floors flooded in the 1% Annual Exceedance Probability (AEP) storm event. These are the combined totals from flooding associated with Council and Melbourne Water drainage systems.

Table 1-1 Properties Flooded, Bulleen North Catchment

Flood Event	Number of Properties Affected	Number of Floors Flooded*
100 year	659	86

* Note 1: the floors flooded have only been counted where surveyed floor level data is available.

* Note 2: figures in table are taken directly from the flood modelling results. Not all properties will be included in the planning layers.

1.2.3 Ruffey Creek

This project was undertaken as a collaboration project between the City of Manningham and Melbourne Water. The Ruffey Creek Flood Mapping results were originally developed by AECOM and were reviewed as part of this project to ensure consistency of modelling parameters across the five catchments.

The Ruffey Creek catchment spans areas of Templestowe and Doncaster and consists almost entirely of residential development with some commercial and public land scattered throughout. The catchment boundary extends just east of Blackburn Road, south of Doncaster Road, along Williamsons Road, Manningham Road, High Street and Serpells Road and discharges to the Yarra River at Finns Reserve. The total catchment area of the highly urbanised catchment is approximately 1,049 hectares. Ruffey Lake sits in the centre of the catchment. The average grade of the catchment is 2% with the upper reaches approaching grades of 7%. The dominant flow direction is from south-east to north-west toward the Yarra River.

The drainage system consists primarily of reinforced concrete pipes that ultimately discharge into the Yarra River. Throughout the entire catchment, a council maintained drainage network exists that flows into the Melbourne Water Main Drainage network at various locations. The Melbourne Water drainage network includes the George Street, Roseland Grove, Bonview Road, Greenridge Avenue and Montpellier Crescent main drains, as well as the Lynnwood Parade Retarding Basin. From a flood mitigation perspective, Ruffey Lake is by far the most important infrastructure component, also functioning as a retarding basin.

1.2.3.1 *Properties Flooded*

Table 1-2 below shows the number of properties that are considered to be flood affected. The total below indicates where a property is intersected by the expected extent of flooding in the 1% AEP flood event.

Table 1-2 Properties Affected by flooding (Ruffey Creek catchment)

Catchment	Land Use	1% AEP Event - Properties Affected*
Ruffey Creek	Residential	3754
	Business	29
	Public	124
	Total	3907

* Note 1: figures in table are taken directly from the flood modelling results. Not all properties will be included in the planning layers

1.2.4 Mullum Mullum Creek, Koonung Creek, Andersons Creek

This project was undertaken by the City of Manningham, with technical review and comment provided by Melbourne Water. The aim of the project was to identify flooding from council owned or controlled assets, however due to the nature of the drainage networks, some areas that are considered Melbourne Water controlled were included.

The Koonung Creek catchment is primarily zoned as 'general residential zone' with an existing extensive underground stormwater pipe network throughout the catchment area. The land has not generally been developed with consideration of major overland flows, which is representative of the development controls at the time the land was urbanised generally in the 1950's and 1960's. There are many examples of overland flow paths traversing private properties.

The Mullum Mullum and Andersons Creek catchments are a mixture of urban and peri urban (large lot) land. Peri urban type uses are more commonly found along the main creek lines of the Mullum Mullum and Andersons Creek catchments. Predominantly, underground drainage is focused in the urban areas, with

rural and occasional urban areas (such as Warrandyte) not as effectively serviced. Most of the flows are carried in open streams and their associated floodplains. Across the catchment the tributary overland flow paths follow the natural drainage lines through properties; however, there are relatively few areas where flood extents appear to encroach on built infrastructure.

1.2.4.1 Properties and Buildings Flooded

Table 1-3 and Table 1-4 below show the number of properties and buildings that are considered to be flood affected in each catchment. The total below indicates where a property or building is intersected by the expected extent of flooding in the 1% AEP flood event.

Table 1-3 Properties Affected by flooding (Mullum, Andersons and Koonung catchments)

Catchment	Land Use*	1% AEP Event Responsible Authority		
		MW	Council	Total
Koonung Creek	Residential	143	1939	2082
	Business	3	36	39
	Public	48	150	198
	Total	194	2125	2319
Mullum Mullum Creek	Residential	245	2219	2464
	Business	0	17	17
	Public	103	203	306
	Total	348	2439	2787
Andersons Creek	Residential	54	460	514
	Business	0	21	21
	Public	49	301	350
	Total	103	782	885

* Note 1: figures in table are taken directly from the flood modelling results. Not all properties will be included in the planning layers

Table 1-4 Buildings Affected by flooding (Mullum, Andersons and Koonung catchments)

Catchment	Land Use*	1% AEP Event Responsible Authority		
		MW	Council	Total
Koonung Creek	Residential	39	926	965
	Business	3	22	25
	Public	4	39	43
	Total	46	987	1033
Mullum Mullum Creek	Residential	50	791	841
	Business	0	11	11
	Public	11	16	27
	Total	61	818	879
Andersons Creek	Residential	10	113	123
	Business	0	20	20
	Public	6	26	32
	Total	16	159	175

The number of buildings which will be inundated in a major storm event will be a subset of the building numbers shown in Table 1-4. This data is not currently available as floor level surveys have not been undertaken to date for these catchments.

2 Applicable Flood Planning Controls

There are three main planning overlay controls for flooding, the Floodway Overlay (FO), the Land Subject to Inundation Overlay (LSIO) and the Special Building Overlay (SBO). Of these controls, the SBO has been adopted to represent flooding in council areas, noting that this is related to a drainage network that may include pipes and open channels and provides ease of implementation.

2.1 Land Subject to Inundation (LSIO)

The LSIO applies to areas subject to mainstream flooding in both rural and urban areas. These are generally areas surrounding major overland flow paths that become inundated during full flood flows in the 1% AEP flood event (also referred to as the 1 in 100 year ARI event).

The current flood planning controls will remain unchanged for LSIO areas and will continue to adopt the standard planning permit requirements found in Clause 44-04 of the Manningham Planning Scheme.

2.2 Special Building Overlay (SBO)

The SBO applies to areas that are subject to stormwater flooding in urban areas. These are generally areas which are inundated due to the inability of the stormwater infrastructure to convey the full flood flows in the 1% AEP flood event (also referred to as the 1 in 100 year ARI event). This overlay is suitable for areas where stormwater systems were implemented prior to current design standards and there has been substantial development since the infrastructure was completed.

The flood planning controls proposed for the City of Manningham include three control types, designated as SBO1, SBO2 and SBO3. SBO1 and SBO2 are for areas of greater flooding where stricter planning controls are required. These areas adopt the standard planning permit requirements found in Clause 44-05 of the Manningham planning scheme. The 1 and 2 represent the break-up between the area of responsibility for management by Melbourne Water (SBO1) and Council (SBO2) respectively.

The proposed SBO3 is for areas managed by Council that have a known flood issue which requires control, but could be managed without a planning permit. The flood depth in the SBO3 area is usually less than 100 mm. It is proposed to adopt a schedule to the SBO that provides for appropriate flood sensitive development in these areas, without a permit, provided certain conditions are met. This approach should significantly lessen the impact of implementing appropriate flood management controls on both council staff and the wider community.

2.3 Schedule to the SBO (SBO1)

SCHEDULE 1 TO THE SPECIAL BUILDING OVERLAY

Shown on the planning scheme map as SBO1

MELBOURNE WATER MAIN DRAINS

1.0 Referral of applications

An application must be referred to Melbourne Water in accordance with Section 55 of the act unless in the opinion of the responsible authority, the proposal satisfies requirements or conditions previously agreed to in writing between the responsible authority and the floodplain management authority

2.4 Schedule to the SBO (SBO2)

The following schedule is proposed for the areas designated as SBO2.

SCHEDULE 2 TO THE SPECIAL BUILDING OVERLAY

Shown on the planning scheme map as SBO2

MANNINGHAM COUNCIL DRAINS

1.0 Referral of applications

- *No referral authority specified*
- *An application will be considered by the City of Manningham as the authority responsible for local drains.*

2.5 Schedule to the SBO (SBO3)

The following schedule is proposed for the areas designated as SBO3

SCHEDULE 3 TO THE SPECIAL BUILDING OVERLAY

Shown on the planning scheme map as SBO3

MANNINGHAM COUNCIL DRAINS

1.0 Permit requirement

A permit is not required to construct or carry out the following buildings or works:

- *a new dwelling where the floor level is at least 400 mm above the natural surface level and the sub floor does not obstruct the overland flow path.*
- *a replacement dwelling where the floor level is at least 400 mm above the natural surface level, the sub floor does not obstruct the overland flow path and the original building footprint remains the same. The responsible authority may require evidence of the existing building envelope.*
- *a single or multiple dwelling extension where:*
 - *the sub floor level does not obstruct the overland flow path; and*
 - *the floor level of the proposed dwelling extension/s is at least 400 mm above the natural surface level.*
- *an alteration to an existing building where the original building footprint remains the same and floor levels are constructed to at least 400mm above natural surface level.*
- *a replacement building (not including an out-building) where the floor level is at least 400 mm above the natural surface level, the original building footprint remains the same and the sub floor does not obstruct the overland flow path. The responsible authority may require evidence of the existing building envelope.*
- *new fencing with at least 25% openings and with the plinth at least 400 mm above the natural surface level .*

2.0 Referral of applications

- *No referral authority specified*
- *An application will be considered by the City of Manningham as the authority responsible for local drains.*

3 Planning Extent Development

3.1 Overview

Proposed planning extents have been developed for Bulleen North, Ruffey Creek, Mullum Mullum Creek, Andersons Creek and Koonung Creek Catchments. The proposed planning extents have been developed based on the hydraulic modelling outputs for the 100yr ARI storm event.

The extent of the overlay includes areas of flooding relevant to Melbourne Water's assets. Melbourne Water has a number of existing overlays in place as part of the scheme. As agreed with MW, these overlays have been replaced with the results of this study as they have been developed using more up to date modelling outputs.

The aim of the proposed planning extents are to identify areas that require planning controls to ensure appropriate responses to flooding. It is not necessary to have a flood related control in all areas where overland flows occur or are predicted by a flood model. The following section discusses the process used to develop the proposed planning extents.

3.2 Inclusion / Exclusion Criteria

Flood extents from the flood mapping projects for each catchment were used to provide the basis for the proposed planning extents. Four criteria have been adopted to assess if an area should be included in the planning extent. These inclusion and exclusion criteria are explained below.

3.2.1 Criteria 1: Properties adjacent to flooded roads

There are many areas in Manningham where flooding is generally contained within the road reserve, however, due to the flood mapping methodology, the flood extents generated from the flood model results may encroach slightly onto properties. This criteria identifies where this may occur and removes areas from the proposed planning extent on properties where this occurs, as shown in Figure 3-1. The guidelines adopted for this criteria were:

Removed from SBO: If the flooded area of a property was entirely within 5 m of a roadway and the percentage of the property affected was less than 10%.

Retained as part of SBO: If other areas of the property, not within 5m of the roadway, were flood affected.



Figure 3-1 Trimming of Flood Extent along Roads

3.2.2 Criteria 2: Isolated ponding

The flood modelling approach used identifies all potential flowpaths in a catchment, including those that may be unrelated to drainage infrastructure. These could be on larger properties, upstream of the drainage network or isolated low points within individual properties. Guidelines were adopted to account for these areas:

Removed from the SBO: If flooded area was less than 500 m², fully disconnected from the flood extent and situated away from the underground drainage network.

Removed from the SBO: Either if:

- a) The flooded area was disconnected from the flood extent, the drainage network, had a maximum flood depth less than 200 mm and the raw (unfiltered) data did not suggest connection to the neighbouring flood extent. These areas were usually isolated local depressions on the land surface
- b) The area was less than 500 m², the maximum flood depth was less than 200 mm and the raw (unfiltered) data did not suggest connection to the neighbouring flood extent.

Removed from the SBO: If the flooded area was determined to be a body of water such as a swimming pool, but not an online dam or similar water storage.

As an example, Figure 3-2 shows the areas that were removed for the Bulleen North Catchment.

3.2.3 Criteria 3: Connecting Disconnected Extents

The flood extents produced by the flood mapping projects have been filtered to remove areas that do not meet specified criteria. In some cases this can lead to a visual disconnection in the planning extent that can appear to show flooded areas with no logical connections. This result can be due to the connected flows being less than 50mm in depth such that the connection is not fully mapped. The proposed planning extents have been amended to provide a more continuous flood extent in these cases.

Connections Made: If the flood extent in the raw (unfiltered) model outputs suggested a connection could occur, and no additional properties are impacted by the change.

As an example, Figure 3-3 shows the areas that were connected for the Bulleen North Area

3.2.4 Criteria 4: Differentiating between LSIO and SBO 1

Areas designated as LSIO and SBO 1 are both Melbourne Water controlled. This delineation is applied at a catchment scale so as not to interchange between each scheme along the same flow path. The guidelines for delineation are:

LSIO: If flooding is present along a mainstream flow path (e.g. creek, river, etc.).

SBO 1: If flooding is present along a Melbourne Water underground asset.

3.2.5 Criteria 5: Differentiating between SBO 2 and SBO 3

Council has adopted a floodplain management approach that enables both council and the wider community to easily understand the floodplain risk associated with each property. It is considered that flow paths where the depth of water is generally greater than 100 mm will require detailed assessment by council officers and these areas are designated as SBO2. All other areas that are managed by council are considered SBO3, and may be developed without a permit, subject to certain conditions being met. The guidelines for delineation are:

SBO 2: If a large proportion of the flow path experienced depths of more than 100 mm.

SBO 3: If the flow path was predominantly less than 100 mm in depth.

The method used to identify these areas is shown in Figure 3-4 for the Bulleen North catchment. Once an area became designated as SBO2, it remained SBO2 until meeting the Melbourne Water controlled area (SBO1/LSIO), even if the flow depths became less than 100 mm. This retains continuity in the SBO shapes and indicates that these downstream flowpaths need greater control as

they may be more sensitive to change. The divide between these areas will generally be at the property boundary such that any property will be affected by SBO2 or SBO3.

3.2.6 Smoothing

An automatic smoothing process was performed on the proposed planning extents in order to remove unrealistically sharp edges and provide a pleasing visual presentation. Careful consideration was made as to ensure that no additional properties were included in the extent due to the smoothing process.

3.2.7 Other Minor Amendments

In some instances minor amendments to the edges of the proposed planning extents have been made. This has been done where the proposed planning extent only covers a small area of a property and the flood risk on that property was considered to be negligible. This commonly occurs along drainage reserves where there is a minor overlap of the flood extent into private property. The removal of this small overlap aims to avoid unnecessary queries from properties with negligible flood risk.

3.3 Separating MW and Council Flood Extents

The following guidelines were followed when undertaking the final derivation of the proposed planning extents. The split between SBO 2 and SBO 3 has been determined as part of this analysis. The guidelines are:

- The breaks between proposed planning extents should be along land parcel boundaries unless otherwise advised;
- To avoid ambiguity, a parcel is classified as being within Melbourne Water's (MW) flood extent or Council's. This ensures that when a request for a flood level for a particular parcel is made, only one authority provides the level.
- The Melbourne Water Areas (LSIO and SBO 1) occur where the flood extent is directly associated with a MW asset, including where it breaks away from the asset.
- Council controlled areas (SBO 2 and SBO 3) begin at the top of the catchment and end once they intersect with the MW flood extent.
- Where the flood extent traverses a group of units, the entire extent will be classified as one authority's flood extent based on the downstream control, unless a suitable other delineation exists.
- For large parcels (schools, reserves, golf courses, etc.), the entire extent will be classified as one authority's flood extent. In the event that the parcel is subdivided in the future, both authorities will re-arrange the flood extents if necessary.

3.4 Eastern Golf Course – Doncaster

The site of the former Eastern golf course is currently being developed into residential housing. The development process ensures that flood and overland flow paths must be provided by the developer to ensure that no new properties are effected by flooding. As such, it is reasonable to exclude this land from the proposed planning extent.

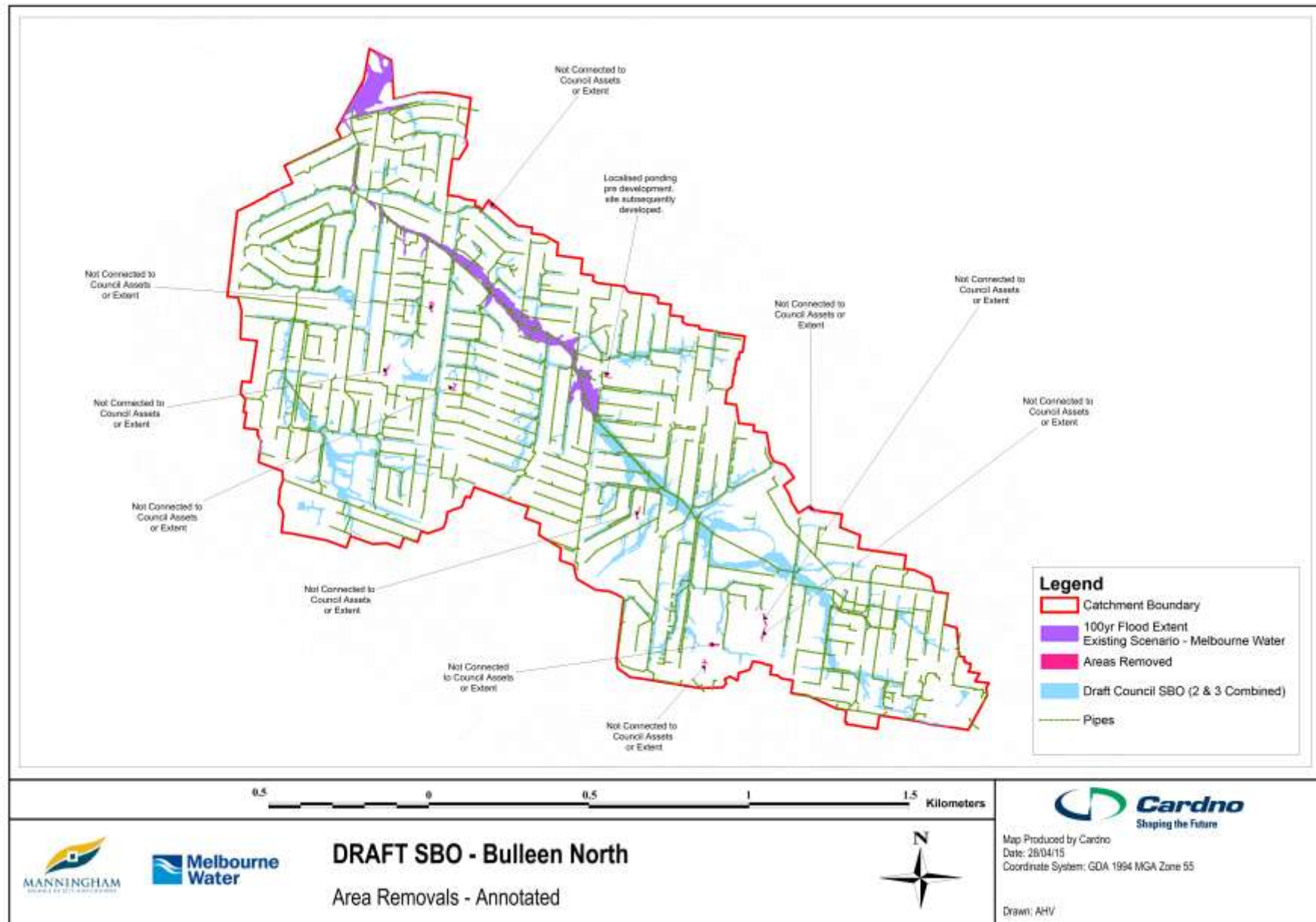


Figure 3-2 SBO Extent Development, Areas Removed

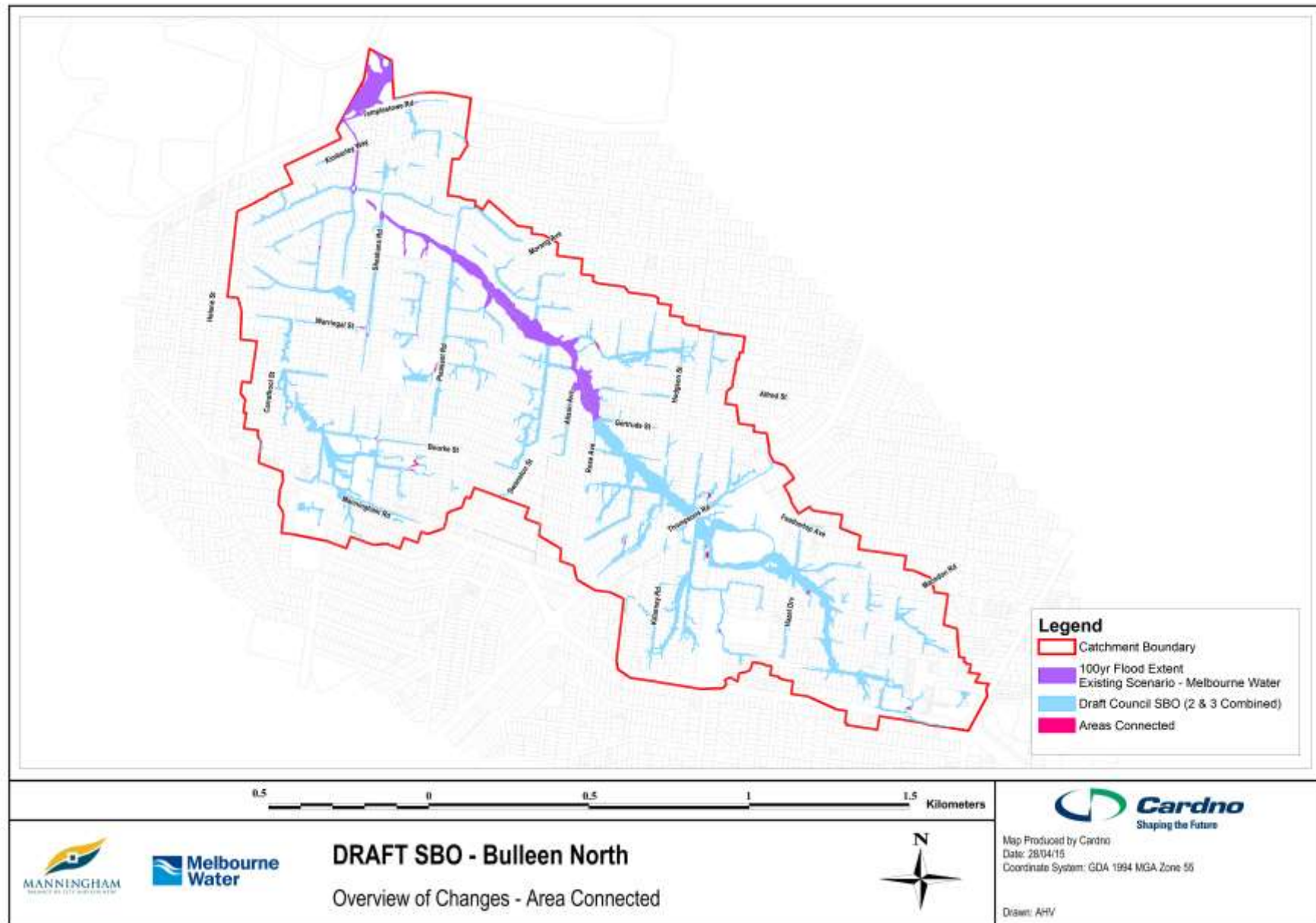


Figure 3-3 SBO Extent Development, Areas Connected

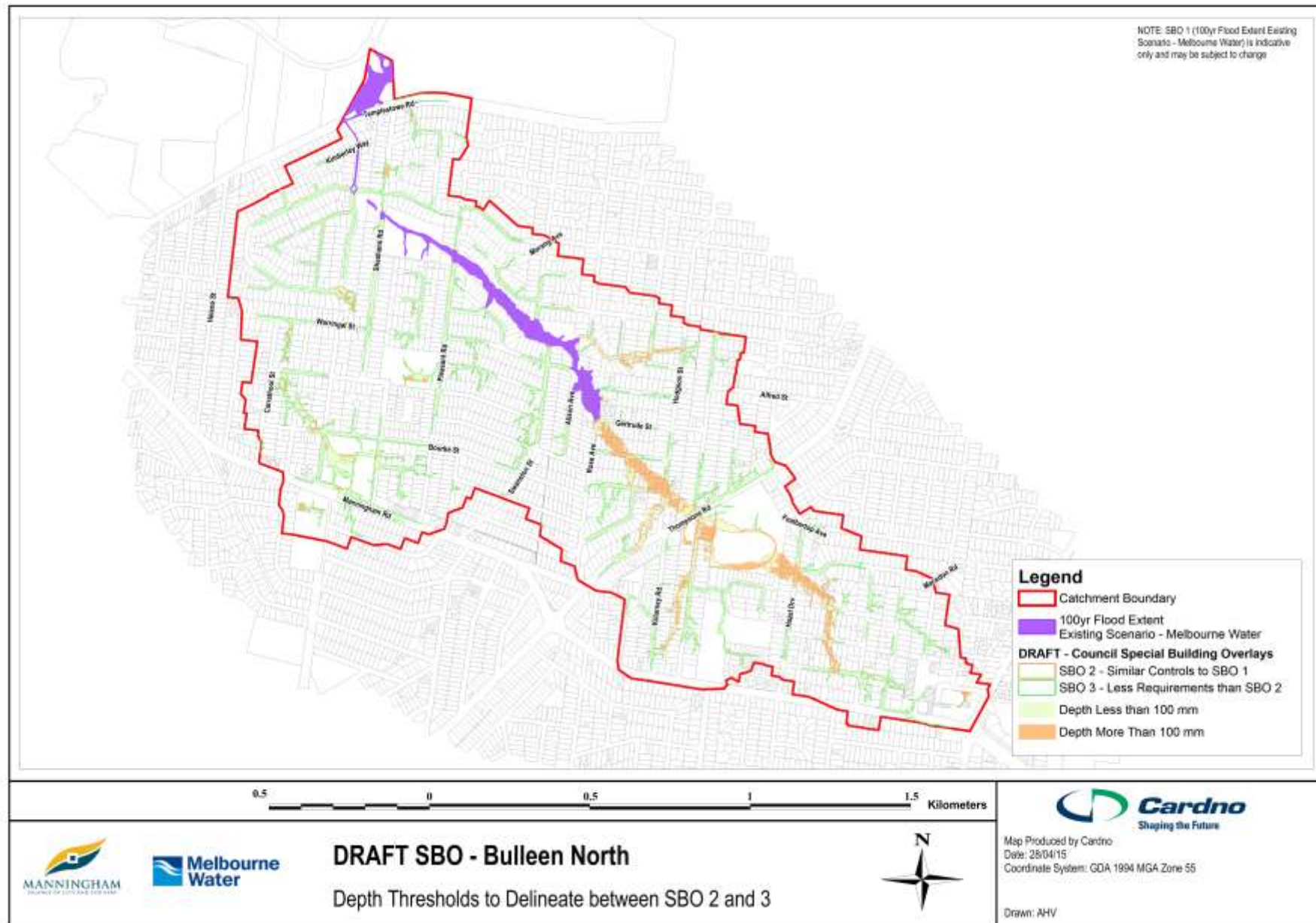


Figure 3-4 SBO Extent Development, SBO2 and SBO3 Delineation

4 Proposed Amendments to Planning Overlays

4.1 Overlays Supplied

Proposed Land Subject to Inundation and Special Building Overlays for each area have been supplied in both map and GIS form.

The draft overlays are provided in the figures attached for:

- > Bulleen North Catchment
- > Ruffey Creek Catchment
- > Andersons Creek Catchment
- > Mullum Mullum Creek Catchment
- > Koonung Creek Catchment

4.2 Properties included in the Proposed Planning Extents

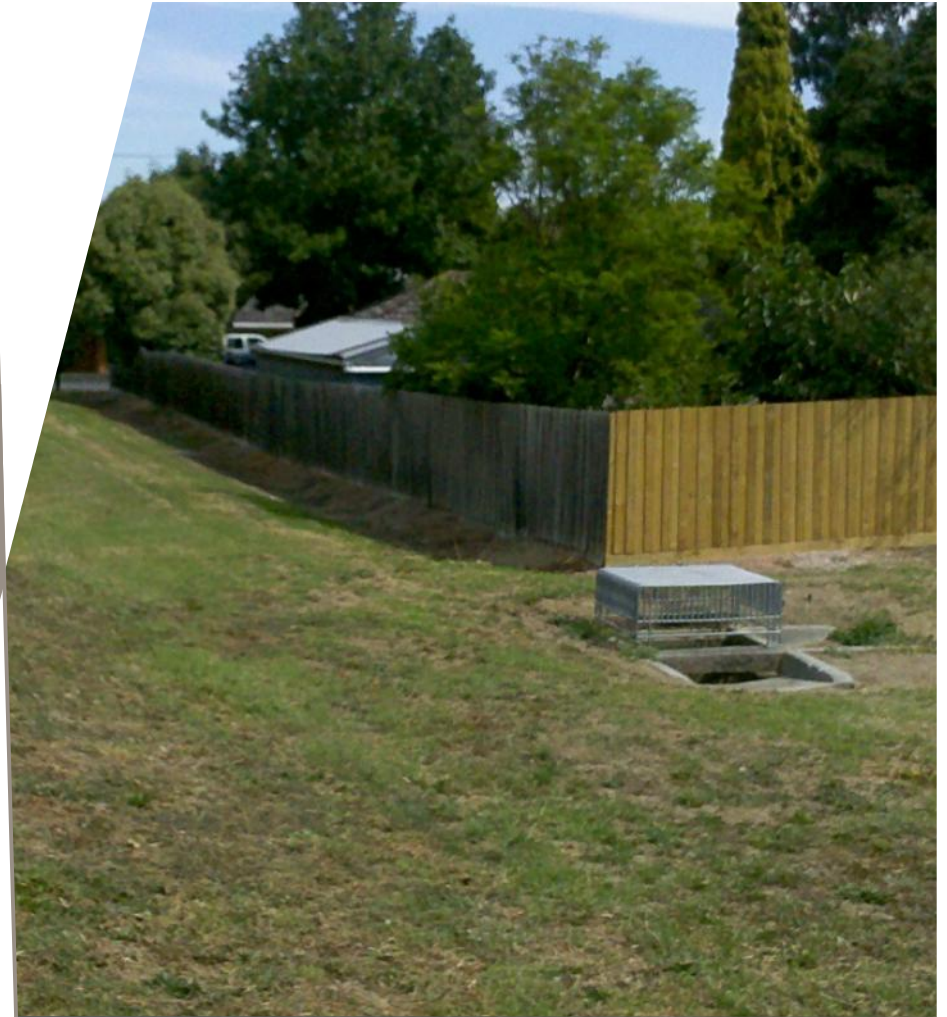
The number of properties that are included in each of the proposed planning overlays are shown in Table 4-1. This includes consideration of land parcels that have multiple property titles, such as strata developments and shopping centres.

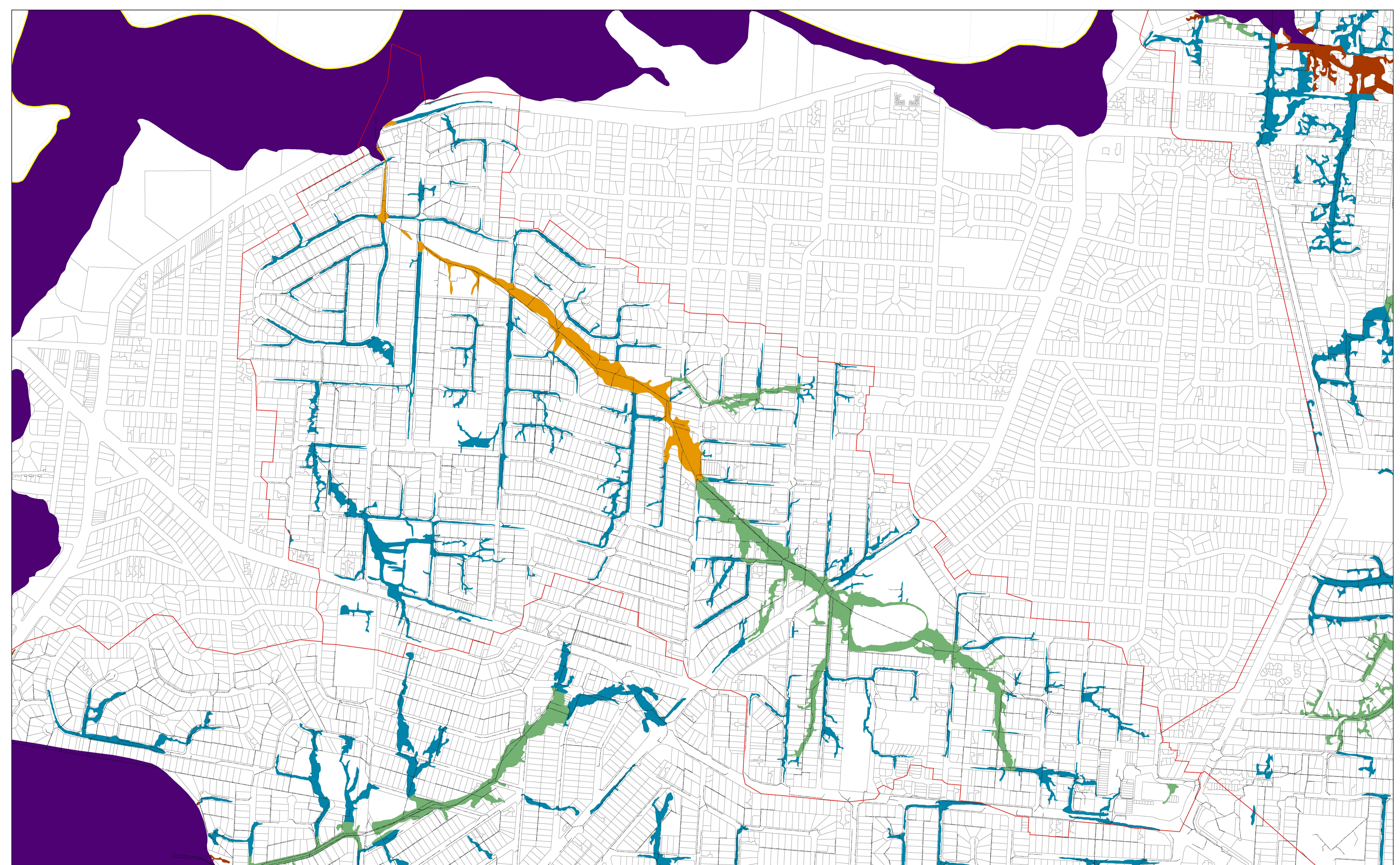
Table 4-1 Properties affected by the flood overlays

Catchment Area	Overlay Type			
	LSIO	SBO 1	SBO 2	SBO 3
Bulleen North	0	46	132	379
Ruffey Creek	96	247	1324	1884
Koonung Creek	24	120	989	1474
Mullum Mullum Creek	247	280	1048	1049
Andersons Creek	123	0	456	192

Development of the
Special Building Overlay

FIGURES





Map Location

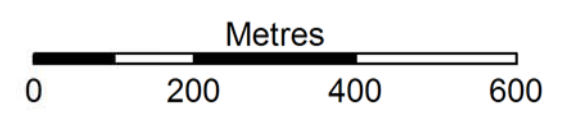
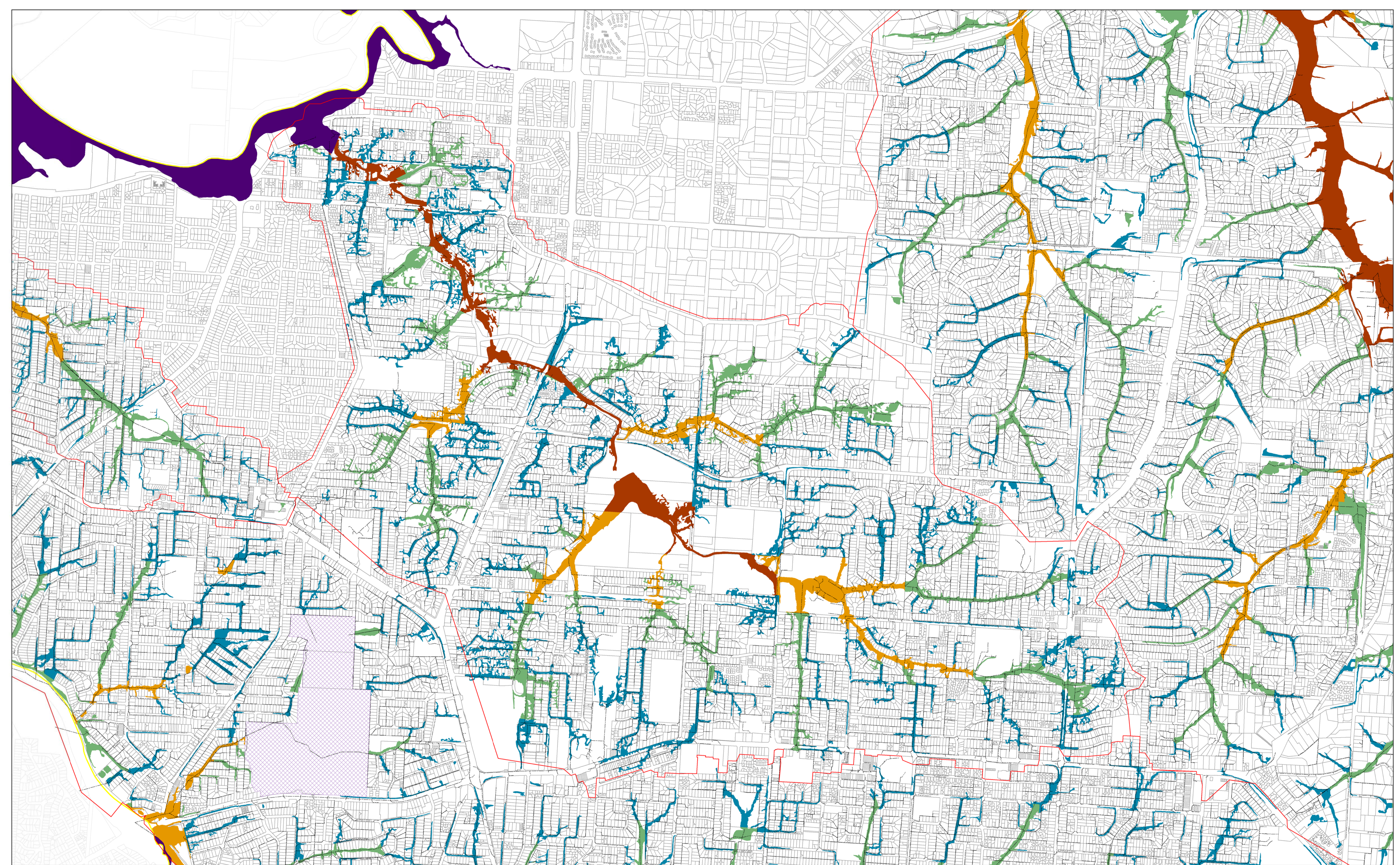


- Legend**
- Model Areas
 - Pipe Network
 - Eastern Golf Course
 - Council Boundary
 - Yarra and Koonung LSIO
 - Proposed LSIO (MW)
 - Proposed SBO1 (MW)
 - Proposed SBO2 (MCC)
 - Proposed SBO3 (MCC)

Proposed Special Building Overlay (SBO) and Land Subject to Inundation Overlay (LSIO)
BULLEEN NORTH CATCHMENT



Map Produced by Cardno Victoria
 Date: 2015-09-01
 Coordinate System: GDA 1994 MGA Zone 56
 Project and Map: NA49913512, Bulleen.mxd 01



Map Location

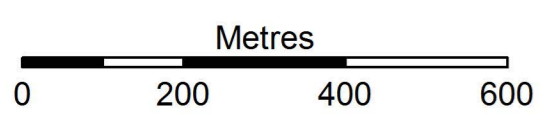
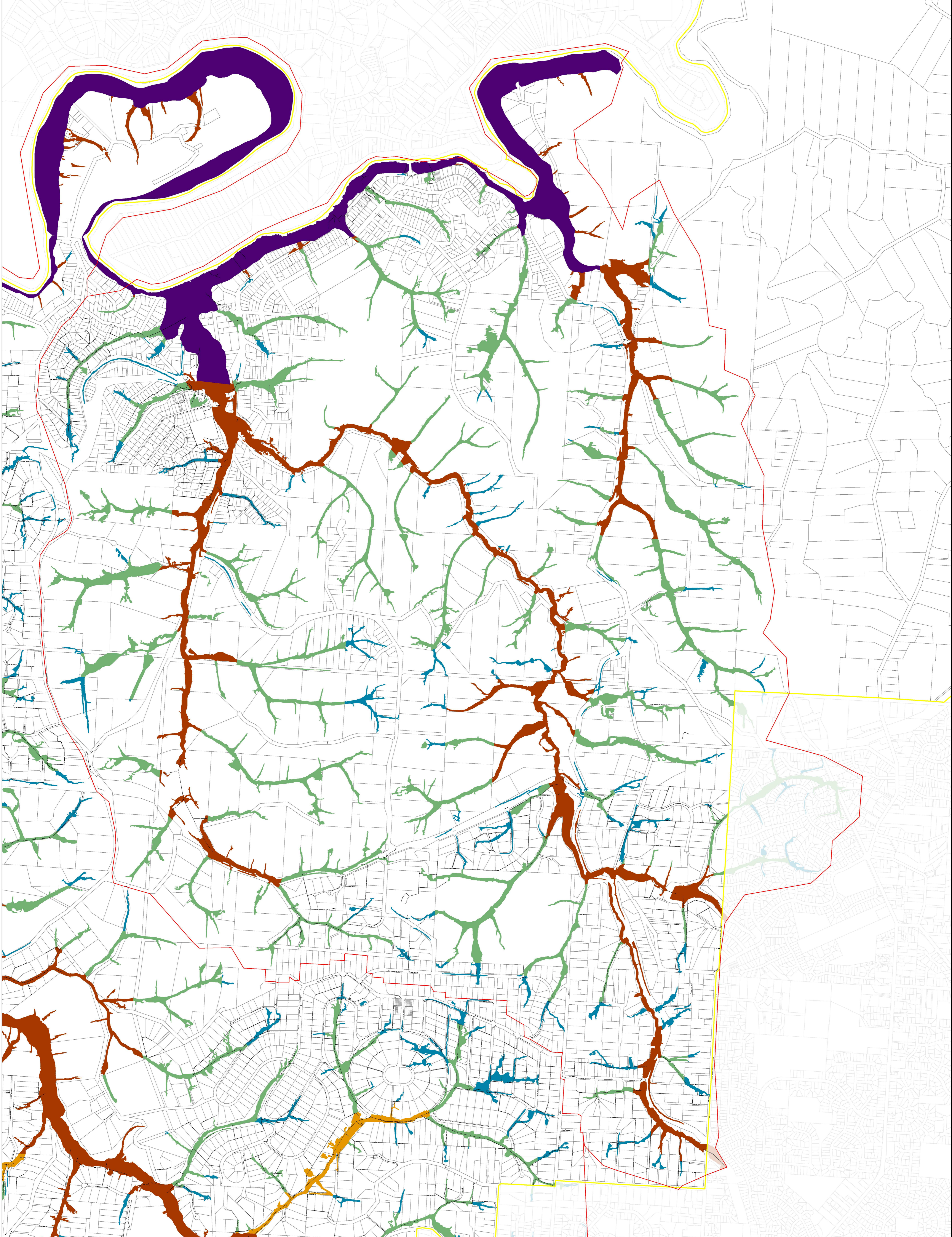


- Legend**
- Model Areas
 - Pipe Network
 - Eastern Golf Course
 - Council Boundary
 - Yarra and Koonung LSIO
 - Proposed LSIO (MW)
 - Proposed SBO1 (MW)
 - Proposed SBO2 (MCC)
 - Proposed SBO3 (MCC)

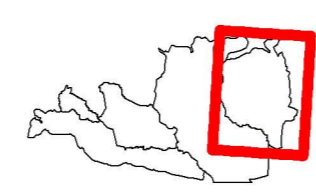
Proposed Special Building Overlay (SBO) and Land Subject to Inundation Overlay (LSIO) with Properties Affected

RUFFEY CREEK CATCHMENT





Map Location



Legend

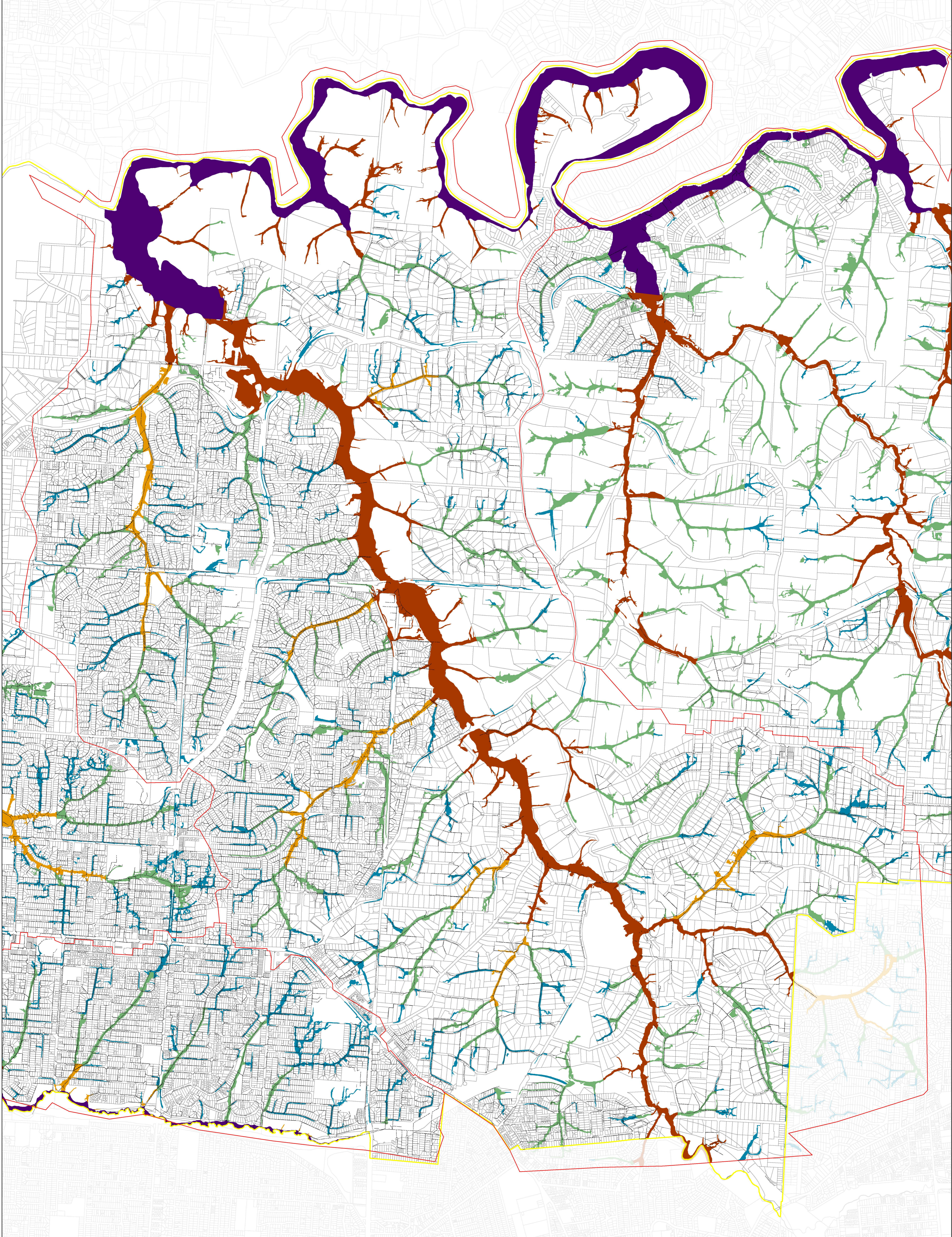
- Model Areas
- Pipe Network
- Council Boundary
- Yarra and Koonung LSIO
- Proposed LSIO (MW)
- Proposed SBO1 (MW)
- Proposed SBO2 (MCC)
- Proposed SBO3 (MCC)

Proposed Special Building Overlay (SBO) and Land Subject to Inundation Overlay (LSIO)

ANDERSONS CREEK



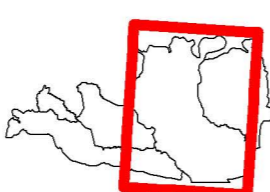
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 Project and Map: NA49913512_Andersons.mxd 01



Metres
0 200 400 600 800



Map Location



Legend

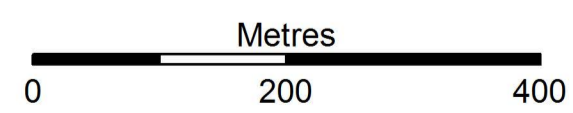
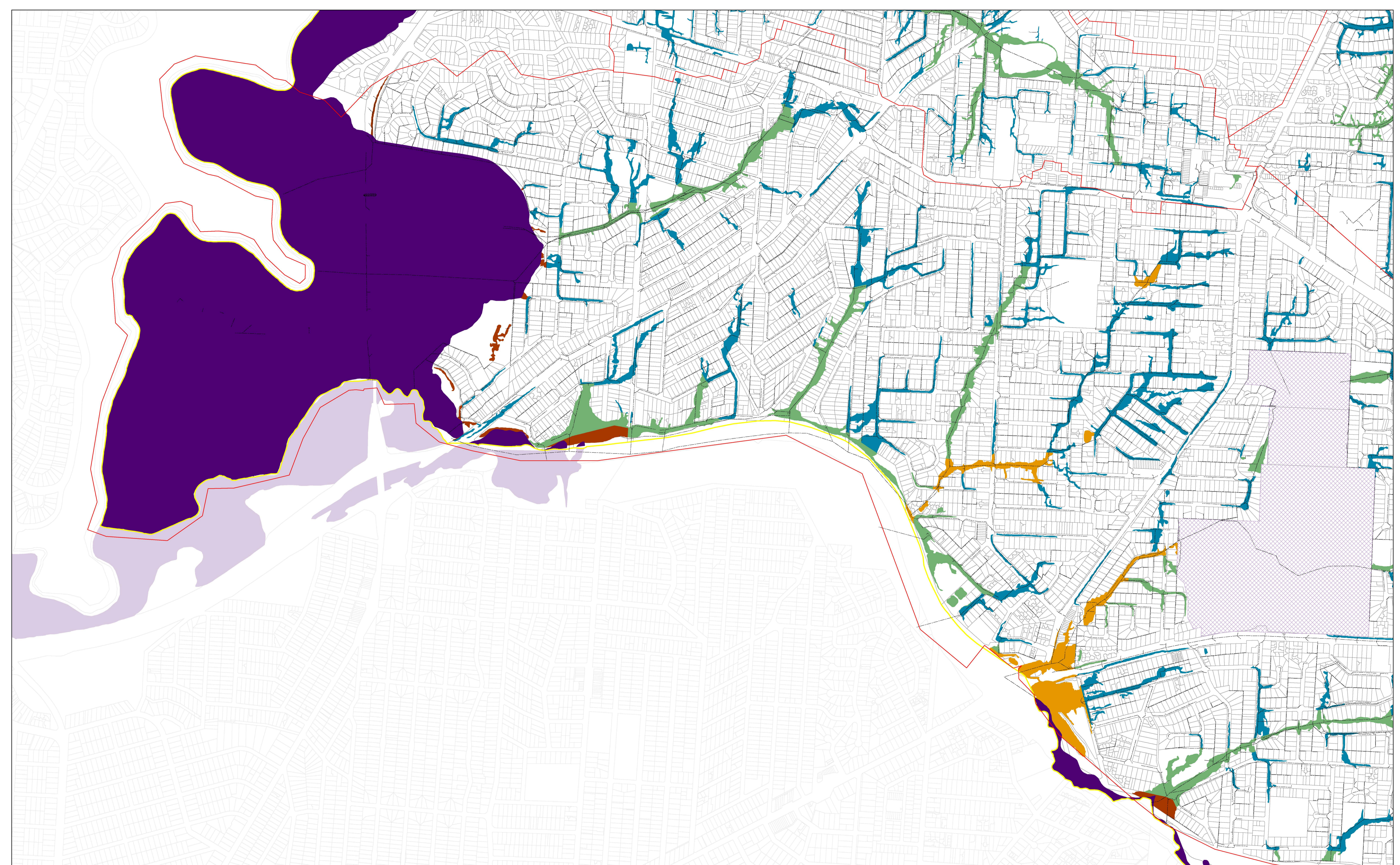
- Model Areas
- Council Boundary
- Yarra and Koonung LSIO
- Proposed LSIO (MW)
- Proposed SBO1 (MW)
- Proposed SBO2 (MCC)
- Proposed SBO3 (MCC)

Proposed Special Building Overlay (SBO) and Land Subject to Inundation Overlay (LSIO)

MULLUM MULLUM CREEK



Map Produced by Cardno Victoria
Date: 2015-09-01
Coordinate System: GDA 1984 MGA Zone 56
Project and Map: N449913512_MullumMullum.mxd 01



Map Location



- Legend**
- Model Areas
 - Pipe Network
 - Eastern Golf Course
 - Council Boundary
 - Yarra and Koonung LSIO
 - Proposed LSIO (MW)
 - Proposed SBO1 (MW)
 - Proposed SBO2 (MCC)
 - Proposed SBO3 (MCC)

Proposed Special Building Overlay (SBO) and Land Subject to Inundation Overlay (LSIO)

KOONUNG CREEK CATCHMENT (MAP 1 OF 3)



Map Produced by Cardno Victoria
 Date: 2015-09-01
 Coordinate System: GDA 1994 MGA Zone 56
 Project and Map: NA49913512, Koonung_Map1.mxd 01



Metres
0 200 400



Map Location

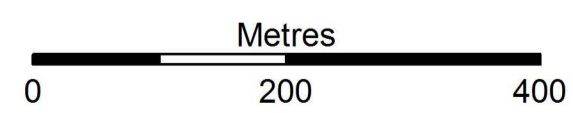
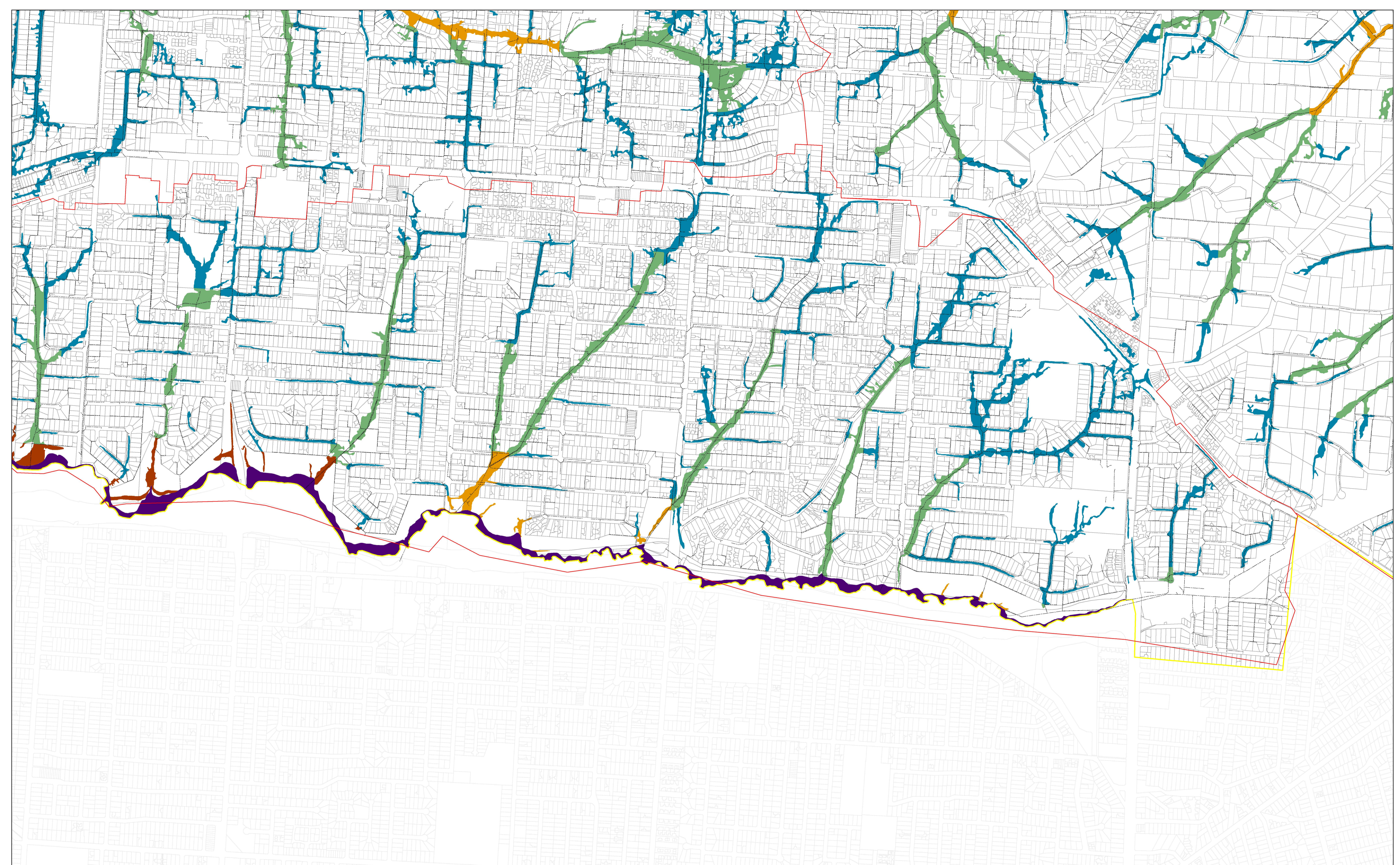


- Legend**
- Model Areas
 - Pipe Network
 - Eastern Golf Course
 - Council Boundary
 - Yarra and Koonung LSIO
 - Proposed LSIO (MW)
 - Proposed SBO1 (MW)
 - Proposed SBO2 (MCC)
 - Proposed SBO3 (MCC)

Proposed Special Building Overlay (SBO) and Land Subject to Inundation Overlay (LSIO)

KOONUNG CREEK CATCHMENT (MAP 2 OF 3)





Map Location



- Legend**
- Model Areas
 - Pipe Network
 - Eastern Golf Course
 - Council Boundary
 - Yarra and Koonung LSIO
 - Proposed LSIO (MW)
 - Proposed SBO1 (MW)
 - Proposed SBO2 (MCC)
 - Proposed SBO3 (MCC)

Proposed Special Building Overlay (SBO) and Land Subject to Inundation Overlay (LSIO)

KOONUNG CREEK CATCHMENT (MAP 3 OF 3)



Map Produced by Cardno Victoria
 Date: 2015-09-01
 Coordinate System: GDA 1994 MGA Zone 56
 Project and Map: NA49913512, Koonung_Map3.mxd 01

Planning and Environment Act 1987

MANNINGHAM PLANNING SCHEME

AMENDMENT C109

EXPLANATORY REPORT

Who is the planning authority?

This amendment has been prepared by Manningham City Council who is the planning authority for this amendment. Melbourne Water has also assisted in the preparation of the amendment.

The Amendment has been made at the request of Manningham City Council.

Land affected by the Amendment

The Amendment applies to land within five local catchments in the City of Manningham which have been identified by Melbourne Water and Council as being liable to inundation in a 1 in 100 year storm event. The land affected is shown on the proposed planning scheme maps that form part of this amendment.

What the amendment does

The Amendment implements revised flood modelling for the City of Manningham which has been recently undertaken by both Melbourne Water and Council.

Specifically, the Amendment proposes to change the Manningham Planning Scheme to:

- Amend the Municipal Strategic Statement (MSS) at *Clause 21.12 Infrastructure* and at *Clause 21.16 Key References* to include reference to:
 - The '*Flood Management Plan for Manningham Council and Melbourne Water June 2011*' which provides the strategic framework for establishing the appropriate Planning Scheme overlays to reflect the results of the flood mapping project and;
 - The '*Development of the Special Building Overlay – Technical Report for Manningham City Council (Cardno) September 2015*', which provides an overview of the methodology used in the flood mapping of the five local catchments.
- Replace the Special Building Overlay (SBO) and Land Subject to Inundation Overlay (LSIO) maps with updated maps to reflect the revised flood extent (land subject to inundation in a 1 in 100 year storm event).
- Replace the existing SBO Schedule at Clause 44.05 with three new schedules to the SBO that distinguish between areas subject to inundation in relation to the 'main' drainage system (Melbourne Water drains) and the 'local' drainage system (Council drains), and establish additional planning permit exemptions for certain areas where Council is the nominated drainage authority.

The schedules are referred to as SBO1, SBO2 and SBO3 and these areas are defined on the planning Scheme (SBO) maps. Each schedule defines what permit exemptions apply to the relevant areas.

Schedule 1 to the Special Building Overlay (SBO1) covers the Melbourne Water drainage system and nominates Melbourne Water as the Determining Referral Authority. All applications for development in this overlay are referred to Melbourne Water to assess and provide the appropriate permit conditions and floor levels.

Schedule 2 to the Special Building Overlay (SBO2) covers the local drainage system and Council is the responsible authority for drainage. Council assesses all

applications for development in this overlay and provides appropriate permit conditions and floor levels.

Schedule 3 to the Special Building Overlay (SBO3) is similar to SBO2, except that a planning permit will be required in fewer circumstances – such as when a building or extension is constructed with a floor level below an identified level. All applications for development in this overlay (not exempted from needing a permit) are referred to Council to assess and provide the appropriate permit conditions and floor levels.

The proposed revisions will result in:

- Approximately 200 properties no longer being covered by the SBO and LSIO;
- Approximately 9500 properties being covered by the SBO and LSIO for the first time; and
- Approximately 1000 properties remaining in the SBO and LSIO (noting this may include some revision to the extent of the SBO and LSIO over an individual property).

The SBO and LSIO do not prevent development but rather, through requiring a planning permit, ensure that development is sited and designed to minimise the impact of flooding.

Planning Permit exemptions

Exemptions from requiring a planning permit for specified buildings and works are nominated in the parent clause to the SBO and LSIO. A schedule is not proposed to be included in the LSIO and therefore additional exemptions are not included. SBO 1 and SBO2 also do not propose any additional exemptions beyond those included in the parent clause.

SBO3, however, does include a number of additional exemptions (i.e. where a permit is not required) as follows:

A permit is not required to carry out the following building or works for:

- a new dwelling where the floor level is at least 400 mm above the natural surface level and the sub floor does not obstruct the overland flow path.
- a replacement dwelling where the floor level is at least 400 mm above the natural surface level, the sub floor does not obstruct the overland flow path and the original building footprint remains the same. The responsible authority may require evidence of the existing building envelope.
- a single or multiple dwelling extension where:
 - the sub floor level does not obstruct the overland flow path; and
 - the floor level of the proposed dwelling extension/s is at least 400 mm above the natural surface level.
- an alteration to an existing building where the original building footprint remains the same and floor levels are constructed to at least 400mm above natural surface level.
- a replacement building (not including an out-building) where the floor level is at least 400 mm above the natural surface level, the original building footprint remains the same and the sub floor does not obstruct the overland flow path. The responsible authority may require evidence of the existing building envelope.
- new fencing with at least 25% openings and with the plinth at least 400 mm above the natural surface level .

Strategic assessment of the Amendment

Why is the Amendment required?

The SBO and LSIO are Victoria Planning Provisions (VPPs) which identify land in urban areas that are liable to inundation (flooding) by overland flows from the drainage system

(SBO) and from flooding associated with waterways and open drainage systems (LSIO). SBOs and LSIOs are based upon the extent of overland flooding and flooding associated with waterways that would result from a 1 in 100 year storm event.

The purpose of both the SBO and the LSIO is to ensure that new development is designed to maintain the free passage and temporary storage of floodwaters, to minimise flood damage and not cause any significant rise in flood level or flow velocity that may adversely affect existing properties. It also seeks to protect water quality.

Including the SBO and the LSIO in the planning scheme enables drainage and flooding issues to be addressed early in the development process (through triggering a planning permit for buildings and works) rather than only at the later building permit stage.

Implementation of the SBO and the LSIO can influence the siting of buildings and set appropriate conditions, such as raised floor levels, to address any flood risk to new development.

Melbourne Water and Council (as the authorities responsible for the main and local drainage systems respectively) prepare drainage survey and floodplain data that is then reflected in the Planning Scheme via the SBO and LSIO.

Melbourne Water has recently developed more advanced methods of mapping and modelling to determine land susceptible to flooding. The same mapping and modelling methods have been used by Council to model local drains. Following the recent flood mapping review, it is now known that the current SBO and LSIO do not accurately reflect all properties at risk of overland and mainstream flooding. Council has a responsibility to keep the Planning Scheme up to date, and the SBO and LSIO provides an important and transparent statutory mechanism for indicating properties that are subject to inundation in a severe storm event.

How does the Amendment implement the objectives of planning in Victoria?

The Amendment implements the objectives of planning in Victoria by:

- (a) *Providing for the fair, orderly, economic and sustainable use, and development of land.*
- (b) *Balancing the present and future interests of all Victorians.*

The Amendment will implement the objectives of planning in Victoria by providing for planning overlay controls that ensure that floodplain management issues are considered during the planning process.

How does the Amendment address any environmental, social and economic effects?

Environmental Effects

The Amendment will minimise the potential detrimental environmental effects of overland flooding and land affected by flooding associated with waterways and open drainage systems by ensuring drainage impacts are assessed at an early stage of the planning approval process. This will reduce the impact of new buildings and works on the free flow and storage of floodwaters.

Social and Economic Effects

The Amendment will have positive social and economic effects by ensuring that issues relating to drainage are identified at an early stage in the planning approval process.

The Amendment will minimise potential property damage by flooding by requiring a permit for buildings and works in the areas identified as subject to inundation. The controls will assist in minimising the personal, social, community and financial losses that result from flooding. The Amendment will also provide greater awareness and transparency of flood risks and impacts.

Does the Amendment address relevant bushfire risk?

The Amendment is not likely to increase the risk to life, property, community infrastructure and the natural environment from bushfire. The amendment does not alter the areas affected by the Bushfire Management Overlay.

Does the Amendment comply with the requirements of any Minister's Direction applicable to the amendment?

The Amendment is consistent with Minister's Direction No. 9 – Metropolitan Strategy (as amended 30 May 2014) pursuant to Section 12 of the *Planning and Environment Act 1987* – that requires planning authorities to have regard to the Metropolitan Strategy (Plan Melbourne).

Plan Melbourne states that we need to: *“value and use Melbourne's rain fall to minimise water price increases, improve the health of waterways and bays, reduce urban flooding, enhance our liveability and amenity, and build Melbourne's expertise in whole-of-water management – a key capability of the 21st century.”*

Plan Melbourne also has as a direction (Direction 5.5) to *‘Integrate whole-of-watercycle management to deliver sustainable and resilient urban development’* in order to, amongst other things, *“minimise the impact of flooding”*.

By improving and implementing better shape modelling, Council and Melbourne Water can better plan for future flood impacts, contribute to broader plans for whole-of-watercycle management with other governments and agencies and can reduce, through planning permit application, the impacts of flooding within the municipality.

The Amendment is also consistent with the Ministerial Direction on the Form and Content of Planning Schemes under Section 7(5) of the Act.

How does the Amendment support or implement the State Planning Policy Framework and any adopted State policy?

The Amendment has been assessed against the objectives of the State Planning Policy Framework and is considered to be consistent with the principles of State Policy, in particular:

Clause 13.02-1 Floodplain Management which includes strategies to:

- Identify land affected by flooding, including floodway areas, as verified by the relevant floodplain management authority in planning scheme maps. Land affected by flooding is land inundated by the 1 in 100 year flood event or as determined by the floodplain management authority.
- Avoid intensifying the impact of flooding through inappropriately located uses and development.

In relation to these strategies, the Amendment will assist in the protection of life, property and community infrastructure from flood hazard and from the natural flood carrying capacity of rivers, streams and floodways, and will protect the flood storage function of floodplains and waterways.

State Planning Policy places a clear onus on Responsible Authorities to ensure that flooding and drainage information is clearly shown in planning schemes and taken into consideration as part of the planning process. The proposed amendment will assist in the achievement of this intent.

How does the Amendment support or implement the Local Planning Policy Framework, and specifically the Municipal Strategic Statement?

The Amendment supports and implements the Local Planning Policy Framework by implementing a range of objectives and strategies contained in Clause 21 – Municipal Strategic Statement relating to floodplain management, monitoring stormwater quality and ensuring that use and development of land does not affect the role of land as an active floodway.

Does the Amendment make proper use of the Victoria Planning Provisions?

The VPPs include a number of overlay controls for identifying areas subject to inundation, including the SBO and LSIO which are applied to the overland flow paths of natural drainage depressions that have been developed for other uses and land affected by flooding associated with waterways and open drainage systems.

The introduction of the SBO and the LSIO are the best VPP tools to ensure that development maintains the free passage and temporary storage of floodwaters, minimises flood damage, is compatible with the flood hazard and local drainage conditions and will not cause any significant rise in flood level or velocity.

How does the Amendment address the views of any relevant agency?

The Amendment has been prepared by Council and Melbourne Water and reflects updated flood mapping information which has been prepared and provided by Council and Melbourne Water.

Does the Amendment address relevant requirements of the Transport Integration Act 2010?

The Amendment addresses the relevant requirements of the *Transport Integration Act 2010*.

The Amendment will not have any significant impact on the transport system, as defined by Section 3 of the *Transport Integration Act 2010*, as it would not result in any increase in demand on the transport system.

Resource and administrative costs

• What impact will the new planning provisions have on the resource and administrative costs of the responsible authority?

By accurately identifying land that is subject to inundation, the Amendment will benefit Council and the community by enabling more accurate, timely and consistent advice to be provided by Council and Melbourne Water as the responsible drainage authorities.

The Amendment is not anticipated to result in any significant increase in the number of planning permit applications, but rather be an additional consideration under permits already required under other provisions in the scheme. Accordingly, the Amendment will not result in any significant resource implications for Council as the responsible authority.

Where you may inspect this Amendment

The Amendment is available for public inspection, free of charge at the following places:

- during office hours, at the office of the planning authority, Manningham City Council, 699 Doncaster Road, Doncaster
- at the Manningham website at www.yoursaymanningham.com.au/Amendment-C109
- at the Doncaster, The Pines, Bulleen, Warrandyte branch libraries and the Box Hill branch library
- at the Department of Environment, Water, Land and Planning website: www.dtpli.vic.gov.au/publicinspection .

Submissions

Any person who may be affected by the Amendment may make a submission to the planning authority.

Submissions about the Amendment must be received by **24 December 2015**.

A submission must be sent to the:

Manager Economic and Environmental Planning
Manningham City Council
PO Box 1
DONCASTER VIC 3108

or submitted online at www.yoursaymanningham.com.au/Amendment-C109

Panel hearing dates

In accordance with clause 4(2) of Ministerial Direction No.15 the following panel hearing dates have been set for this amendment:

- Directions hearing: To commence in the week beginning 21 March 2016
- Panel hearing: To commence in the week beginning 18 April 2016

Planning and Environment Act 1987

MANNINGHAM PLANNING SCHEME

AMENDMENT C109

INSTRUCTION SHEET

The planning authority for this amendment is the City of Manningham.

The Manningham Planning Scheme is amended as follows:

Planning Scheme Maps

The Planning Scheme Maps are amended by a total of 33 attached map sheets.

Overlay Maps

1. Amend Planning Scheme Map Nos 1SBO, 2SBO, 3SBO, 6SBO, 7SBO, 8SBO, 9 SBO and 11SBO in the manner shown on the attached maps marked "Manningham Planning Scheme, Amendment C109".
2. Amend Planning Scheme Map Nos 1LSIO, 2LSIO, 3LSIO, 4LSIO, 6LSIO, 7LSIO, 8LSIO, 9LSIO and 11LSIO in the manner shown on the attached maps marked "Manningham Planning Scheme, Amendment C109".
3. Insert new Planning Scheme Map No 4SBO in the manner shown on the attached map marked "Manningham Planning Scheme, Amendment C109".

Planning Scheme Ordinance

The Planning Scheme Ordinance is amended as follows:

4. In Local Planning Policy Framework – replace Clause 21.12 with a new Clause 21.12 in the form of the attached document.
5. In Local Planning Policy Framework – replace Clause 22.16 with a new Clause 22.16 in the form of the attached document.
6. In Overlays – Clause 44.05, delete Schedule to the Special Building Overlay.
7. In Overlays – Clause 44.05 – Special Building Overlay, insert a new Schedule 1 in the form of the attached document.
8. In Overlays – Clause 44.05 – Special Building Overlay, insert a new Schedule 2 in the form of the attached document.
9. In Overlays – Clause 44.05 – Special Building Overlay, insert a new Schedule 3 in the form of the attached document.
10. In General Provisions – Clause 61.03, replace the schedule with a new Schedule in the form of the attached document.

End of document

SCHEDULE TO CLAUSE 61.03

Maps comprising part of this scheme:

- 1, 1DDO, 1ESO1, 1ESO, 1HO, 1LSIO, 1PAO, 1SBO, 1VPO
- 2, 2DDO, 2EAO, 2ESO1, 2ESO, 2HO, 2LSIO, 2PAO, 2SBO, 2SLO1, 2SLO5, 2SLO6, 2VPO
- 3, 3DDO, 3ESO1, 3ESO, 3HO, 3LSIO, 3PAO, 3SBO, 3WMO, 3SLO1, 3SLO3, 3SLO6
- 4, 4DDO, 4EMO, 4ESO1, 4ESO, 4HO, 4LSIO, [4PAO](#), [4SBO](#), 4WMO, ~~4PAO~~
- 5, 5EMO, 5ESO, 5HO, 5LSIO, 5WMO, 5SLO1, 5VPO
- 6, 6DDO, 6DPO, 6EAO, 6ESO1, 6ESO, 6HO, 6LSIO, 6SBO, 6SLO5, 6VPO
- 7, 7DCPO, 7DDO, 7ESO, 7DPO, 7EAO, 7HO, 7IPO, 7LSIO, 7PAO, 7SBO, 7SLO5, 7SLO7, 7VPO
- 8, 8DDO, 8EAO, 8ESO, 8HO, 8LSIO, 8PAO, 8SBO, 8WMO, 8SLO1, 8SLO5, 8SLO6, 8SLO7, 8SLO8, 8VPO
- 9, 9DDO, 9EMO, 9ESO1, 9ESO, 9HO, 9LSIO, 9SBO, 9WMO, 9PAO, 9SLO1, 9SLO6, 9VPO
- 10, 10EMO, 10ESO, 10HO, 10LSIO, 10WMO
- 11, 11DDO, 11ESO, 11HO, 11LSIO, 11SBO, 11SLO1, 11SLO6

21.1217/09/2009
VC59**INFRASTRUCTURE****21.12-1**02/10/2008
C52**Overview****Public transport**

Over reliance on car based transport is an environmental and social concern. The municipality is currently serviced by a single mode of public transport (bus). There are opportunities to improve this through increasing the frequency of bus services and extending the hours of operation. In addition, there are opportunities to extend tramlines into the municipality. There is a need to encourage the use of existing public transport, which may include Park and Ride facilities. The State Government has a policy of achieving 20% of all travel being by public transport by 2020 (DOI 2004).

Refer to Infrastructure Framework Plan 6 for key infrastructure features and opportunities.

Movement network

There is a hierarchy of roads in the municipality including declared arterial roads, Council arterial roads, collector roads and local streets. There are deficiencies with the standards of some of the declared arterial roads and Council arterial roads, which need to be upgraded.

Doncaster Road is the main east-west arterial road and a major bus route in the municipality. Council will promote initiatives that improve the public transport function of Doncaster Road and seek to improve pedestrian amenity, visual character and its local identity by changing its appearance to a treed boulevard.

There are a number of major existing on-road and off-road routes throughout the municipality, which make up the existing Manningham bicycle network and are used by commuter and recreational cyclists. There is also a network of linear parks which provide additional recreational opportunities including walking and horse trails.

Council will continue to identify and upgrade the existing road, bicycle and pedestrian networks throughout the municipality. This will take into account social, economic and environmental values whilst recognising safety, traffic needs, improved access and mobility.

Services

Council is responsible for providing drainage for the local street network and local catchment areas. Council encourages developments to design and upgrade drainage infrastructure to reduce the occurrence of inundation and flooding, improve safety and enhance the amenity of the municipality. An integrated approach is sought to the management of stormwater and the progressive upgrading of stormwater and drainage infrastructure assets. Council will investigate the introduction of drainage contributions focussing on areas around activity centres, and will continue to identify land which has drainage and flood constraints.

The protection and enhancement of Manningham's waterways and catchments is a key issue. Manningham lacks reticulated sewerage systems in its low-density residential and green wedge areas, which has a significant impact on these waterways. Council will continue to encourage the provision of reticulated sewerage to unsewered areas and/or innovative solutions to reuse wastewater.

Council requires the undergrounding of services to all new development and subdivisions. With regard to the provision of new powerlines, only those powerlines of up to 66kV will be required to be located underground. The undergrounding of existing powerlines is also

encouraged particularly for historic and environmentally sensitive areas, where the opportunity arises.

Telecommunications and satellite dishes

Telecommunication facilities and satellite dishes often have visual and environmental impacts, including issues relating to amenity, visual intrusion on the streetscape or landscape and a lack of compatibility with surrounding land uses.

21.12-2
17/09/2009
VC59

Public transport

Key issues

- Lack of public transport services in some areas.
- Infrequency and limited hours of public transport services.
- The need to provide alternative public transport options.
- Connectivity between modes of transport.
- The need to encourage greater use of an improved public transport network.

Objectives

- To increase the usage of public transport.
- To improve the existing bus network with regard to frequency, connectivity and accessibility.
- To improve bus infrastructure including upgrading bus stops and interchanges.
- To encourage the provision of a second form of public transport (tramline).

Strategies

Strategies to achieve these objectives include:

- Facilitate the location and development of transport hubs at or adjoining activity centres.
- Facilitate the provision of bus shelters at high use public transport sites.
- Encourage creation of 'park and ride' and 'bike and ride' facilities and public transport linkages.

Implementation

These strategies will be implemented by:

Zones and overlays

Policy and exercise of discretion

- Implementing the *Manningham Integrated Transport Strategy* (2003).
- Implementing the *Manningham Bicycle Strategy* (2001).

Further strategic work

- Reviewing the *Manningham Bicycle Strategy* (2001).

Other actions

- Continuing to advocate for improved public transport services and facilities within the municipality.
- Investigate appropriate locations for new ‘park and ride’ and ‘bike and ride’ facilities.

21.12-3

17/09/2009
VC59

Roads

Key issues

- The continued upgrade of the road, bicycle and pedestrian networks.
- Balancing the environmental values of roadside vegetation with safety needs.
- The need to improve the streetscape and amenity along Doncaster Road and other main roads.

Objectives

- To ensure that road construction standards and new vehicle crossings achieve a balance between the role of providing safe and efficient passage of vehicles, bicycles and pedestrians while taking into account the natural and cultural heritage values of roadsides and the area’s character.
- To maximise opportunities along Doncaster Road and other main roads to facilitate pedestrian and cyclist activity and provide higher levels of user amenity.
- To ensure that a comprehensive network of paths is available which facilitates safe and accessible bicycle and pedestrian movement.

Strategies

Strategies to achieve these objectives include:

- Require that design and construction standards cater for safe, efficient and effective vehicle movement and servicing needs.
- Require that design and construction standards protect remnant vegetation using techniques such as site assessment prior to any roadworks, the development of action/management plans to ensure protection of indigenous vegetation and the use of suitable indigenous plant species.
- Promote cycling and walking opportunities by providing safe bicycle routes and expanding the bicycle network, and providing pedestrian trails to improve accessibility to local and regional commercial, community and recreational facilities.
- Provide opportunities to enhance the amenity of Doncaster Road and other main roads.

Implementation

These strategies will be implemented by:

Zones and overlays

- Applying the Road Zone 1 for Category 1 roads.
- Applying the Road Zone 2 for Category 2 roads.

Policy and exercise of discretion

- Implementing the *Public Open Space Strategy* (2004).
- Implementing the *Roadside Environmental Management Strategy* (2004).
- Implementing the *Manningham Bicycle Strategy* (2001).
- Implementing the *Manningham Integrated Transport Strategy* (2003).
- Implementing the *Doncaster Hill Pedestrian and Cycle Plan* (2003).
- Implementing the *Doncaster Hill Developer Contribution Plan* (2004).

Further strategic work

- Reviewing the Design and Development Overlay for Doncaster Road (DDO1).
- Reviewing the *Manningham Bicycle Strategy* (2001).

Other actions

- Consider recommendations from the North East Integrated Transport Study.
- Implementing the *Arterial Roads Improvement Strategy* (2004)
- Implementing the *Road Safety Strategy* (2005).

21.12-4

Services

17/09/2009
VC59

Proposed
C109

Key issues

- The introduction of water capture, reuse and recycling within developments.
- The existence of unsewered land.
- Low and/or declining water quality.
- Drainage capacity and the need to prevent loss of life and damage to property.
- Visual impact of services.
- Unsuitability of land (lot size, soil type, etc) to absorb wastewater.

Objectives

- To encourage connection to sewer where available and within reasonable proximity.
- To integrate the capture and re-use of water within developments.
- To ensure that drainage infrastructure is designed and upgraded to provide a safe, and efficient system.

- To ensure that the use and development of land maintains the flood flow characteristics of the Yarra River and its tributaries.
- To encourage the use of recycled water.
- To ensure that appropriate management practice is applied to the urban stormwater system.
- To ensure the undergrounding of services to all new development and subdivisions.
- To ensure that all new development and subdivision connect to mains water.
- To ensure that all new development and subdivision can treat and retain wastewater on site.

Strategies

Strategies to achieve these objectives include:

- Regularly monitor reports on water quality in natural waterways in Manningham.
- Regularly monitoring and reviewing stormwater quality.
- Regulate the off-site flow of water by installing and maintaining on-site detention systems and consider inclusion of a capture and reuse function within these systems.
- Ensure that the use and development of land does not affect the role of land as an active floodway.
- Promote best practice stormwater management and reuse techniques.
- Require subdivision applications to include a designated effluent disposal envelope on each lot where appropriate..
- Require applications for development and subdivision to include the results of land capability assessments where appropriate, which demonstrate that the proposal is capable of treating and containing wastewater on site.
- Encourage applicants to create natural biological filtration systems in areas of high sediment and/or nutrient run-off, including roadside developments and subdivisions.
- Require development proposals that increase water runoff from a site, to detain stormwater on site or conduct or assist with other works which are necessary to maintain or increase drainage capacity, where appropriate.
- Maintain the flood flow characteristic of the Yarra River and its tributaries.
- Require all new development, including subdivision to provide underground services.
- Require all new development, including subdivision to be connected to mains water.

Implementation

These strategies will be implemented by:

Zones and overlays

- Applying the Urban Floodway Zone.
- Applying the Special Building Overlay.
- Applying the Land Subject to Inundation Overlay.

Policy and exercise of discretion

Further strategic work

- Investigating introduction of a Developer Contributions Plan for the upgrade of drainage infrastructure.
- Identifying land with drainage and flood constraints in the planning scheme.
- Developing Ecologically Sustainable Development Guidelines for the municipality.
- Investigating the appropriateness of a Local Planning Policy to guide ecologically sustainable development, for the municipality.

Other actions

- Continuing to liaise with Melbourne Water to co-operatively manage the stormwater and natural creek systems in the municipality.
- Continuing to monitor and review the operation of septic tank systems.
- Continuing to lobby Yarra Valley Water with regard to the sewer backlog program and the use of local alternative treatment technologies.
- Promoting the use of new technology in the treatment of wastewater for re-use.
- Implementing the *Manningham Drainage Strategy 2004-2014* (2004).
- Implementing the *Manningham Stormwater Management Plan* (2001).
- Implementing the *Domestic Wastewater Management Plan* (2002).
- Implementing *Manningham's Water15 – Sustainable Water Management Plan* (2005).
- [Implementing Manningham Flood Management Plan for Manningham Council and Melbourne Water \(2011\)](#)

21.12-5

02/10/2008
C52

Telecommunications and satellite dishes

Key issues

- Visual and environmental impact of telecommunication facilities and satellite dishes.

Objectives

- To ensure that any future telecommunications facilities and satellite dishes are located to minimise impacts on the environmental values of land
- To ensure that any future telecommunications facilities and satellite dishes are sited to minimise visual impacts on adjoining and nearby land.
- To ensure that telecommunication cables are situated underground.

Strategies

Strategies to achieve these objectives include:

- Encourage telecommunications infrastructure and satellite dishes, and arrangements for associated vehicle access and maintenance, in locations, which minimise environmental and visual impacts.
- Encourage the sharing of existing infrastructure for telecommunication facilities including the use of existing infrastructure such as roof-top locations or integrated with existing buildings.

- Require the application of low maintenance, non-reflective finishes and appropriate colour schemes to ensure telecommunication facilities and satellite dishes blend in with the surrounds.
- Require the undergrounding of new telecommunication cables.
- Require underground conduits to be installed with sufficient capacity to enable sharing of the conduit by other telecommunication carriers.

Implementation

These strategies will be implemented by:

Zones and overlays

Policy and exercise of discretion

Further strategic work

Other actions

- Preparing and continually updating a map showing existing telecommunication facilities to assist in the consideration of opportunities for co-location.
- Encouraging the design and location of low impact facilities to minimise visual impact.

21.12-6

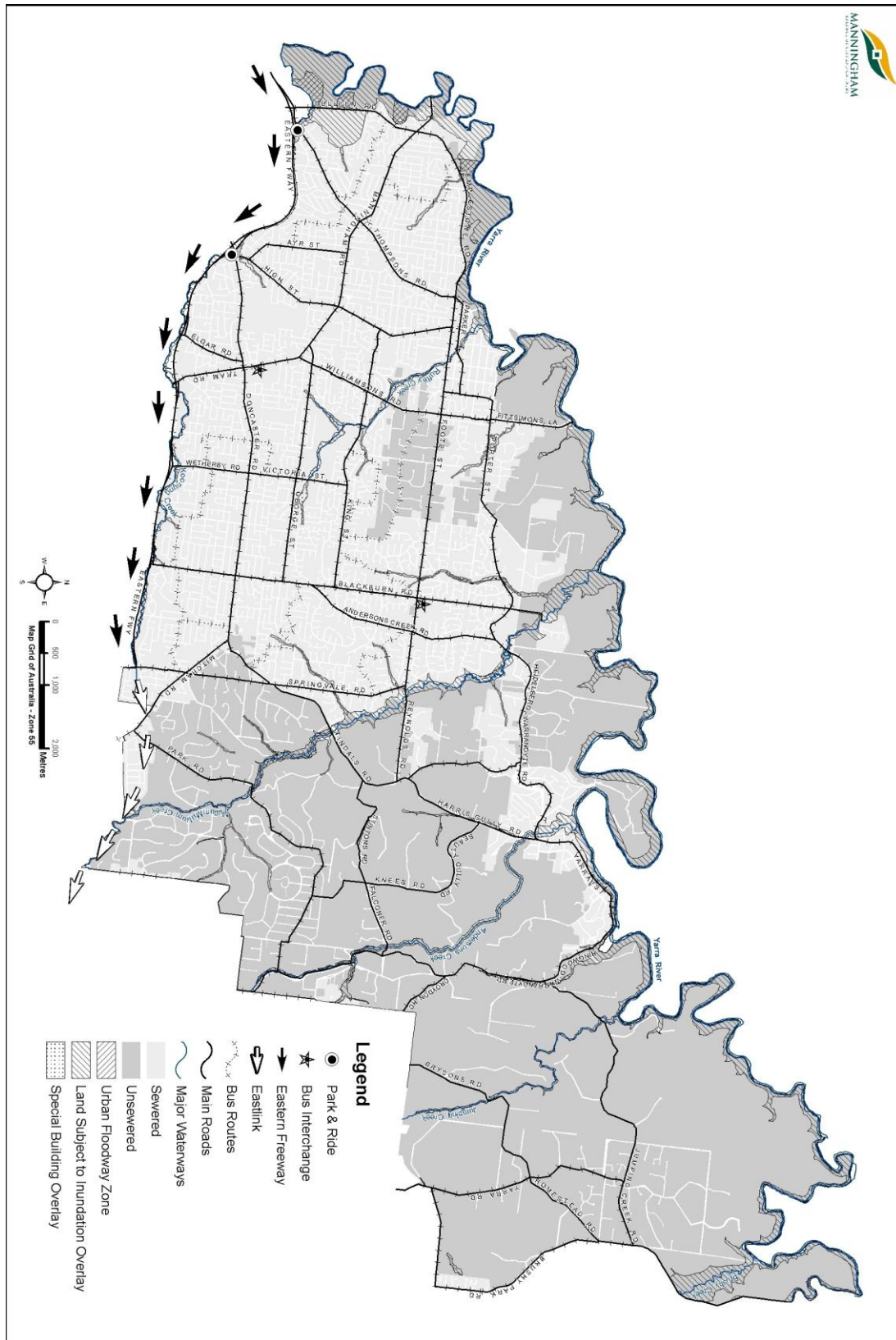
02/10/2008
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INFRASTRUCTURE FRAMEWORK PLAN 6



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Planning and Environment Act 1987

MANNINGHAM PLANNING SCHEME

Notice of the Preparation of an Amendment

Amendment C109

Manningham City Council has prepared Amendment C109 to the Manningham Planning Scheme.

The Amendment affects land throughout the City of Manningham that has been identified by the City of Manningham and Melbourne Water as being liable to inundation (flooding) in a 1 in 100 year storm event. The land affected is shown on the proposed planning scheme maps that form part of this amendment.

The Amendment proposes to amend the Manningham Planning Scheme by replacing the existing Land Subject to Inundation Overlay (LSIO) and Special Building Overlay (SBO) with a new LSIO and three new Schedules to the SBO that distinguish between areas subject to inundation in relation to the 'main' drainage system (SBO1 – Melbourne Water drains) and the local drainage system (SBO2 and SBO3 – Council drains). SBO3 establishes additional planning permit exemptions for certain areas subject to inundation in relation to the 'local' drainage system.

More specifically the Amendment proposes to:

- Amend the Municipal Strategic Statement at Clauses 21.12 and 21.16 to include reference to the '*Flood Management Plan for Manningham Council and Melbourne Water June 2011*' and the '*Development of the Special Building Overlay - Technical Report for Manningham City Council (Cardno) September 2015*'.
- Replace the existing schedule to the SBO at Clause 44.05, with new Schedules 1, 2 and 3.
- Update the Special Building Overlay (SBO) and Land Subject to Inundation Overlay (LSIO) maps to reflect the revised flood extent (land subject to inundation in a 1 in 100 year storm event) and to delineate areas to which SBO1, SBO2 and SBO3 apply.

You may inspect the Amendment, any documents that support the Amendment and the Explanatory Report about the Amendment, free of charge, at the following locations:

- during office hours, at the office of the planning authority, Manningham City Council, 699 Doncaster Road, Doncaster
- at the Manningham website at www.yoursaymanningham.com.au/Amendment-C109
- at the Doncaster, The Pines, Bulleen, Warrandyte branch libraries and the Box Hill branch library
- at the Department of Environment, Land, Water and Planning website: www.dtpli.vic.gov.au/publicinspection .

Any person who may be affected by the Amendment may make a submission to the planning authority about the Amendment. Submissions must be made in writing giving the submitter's name and contact address, clearly stating the grounds on which the Amendment is supported or opposed and indicating what changes (if any) the submitter wishes to make.

Name and contact details of submitters are required for Council to consider submissions and to notify such persons of the opportunity to attend Council meetings and any public hearing held to consider submissions. The closing date for submissions is 24 December 2015.

A submission must be sent to the
Manager Economic and Environmental Planning
Manningham City Council
PO Box 1
DONCASTER VIC 3108

or submitted online at www.yoursaymanningham.com.au/Amendment-C109

The planning authority must make a copy of every submission available at its office for any person to inspect free of charge until the end of the two months after the amendment comes into operation or lapses.

JOE CARBONE
Chief Executive Officer

--/20--
Proposed
C109

SCHEDULE 1 TO THE SPECIAL BUILDING OVERLAY

Shown on the planning scheme map as **SBO1**

MELBOURNE WATER MAIN DRAINS

1.0 Permit requirement

--/20--
Proposed
C109

None specified.

2.0 Referral of Applications

--/20--
Proposed
C109

An application must be referred to Melbourne Water in accordance with Section 55 of the act unless in the opinion of the responsible authority, the proposal satisfies requirements or conditions previously agreed to in writing between the responsible authority and the floodplain management authority.

--/20--
Proposed
C109

SCHEDULE 2 TO THE SPECIAL BUILDING OVERLAY

Shown on the planning scheme map as **SBO2**

MANNINGHAM COUNCIL DRAINS

1.0 Permit requirement

--/20--
Proposed
C109

None specified.

2.0 Referral of applications

--/20--
Proposed
C109

- No referral authority specified.
- An application will be considered by the City of Manningham as the authority responsible for local drains.

DD/MM/YYYY
Proposed C109

SCHEDULE 3 TO THE SPECIAL BUILDING OVERLAY

Shown on the planning scheme map as **SBO3**

MANNINGHAM COUNCIL DRAINS

1.0

DD/MM/YYYY

Proposed
C109

Permit requirement

A permit is not required to construct or carry out the following buildings or works:

- a new dwelling where the floor level is at least 400 mm above the natural surface level and the sub floor does not obstruct the overland flow path.
- a replacement dwelling where the floor level is at least 400 mm above the natural surface level, the sub floor does not obstruct the overland flow path and the original building footprint remains the same. The responsible authority may require evidence of the existing building envelope.
- a single or multiple dwelling extension where:
 - the sub floor level does not obstruct the overland flow path; and
 - the floor level of the proposed dwelling extension/s is at least 400 mm above the natural surface level.
- an alteration to an existing building where the original building footprint remains the same and floor levels are constructed to at least 400mm above natural surface level.
- a replacement building (not including an out-building) where the floor level is at least 400 mm above the natural surface level, the original building footprint remains the same and the sub floor does not obstruct the overland flow path. The responsible authority may require evidence of the existing building envelope.
- new fencing with at least 25% openings and with the plinth at least 400 mm above the natural surface level .

2.0

Referral of applications

- No referral authority specified
- An application will be considered by the City of Manningham as the authority responsible for local drains.

AMENDMENT C109

Review of the Land subject to Inundation Overlay and Special Building Overlay

CONSULTATION SUMMARY

PART 1: SUMMARY OF CONSULTATION PROCESS

Overview

Timeframe

- The Amendment was on exhibition for 6 weeks from 12 November to 24 December 2015. The minimum statutory requirement is one month, however, additional days were provided because of the complexity of the Amendment.
- During and immediately after the formal exhibition period, extensions of time were granted to any resident seeking an extension of time.

Notification given

- A total of 10,064 letters were sent notifying owners of the Amendment.
- Letters dated 9 November 2015 were customised to inform people how the Amendment affects their property.
- The letters included the formal Amendment Notice, the Explanatory Report and a double sided colour flyer giving basic information about the Amendment.
- Letters were also sent to Prescribed Ministers on 9 November 2015 informing them of the Amendment.
- A notice appeared in the Manningham Leader on 9 November 2015 and the Government Gazette on 12 November 2015 and again on the 26 November 2015.
- An article was included in the November edition of Manningham Matters that highlighted the Amendment for affected non-owner occupiers.

Information made available

- An interactive web tool was provided through a link on Council's web site, allowing people to search for their address and find out how their property is affected.
- Council's web site (yoursaymanningham.com.au/Amendment-C109) made available – the Amendment documentation, Fact Sheet, Frequently Asked Questions, background material and a link to a submission form.
- Melbourne Water's web site was linked to Council's website and interactive web tool.
- Information folders were displayed at all Council libraries and the Council office.

Information sessions and meetings

- Six information sessions were held during the weeks beginning 17 November through to 9 December 2015. People were requested to pre-book for these sessions so that specific information about their property could be provided. 150 people attended these sessions.

- In addition, all owners and/or interested parties were able to meet with Council officers if they were not able to attend one of the information sessions.

How people responded to notification

- The dedicated Council webpage (yoursaymanningham.com.au/Amendment-C109) received approx. 4220 hits between when the webpage went live and the closing date for submissions (24 December 2015).
- The interactive map received 2,788 hits during the same period.
- Council officers were available for counter enquiries during the exhibition period and beyond. Approximately 120 people came to the counter during the exhibition period inquiring about the Amendment.
- Council officers also fielded a large number of telephone enquiries during the exhibition period with approx. 1000 phone calls received within the exhibition period.
- 360 submissions were received during the exhibition period. 162 submissions were received after the exhibition period taking the total number of submissions, at the time of writing this report to 523.

Subsequent communication actions undertaken post exhibition at the request of Council

- All submitters received an acknowledgement letter in relation to their submission.
- At the request of Council, a follow up letter to all submitters was sent on 12 May 2016, explaining the process for the review of submissions and the type of information that will be considered in the review. This correspondence also offered the opportunity for addendums to original submissions to be submitted.
- In addition, at the request of Council, letters were also sent on 23 May 2016, to those properties affected by an identified communication ambiguity (58 private properties and 50 government properties), clarifying that the existing LSIO along the Yarra River will continue to apply in addition to the proposed controls. These property owners were also given an opportunity to lodge a submission or to submit addenda to existing submissions over a period of six weeks.
- The web based communication tool was also amended to include the existing LSIO in the 'Proposed Overlay' view.
- To the wider community, a separate dedicated advertisement was included in the Manningham Leader in the week beginning 16 May 2016 advising that Council officers are still considering submissions in relation to Amendment C109 and that further updates are being provided on the Your Say Manningham webpage.

Quick Stats

No. of letters initially sent	10,064
Webpage hits	4,220
Interactive map hits	2,788
Phone calls	1,000
Counter enquiries	120
Attendees at Info Sessions	150
No. of submissions	523

PART 2: SUMMARY OF SUBMISSIONS

Effect of the Amendment

Individual properties are affected in one of the following ways by the Amendment:

- Existing SBO removed
- Existing LSIO removed
- Retain existing SBO but change to either SBO1, SBO2 or SBO3
- Added to SBO for the first time and apply either the SBO1, SBO2 or SBO3
- Added to the LSIO for the first time
- Retain existing LSIO but change the existing floodshape
- Other e.g. dual controls apply

Location of submissions

- 13 % of submissions related to properties in Melbourne Water's drainage areas (LSIO and SBO1)
- 38% of submissions related to properties in Council's drainage areas (SBO2)
- 44% of submissions related to properties in Council's drainage areas (SBO3)
- 5% of submissions related to properties with dual controls.

The submissions were also located in one of the 5 catchment areas – see attached [catchment map](#) as follows:

- 41% of submissions were from Ruffey Creek catchment
- 18% of submissions were from Koonung Creek catchment
- 29% of submissions were from the Mullum Mullum Creek catchment
- 5% of submissions from Bulleen catchment
- 7% of submissions from Anderson Creek catchment

Position taken on the amendment

- 476 submissions or 92% objected to the Amendment, essentially seeking the removal of a property (or a group of properties) from the proposed Amendment.
- 5 submissions or 1% objected to the Amendment, essentially seeking a modification to the floodshape or overlay designation exhibited in the Amendment.
- 5 submissions or 1% objected to the Amendment with no reasons given.
- 17 submissions or 3% requested other changes that are not directly related to the Amendment e.g. drainage maintenance issues.

- 14 submissions (3%) were received from properties not offering a position on the Amendment. A follow up letter was sent but no responses were received.
- 2 submissions (.5%) were received supporting the Amendment.

In addition:

- 1 submission was received from Parks Victoria offering no objection to the Amendment.
- 1 submission was received from a property not affected by the Amendment.
- 2 submissions were received and subsequently withdrawn.

Issues raised in submissions

There are a number of key issues raised in the submissions, as outlined in the table below. The table below provides information on the numbers and percentages of submissions that included a specific issue in their submission:

Issue	%/No of submissions
1. Individual properties have not experienced flooding in the past and should therefore not be subject to the overlays.	34%
2. The modelling is inaccurate and does not reflect real life flood events and/or existing site/area characteristics such as existing topography.	68%
3. Council and/or Melbourne Water drainage works have already addressed any potential flooding impacts.	15%
4. The Council/Melbourne Water drains have not been properly maintained and/or are inadequate.	8%
5. Council and Melbourne Water should review and upgrade the drainage system to cope with overland flow and flooding from the one in 100 year flood event.	23%
6. New development and the increase in density across Manningham has increased the level of overland flow and flooding.	10%
7. Property values and property resale will be impacted, Council rates should decrease/may increase as a result of the overlays and compensation should be payable.	35%
8. Insurance costs/premiums will be impacted.	33%
9. Buildings or structures on a property are unaffected by the proposed overlays, and will impact on the site unnecessarily.	2%
10. There will be a financial or administrative burden for future development – including additional costs associated with seeking planning permission and raising floor levels.	10%
11. The proposed overlay will only have a minor impact on the property due to a minimal incursion, the overlay falling over an existing easement or driveway and should therefore be removed.	13%
12. Built features (such as existing floor levels, on site drainage, retaining walls etc.) on the subject property and adjoining properties may	19%

Issue	%/No of submissions
currently divert water away or prevent water from entering a property. Therefore question relevance of overlay.	
13. Consultation process and information provided was inadequate.	3%
14. Other miscellaneous issues	11%

AMENDMENT C109

**Review of the Land subject to Inundation Overlay
and Special Building Overlay**

**OFFICER RESPONSE TO ISSUES RAISED IN
SUBMISSIONS**

Overview

The proposed changes to the boundaries of the SBO and LSIO are based on the best available information, best practice modelling and techniques developed over many years by experts in this field. The use of computer modelling is acknowledged as the only practical method to reliably map the extent of changes to the floodshape across the municipality.

Officer response to themes

This section provides the following in relation to each of the 14 issues identified:

- A short explanation of the issue;
- An officer response to the issue;
- Relevant commentary from previous Planning Panel reports where the issue has been previously considered.

Where a submission questions the accuracy of the modelling or raises a specific issue that cannot be categorised as generic, then a submission specific response has been prepared. These submission specific responses can be found in **Attachment 9**.

Issue 1 Individual properties have not experienced flooding in the past and should therefore not be subject to the overlays.

Explanation of issue:

Submissions objecting to the Amendment referred to previous flood events (or the lack thereof) in a local area. In this context, advice that their property had not experienced flooding was used to substantiate their position that the modelling must be incorrect.

Officer response:

- The shape of the overlay is based on the overland flow paths identified through best practice computer modelling. It is the most reliable, cost effective estimate that can be made from existing information and techniques.
- The lack of historical evidence about flooding on a particular site does not mean the property may not be inundated by overland flooding in the future.
- Storm events vary considerably and the factors that contributed to flooding in one storm event may not be repeated for the next.
- The SBO and LSIO maps are based on the forecasted overland stormwater flows associated with a 1 in 100 year storm event at a specific location, meaning that there is a 1 per cent chance that such an event could occur in any given year.
- Buildings and structures within the flow path may currently divert or otherwise hinder flood waters. If these structures were removed, then the flowpath would change and a property further down the flowpath may be impacted and experience flooding.

- Where this issue was raised in a submission, the Further Technical Review investigated and clarified if it was relevant to the floodshape on affected properties.
- Given the above, there is no justification to remove properties from the model simply because a submission has been made with this request.

Previous Panel findings

The Planning Panel in relation to Amendment C1 to the Bayside Planning Scheme considered the view of the Planning Authority that:

- *“The technical basis for the derivation of the SBO is appropriate and accords with industry practice.*
- *It is unlikely that a single storm event will cause the extent of inundation shown on the SBO. Flooding tends to be localised because a single storm event is unlikely to cover the whole of the SBO area at one time.*
- *Varying the input parameters of the models would result in relatively minor variations to the flood levels on which the SBO is based.*
- *The general absence of severe flooding in the past 80 years does not undermine the validity of the SBO.*
- *Application of more rigorous prediction methods is unlikely to result in a significantly different outcome.”*

These points were also submitted to the Planning Panel in Amendment C18 to the Stonnington Planning Scheme:

“Melbourne Water stressed to the Panel that the SBO was not based upon a known or historical flood event. It was based upon the overland flows that would result from a storm event that occurs, on average, once every one hundred years. These overland flow paths were identified through computer modelling techniques.”

In both cases, the Panel accepted these arguments and in relation to the latter case, the Panel noted:

“Whilst there may be no record of flooding on a property, however this did not mean that overland flows had not or would not occur at the site. Although flooding may not have previously been witnessed at the site, each storm event occurs independently of previous ones and it cannot be assumed that flooding has not previously or will not occur, on the basis that there are no records of such an event.”

In Amendment C36 to the Boroondara Planning Scheme, the Panel made the following further points in relation to properties only marginally affected by the SBO and the need to maintain the integrity of the approach to flood mapping and controls:

“A number of the submitters sought the removal of these fringe elements of the SBO from their properties on the basis that no local knowledge existed to indicate that their land had been subject to flooding, even in recent heavy downpours. Others drew attention to constraining elements on their properties or adjoining properties that would serve to divert or withhold floodwaters from the natural flooding boundaries if the SBO flood levels were experienced. It

was contended that common sense consideration of these aspects should result in a decision to remove their property from the SBO...

The Panel can appreciate where a property is partially impacted by what some may view as a relatively small encroachment that these owners could experience a sense of frustration and view any variance that would relieve their property from the SBO as being an extremely minor variation, when viewed in context against the broad picture of the overall area impacted by any projected 1:100 flood. However if such variations were granted in a piecemeal approach then the whole integrity of the SBO would be challenged. It is important to appreciate that the SBO boundaries have been based upon rigorous application of both flood modelling and terrain modelling principles and each section of the SBO has been ultimately plotted and presented using prescribed and best practice of cartographic principles. To randomly vary boundaries without any substantial justification is inappropriate."

Issue 2 The modelling is inaccurate and does not reflect real life flood events and/or or existing site/area characteristics such as existing topography.

Explanation of issue

Submissions questioned the fundamental of the modelling and questioned the data that was used as a basis for the modelling.

Officer response

- The use of computer based modelling has been consistently accepted by Planning Panels as an appropriate basis for application of the SBO and LSIO.
- The terrain map used as the basis for the model is based on aerial photography and LIDAR point data provided by Melbourne Water.
- Council and Melbourne Water have gone to great lengths to ensure that the boundaries of the LSIO and SBO are mapped as accurately as possible (including undertaking further analysis following exhibition).
- A further technical review (peer review) has been undertaken to investigate whether there are any anomalies with the floodshape on affected properties that have made a submission. If an anomaly is found, then it has been recommended that the floodshape be amended.
- Fully assessing the flooding impact to an individual property will rightly occur at the planning application stage; when more detailed, site specific information can be assessed. At that stage any specific conditions for development can be most appropriately determined.

Previous Panel findings

The use of computer based flood modelling has been consistently supported by Planning Panels in the past.

This position is clearly outlined in the Panel Report on Amendment C18 to the Stonnington Planning Scheme:

“It is important to appreciate that the SBO boundaries have been based upon rigorous application of both flood modelling and terrain modelling principles and each section of the SBO has been ultimately plotted and presented using prescribed and best practice of cartographic principles. To randomly vary boundaries without any substantial justification is inappropriate. This aspect is best appreciated by taking an instance where a development on a property may incorporate a proposed underground car park and it is intended to grade the driveway from the street alignment down to the car park. The presence of a sliver of SBO across the property frontage would bring under scrutiny the levels of the driveway and if it was revealed that the proposed grade change was to introduce a significant change in levels that could result in a dramatic extension of the SBO not only over the property under development but also an adjoining property, then the presence of the SBO has fulfilled valuable role.”

It has been accepted by all Planning Panels that have considered this issue that a full assessment of the flooding risk to a particular property is most appropriately undertaken at the planning permit stage, where accurately surveyed levels are provided by the permit applicant.

In the *Final Report on the New Format Planning Schemes*, Chief Panel Member, Helen Gibson raised the following points in relation to the Land Subject to Inundation Overlay (and which are equally applicable to the SBO):

“In the Panel's view, if accurate flood mapping is not being completed by DNRE [Department of Natural Resources and Environment], the relevant flood plain management authority should determine what land is potentially or likely to be affected by flooding and that land should be included in a Land Subject to Inundation Overlay. It does not matter that the boundaries may not be accurate at the time the overlay is applied. The Land Subject to Inundation Overlay only requires that a permit be obtained for buildings and works. It does not prohibit either use or development. The time to examine the evidence in detail about where flood levels lie in fact is at the time a permit application is made. The same approach needs to be adopted even when flood levels have been verified by DNRE but individual landowners dispute their accuracy. Panels do not have the resources to examine in detail competing arguments about where the flood levels lie on an individual property when there is a lack of agreement about this. At the amendment stage it is usually irrelevant. It is a matter more appropriately sorted out at the time any permit may be applied for.”

Issue 3 Council and/or Melbourne Water drainage works have already addressed any potential flooding impacts.

Explanation of issue:

A number of submissions have raised the issue that drains in the vicinity of the subject property have been upgraded in recent years to address potential flooding impacts and that the modelling must not have factored in these recent upgrades.

Officer response

- Timing of any upgrades with respect to when the modelling was undertaken was considered. The drains in the ground at the time of the review were modelled.
- Council had to choose a point in time from which to proceed with the modelling using drainage infrastructure existing at that time, otherwise the modelling would still be unfinished due to the regular infrastructure improvements that are undertaken.
- Whether or not the submission property address is upstream or downstream of the upgrade is also important, as the property would not benefit from an upgrade if it was upstream of it.
- The Further Technical Review process involved interrogation of the drainage pipe GIS data in the surrounding area to the submission property to ascertain if an upgrade had taken place recently.
- The capital works records from the last few years were also scrutinised to identify possible upgrades that were not reflected in the GIS data.
- When a submission claimed that an upgrade had taken place, it could be one of the following scenarios:
 - The drainage upgrade was included in the modelling but the upgraded drains would not have the capacity to remove surface runoff entirely during a 1 in 100 year ARI event;
 - The upgrade was modelled (or not) but the submission property is upstream and does not benefit;
 - The upgrade was not modelled because it was undertaken after the modelling was done;
 - The upgrade was not modelled but should have been as it was undertaken before the modelling was done.

Issue 4 The Council/Melbourne Water drains have not been properly maintained and/or are inadequate.

Explanation of Issue

Submissions and enquiries have raised specific issues about drains blocked with leaves and other litter, or specific problems with the design of the local drainage network and have stated that poorly maintained infrastructure is partially responsible for the floodshape.

Office response

- Maintenance issues do not have any direct bearing on proposed Amendment C109 – noting however, the organisation’s broader obligation to respond to these issues. The modelling was generated on the assumption that all infrastructure was free from litter and obstructions, and in perfect working order.
- Council and Melbourne Water continue to maintain and upgrade their respective drainage systems to ensure that drains continue to cater for the 1 in 5 year standard (design standard applied to the system).

- Council also provides regular street sweeping services to reduce the amount of leaf (and other) litter that could collect in the drainage system and responds to specific complaints or issues raised by customers about specific drains.
- Enquiries registered with Council that raised issues about drains blocked with leaves and other litter, or specific problems with the design of the local drainage network, are logged in Council's customer requests system.
- Actions may include cleaning out the relevant drain and if necessary marking it up for future or special attention and contacting the customer about the action taken.

Previous Panel findings

The Planning Panel in relation to Amendment C2 to the Moreland Planning Scheme provided the following points in relation to this topic:

"It is to be expected that the introduction of overlays will tend to draw from the community responses to perceived inadequacies in the existing drainage systems and submitters will endeavour to utilize the process as a forum for focusing on such matters. However the Panel has no power to deal with such concerns and it can do little but to draw such concerns to the attention of the Council administering the Planning Scheme."

Issue 5 Council and Melbourne Water should review and upgrade the drainage system to cope with overland flow and flooding from the one in 100 year flood event.

Explanation of Issue

Submissions suggested that the entirety of the drainage system should be upgraded to accommodate overland flows from the 1 in 100 year flood events. Some suggested that these measures should be undertaken in lieu of expanding the SBO to cover more properties.

Officer response

- The drainage system in Manningham was predominantly constructed prior to 1975, well before consideration of overland flows from 1 in 100 year flood events and was constructed to accommodate 1 in 5 year flood events which was the standard at the time.
- Upgrading the entirety of the drainage system in Manningham to a 1 in 100 year standard would not simply necessitate the use of drainage pipes with larger diameters, but in some areas it would also necessitate realignment and widening of existing roads, demolishing existing buildings and increasing the natural ground level of all properties that are affected.
- This would result in significant disruption and displacement for many residents – and a considerable financial cost to property owners and Council / Melbourne Water.
- The imposition of the SBO, requiring new buildings to be protected from flooding and for an assessment to be made about the impact of development on flowpaths, is comparatively less costly and disruptive than dealing with the damage caused by flooding events.

- Council has a strategic resource plan item for 2016/17 to review the current Drainage Strategy. This will use detailed flood mapping as a key input to understand the magnitude of and risk posed by flooding. This will enable a systematic approach to develop and prioritise management responses and interventions.

Previous Panel findings and background information

In Victoria, the use of the 1 in 100 flood level has been in effect since 1975 following the introduction of the *Drainage of Land Act 1974*. This provides the basis for declaring flood levels and flood areas and has since been incorporated into the *Water Act 1989* and the *Building Act 1993*. The standard and best practice prior to 1975 was for the drainage system to cope with 1 in 5 year flood events. This measure is also in the planning system, including the Special Building Overlay, which has as its stated purpose to:

“identify land in urban areas liable to inundation by overland flows from the urban drainage system as determined by, or in consultation with, the floodplain management authority”.

Planning Panels have regularly considered this issue and have consistently agreed with Melbourne Water’s comments about the true cost of addressing this legacy issue:

“To upgrade the whole Metropolitan system to accommodate a 1% flood standard would cost billions of dollars. [Melbourne Water’s] current budget provides for a capital expenditure of approximately \$6-8,000,000 per annum on the main drainage system and therefore it is necessary to adopt other complementary approaches to deal with the issue.”

“A massive injection of funds into improving stormwater drainage in settled suburbs would be at the expense of other community aspirations... it would not be reasonable to inhibit the normal expectations of owners to develop their properties, awaiting some future time when community priorities favour a massive injection of funds towards drainage improvements.”

Issue 6 New development and the increase in density across Manningham has increased the level of overland flow and flooding.

Explanation of issue

A number of submissions have raised concerns with the impacts that increased densities in municipalities such as Manningham are having on existing infrastructure such as drainage, which in turn is increasing local flooding and overland flow impacts.

Officer response

- Manningham has a responsibility to allow increased densities in appropriate locations and Council actively requires developers to provide sustainable development and include on site drainage retention systems.
- Council’s drainage system is designed for the 1 in 5 year flood and any excess flood water flows overland along roads and parks. Properties within areas that have limited or no overland flow paths are more prone to flooding.

- With increased urban consolidation, drainage services are being placed under increased pressure, affecting the quality, quantity and rate of flow of water emanating from new or intensified development and potentially causing flooding.
- Sustainable development that uses the principles of integrated water management can help address these issues. Integrated water management has three aims: reduce reliance on potable water supplies; reduce the amount of wastewater and stormwater generated; and improve water quality in water catchment ecosystems.
- Providing a drainage system that promotes the on-site retention and re-use of stormwater run-off and regulates overland flow to prevent flooding may assist in ameliorating an intensification of the impacts of flooding through inappropriately located uses and developments.

Previous Panel findings

The Planning Panel in relation to Amendment C2 to the Moreland Planning Scheme provided the following points in relation to this topic:

The occurrence of overland flows is due primarily to the limited capacity of the drainage infrastructure, which, in accordance with design standards of the time, was generally only required to be designed and constructed to the 1 in 5 year standard. Although incremental developments throughout the catchment may contribute to increases in runoff, this would only impact marginally upon what is an existing risk of inundation from the large storm events.

Issue 7 Property values and property resale will be impacted, accordingly, Council rates should decrease or may increase as a result of the overlays and compensation should be payable.

Explanation of issue

Submissions suggested that the inclusion of their property in the SBO and LSIO would negatively impact on the value of their property.

Officer response

- The flood prone nature of some land is an existing fact. Excess floodwater may still follow natural valleys and drainage paths that existed prior to the subdivision and development of the area.
- The LSIO and SBO have an important function to reflect this underlying condition of the land transparently to current owners and future purchasers of affected properties – so that they can make informed decisions about the property and about planning for their own safety during flooding events.
- Property values are determined by many different factors, including location, streetscape and amenity, the current economic conditions, as well as planning controls. It is therefore difficult to assign what effect, if any, the identification of land as liable to overland flows by the SBO and/or LSIO may have on the value of a property.

- Past Panels have not found evidence that the SBO and LSIO impacts on property values and have also determined this would not be a reason to avoid application of the controls – see below.
- The *Planning and Environment Act 1987* clearly sets out the circumstances where compensation is payable and is essentially limited to where land is reserved or required for a public purpose or where access is to be denied by the closure of a public road. It does not cover situations where controls such as the SBO/LSIO are imposed. Compensation would not be payable as a result of applying the overlay controls.
- The overlay does not cause or change the likelihood of flooding. While the overlay may identify the drainage conditions of the land, there is, appropriately, clear legislative indemnification from any claims arising out of the identification of land liable to flooding.
- In November 2016, Council appointed Charter Keck Cramer ('Charter') to provide advice on what, if any, impact the SBO will have on the values of those properties affected in the short and long term. Attachment 11 contains this report and the report concluded the following:

"In undertaking this assessment Charter has not been able to establish that the application of the SBO will negatively impact the values of those properties to be affected. This is consistent with the findings of the study undertaken by Charter for the City of Stonnington in 2004.

...it is Charter's opinion that the SBO will not negatively impact property values in the City of Manningham."

Previous Panel Findings

The Planning Panel, in relation to Amendment C18 to the Stonnington Planning Scheme concluded that:

"Panels have consistently found that there is no justification for setting aside of any SBO amendment on the basis of requests for compensation, loss of property value and possible increase in insurance premiums."

The Planning Panel, in relation to Amendment C50 to the Moreland Planning Scheme stated that:

"The value of any property is determined by the complex interplay of many different factors such as overall economic conditions, public economic policies, location, streetscape and amenity, and it is difficult to assign what effect, if any, the identification of land as liable to overland flows may have on the value of a property. This view is consistent with the conclusions of the Planning Panels for Amendment C3 to the Yarra Planning Scheme and Amendment C18 to the Stonnington Planning Scheme. These Panels generally found no correlation between the application of the SBO and property values. Melbourne Water also reported that the Stonnington Council commissioned Charter Keck Kramer (CKC) to review

the effects on property prices of the application of the SBO. CKC examined property prices in the City of Port Phillip and found no correlation. The Panel was not provided with any contrary evidence and concludes that the SBO or the LSIO are highly unlikely to affect property prices, and that it is appropriate that the condition of the land be recorded and available to interested people.”

Specifically, the Charter Keck Kramer study concluded (as reported in the Panel Report to Amendment C18 to the Stonnington Planning Scheme):

“There is a general purchaser awareness of the SBO within the City of Port Phillip, and that purchasers understand the consequences that some properties affected by the Overlay may, in the course of renovation and extension, have to meet special planning and building requirements that would otherwise not apply. Notwithstanding, the pattern of sales and analysis, gives no evidence or cause to believe that the application of the SBO to any of the properties has had a measurable effect on the value of those properties when offered to the market on normal reasonable terms and conditions. Simply stated, the application of the Overlay within the City of Port Phillip appears to have had no adverse impact on the property values. For the reason that there is a strong socio-economic and demographic similarity between the City of Port Phillip and the City of Stonnington, and as many of the properties affected in the City of Port Phillip are of a similar style, construction mode and market value range as many of those likely to be affected within the City of Stonnington by the proposed introduction of the SBO, we consider it reasonable to anticipate that the introduction of the SBO in Stonnington will, similarly, have no measurable impact on the value of properties to which it will apply.”

Issue 8 Insurance costs/premiums will be impacted.

Explanation of Issue

Submissions suggested that the inclusion of their property in the SBO and LSIO would result in higher insurance premiums.

Office response

- The potential impact on insurance premiums is not a matter that should have any bearing on the application of the LSIO or SBO.
- The application of the overlays does not cause or change the likelihood of flooding, but recognises the existing condition of land.
- The Insurance Council of Australia has advised Melbourne Water that most insurance policies provide coverage for storm damage, include cover for damages resulting from overland flows. However, this needs to be confirmed by the property owner’s individual insurance provider.
- Previous Panels have consistently determined that the potential impact on insurance premiums is not a matter that should have any bearing on the application of the SBO or LSIO.

Previous Panel findings

The impact on insurance premiums has been consistently dismissed as a relevant issue by previous Panels. Whilst other panel reports generalised and combined these issues, in Amendment C1 to the Bayside Planning Scheme there was a significant discussion on this topic. Both the Council and Melbourne Water put the following to this Panel:

“This is not a relevant consideration in the determination of whether a development overlay should apply. Insurance contracts have always imposed an obligation of disclosure on policy holders. The application of an SBO does not cause or change the likelihood of flooding, but recognises the existing condition of land. Insurance companies would continue to calculate their premiums on the basis of what is known, and the properties identified in the overlay would still be subject to flooding in a 1 in 100 year rain event. ☐ The Insurance Council of Australia has advised Melbourne Water that most insurance policies that provide coverage for storm damage, include cover for damages resulting from overland flows. However this would need to be confirmed by the household's individual insurer.”

The Panel agreed with these points and added:

“The Panel agrees that [the impact on insurance] is not a matter which should affect the imposition of the overlay. Such a position, if accepted, may also affect the imposition of other overlays such as the Wildfire Management Overlay. The inclusion of the overlay in the scheme represents an important piece of information for property owners and potential purchasers and developers.”

Issue 9 Buildings or structures on a property are unaffected by the proposed overlays, and therefore the overlay will impact the site unnecessarily.

Explanation of issue

A number of submissions have raised the issue that the overland flow path does not impact land where there is a building or structure, there will be no flooding of the house or garage in a 1 in 100 year flood event and therefore application of the overlay is irrelevant.

Officer response

- It is important to note that future buildings or development may not necessarily be in the same location as existing buildings or structures.
- The function of the LSIO and SBO is therefore to ensure that any future development within an affected portion of the site is designed appropriately in response to the identified flood potential.
- The removal of the SBO or LSIO could result in inappropriate development that increases flood risk to adjoining properties, or has an insufficient floor level or basement entrance that would be at risk of flooding.

Previous Panel findings

The Panel in relation to Amendment C2 to the Moreland Planning Scheme stated:

“The purpose of the Overlay is to identify land affected by flooding or overland flows as a result of a 1 in 100 year rainfall event. The Panel accepts that a prime function of the

overlay is to ensure that any future development within the affected portion of the site is appropriate in terms of the identified flood potential. The removal of the overlay could result in a development application that may seek to introduce a floor level that has an inappropriate relationship with the flood level.”

Issue 10 **There will be a financial or administrative burden for future development – including additional costs associated with seeking planning permission and raising floor levels.**

Explanation of issue

Submissions stated that the inclusion of their property in the LSIO and/or SBO would be an administrative burden and could result in increased costs associated with future redevelopment or extensions to existing buildings.

Officer response

- A planning permit is only triggered if the proposed buildings and/or works fall within the area of land covered by the SBO and LSIO. In many cases (45% of affected properties), a planning permit would already be required under other provisions of the Planning Scheme.
- Costs associated with redevelopment in LSIO and SBO areas will vary depending on the site context, how the overlay covers the site and the proposed design of the development.
- Any additional costs of increasing floor levels should be considered as a safeguard against the cost incurred as a result of potential flood damage to new buildings.

Previous Panel findings

In relation to the issues associated with redevelopment, the Planning Panel for Amendment C50 to the Moreland Planning Scheme has highlighted that the SBO is a necessary planning mechanism to ensure that development responds to flood risk at the permit stage. It stated:

“The Panel notes that under the Overlays, a planning permit is required for buildings and works, and applications are referred to Melbourne Water. Upon application for a permit, each site can be investigated further, and a detailed assessment be made. Melbourne Water’s requirements generally relate to the raising of floor levels or changes to site layout. The Overlays ensure that development proposals are tested prior to being implemented. This process ensures the proposed development is safe and minimises the risk of personal injury or property damage that may arise from periodic inundation. Often the referrals process is likely to improve the design of the development. The Panel also notes that applicants have the right to seek a Review by VCAT if they consider that the Responsible Authority or referral authority are being unreasonable.”

Issue 11 **The proposed overlay will only have a minor impact on the property due to a minimal incursion, or the overlay falling over an existing easement or driveway and should therefore be removed.**

Explanation of issue

A number of submissions have questioned the relevance of the overlay as it only applies to a very small section of their property and is often located along the boundary or across an existing easement.

Officer response

- The extent of the proposed floodshapes affect properties differently. Some properties may only have .01% of their property affected by the floodshape, whereas other properties may be 100% affected. People will have different opinions about what is considered to be a minor incursion.
- Due to the flood mapping methodology, the flood extents generated from the flood model results may encroach slightly onto properties. As part of the development of the overlays, in cases where the flooded area of a property was entirely within 5 metres of a roadway and the percentage of the property affected was less than 10%, these areas were removed from the proposed overlay floodshape, prior to exhibition. These adjustments were considered appropriate given the low level of benefit associated with retention of these encumbrances in controlling future development.
- Several submissions have objected to the Amendment on the basis that their properties are only impacted by minor incursions. The City of Port Phillip Planning Scheme amendment proposed that in cases where incursions of 6% and 15sqm or less of the property area applied, the planning extents be removed from affected properties. Similar criteria has been developed as part of the Further Technical Review of submissions made to Amendment C109. In the case of Manningham, as the properties are generally significantly larger than the properties in Port Phillip (700sqm versus 300sqm), where the incursion is less than 30m² and represents less than 6% of the property area and is not considered to be significant, then a recommendation may have been made to delete the overlay in the subject location.
- An assessment has also had to be made that trimming of the floodshape in such a way won't create a disconnect or significant impact on the connectivity of the floodshape.
- Consideration was also given to whether the minor flood shape incursion was associated with flow into or out of the property, based on the topography of the land. If the flood shape is associated with flow into the property, the flood shape is recommended to be retained.
- Consideration was given to the length of the incursion into the property. Incursions greater than 5 metres into properties are recommended to be retained.
- These requirements are in keeping with the adopted criteria for removal of minor incursions along the frontages of properties as part of the original filtering process, precedent associated with prior Panel processes and flood risk principles.

Previous Panel findings

In relation to Amendment C111 to the Port Phillip Planning Scheme, the Panel provided a response to this particular issue;

‘the premise for the inclusion of a property for further technical review, i.e. that the SBO covers less than 15sqm, and less than 6% of the total site area of the site is regarded by the Panel appropriate in so far as there is consistency in procedure and approach across municipalities’.

Issue 12 Built features (such as existing floor levels, on site drainage, retaining walls etc.) on the subject property and adjoining properties may currently divert water away or prevent water from entering a property. Therefore question relevance of overlay was questioned.

Explanation of issue

Submissions have suggested that existing walls, buildings or fences (on their property or adjoining properties) currently protect their property from flood damage.

Officer response

- There is no certainty that development on a site or on adjoining sites will remain and continue to block the flowpath of water. If these structures are removed, then properties on the site or further down the flowpath may be affected by overland flows.
- In relation to existing buildings, once the flood water reaches floor level, the building is inundated and becomes part of the flow path.
- It is important to assess the impact of future development within the LSIO and SBO, particularly development that may impact on the flowpath.
- Adding further information to the terrain map in relation to the building locations, walls and fences and other structures and their impact on flows would be extremely complex and resource demanding (noting that the ‘roughness factor’ incorporated in the modelling already addresses the existence of obstructions).
- Therefore, a general depiction of the likely flooding impact is the most effective approach in deriving the LSIO and SBO boundaries.
- For all of these reasons, the presence of built form on an adjoining or nearby site, or on the site itself does not warrant removal of the property from the LSIO and/or SBO.

Previous Panel findings

In relation to Amendment C18 to the Stonnington Planning Scheme, the Panel provided a response to this particular issue:

“Whilst the model does embody some elements that deal with the recognition of flows in urban areas, the overland flow path projected by the model is based on the ground levels and assumes that no blockage of drainage infrastructure exists at the time of flooding and that structural barriers such as fences, houses and brick walls are less permanent [It has been] consistently stressed in previous Panel hearings... that the SBO should be viewed as a

planning tool that aims to identify areas subject to the 100 ARI event... and it must be recognised that hydrological analysis was based on statistical concepts that were susceptible to change as more data became available. Consequently, hydraulic and hydrological analysis can be continuously refined.”

Issue 13 Consultation process and information provided was inadequate.

Explanation of issue

Some submissions are critical of the exhibition process undertaken for the Amendment. Criticisms have included inadequate information and the exhibition period too close to Christmas.

Officer response

- Exhibition of the Amendment exceeded the statutory requirements specified under section 19 of the *Planning and Environment Act, 1987*.
- Exhibition of the Amendment also included non statutory communication measures as follows:
 - Interactive web tool
 - Information sessions
 - FAQs
 - Information on Council’s web site
- The Amendment was exhibited for 6 weeks as opposed to the statutory requirement of 4 weeks under the *Planning and Environment Act, 1987*.
- Council received over 100 phone calls in the first two weeks of exhibition; attended to over 120 counter enquiries and every person who wished to speak to a Council officer directly had the chance to do so.
- All requests for an extension of time to submit and/or add to existing submissions was widely made known.
- Submissions were still being submitted after the closing date and can be received up until the panel hearing to consider submissions. The latest submission was received in December 2016.

Issue 14 Other issues

Explanation of issue

A number of submissions raised specific issues that require an individual response. The responses can be found in **Attachment 7** where each submission has also been summarised.

Previous Planning Panels - Summary

Planning Panels Victoria (PPV) have considered and reported on a significant number of planning scheme amendments relating to flood overlays or zones (including the LSIO and SBO), since the introduction of these provisions into the Victoria Planning Provisions more than 17 years ago. Most of the issues raised by submitters to Amendment C109 have been raised in previous Planning Panel hearings considering the introduction (or change to) the LSIO or SBO. Previous Planning Panels have consistently made the following points with respect to the application of the overlays:

The drainage system

- The application of the LSIO and SBO complement other flood mitigation, drainage maintenance and upgrade works undertaken by floodplain management authorities or local councils.
- Upgrading the entire drainage system to present day standards in order to accommodate for 1 in 100 year flood events would cost billions of dollars, and is not practical for floodplain management authorities (e.g. Melbourne Water) or for local councils to deliver.

Purpose of the LSIO and SBO

- The flood prone nature of some land 'represents an existing fact'.
- The LSIO and SBO are tools to advise landowners and potential purchasers of the potential for the land to flood in a 1 in 100 year flood event, and allows authorities to consider any development proposals to reduce detrimental impacts.
- The LSIO and SBO do not prohibit development and the requirements in the LSIO and SBO only apply to development and works proposed within the area covered by the overlay.

Flood modelling

- The shape of the overlay is based on the overland flow paths identified through best practice computer modelling and is the most reliable estimate that can be made from existing information and techniques.
- It is unlikely that a single storm event will cause the extent of inundation shown on the LSIO and SBO. Flooding tends to be localised, because a single storm event is unlikely to cover the whole of the LSIO and SBO area at one time.
- The cost of gaining more intensive terrain information (via land surveys of individual properties) would be prohibitive and the most appropriate time to assess the flooding risk to a particular property is at the planning permit stage, where accurately surveyed levels area provided.

Development costs, property values & insurance

- There has generally been no correlation found between the application of the LSIO and SBO and property values.
- A potential increase in insurance premiums is not a relevant consideration as to whether the LSIO and SBO should be applied.
- The full disclosure of property information is appropriate and beneficial.

- The prospect of improved planning for the community is more important than the possibility of decreased property values or the increased costs associated with raising the floor level of a new building.

AMENDMENT C109

Review of the Special Building Overlay and Land subject to Inundation Overlay

FURTHER TECHNICAL REVIEW –TEMPLATE AND CRITERIA USED WHERE FLOODSHAPE WAS REVIEWED

Overview

- Officers have undertaken a Further Technical Review (FTR) where submitters have questioned the inclusion of their property in the SBO and LSIO, the accuracy of the modelling and where the extent of coverage over the subject land is minimal.
- The FTR included a more detailed analysis to ascertain the exact flood risk to the property. The objective of this review was to check for anomalies.
- The FTR is based on a number of agreed criteria – see below and may indicate that the LSIO or SBO floodshape could be removed or refined in shape or should be kept as exhibited.

Criteria for the Review

The following criteria were developed to guide the Further Technical Review of submissions and to ensure that there is a consistency in the response to submissions.

Criteria	Assessment
Actual terrain differs from LIDAR data used for modelling.	<ul style="list-style-type: none">• <i>Does the actual land shape and fall generally agrees with LIDAR data?</i>
Actual drainage infrastructure differs from that modelled.	<ul style="list-style-type: none">• <i>Does it relate to private internal drainage infrastructure on a single lot?</i>• <i>How does the actual drainage pipe diameter and compare against the modelled pipe diameter?</i>
Flood extent incursion into property minor in nature.	<ul style="list-style-type: none">• <i>Is the incursion of the flood overlay on the property considered minor?</i>
Other including unexplained isolated ponding, title boundaries and overlay designation.	<ul style="list-style-type: none">• <i>Is there unexplained isolate ponding which does not contribute to the integrity of the floodshape?</i>

Template for the Review

The following template has been used to document the FTR undertaken for each submission where the accuracy of the modelling has been questioned.

Note: This is a Further Technical Review (FTR) where submitters have questioned the inclusion of their property in the SBO and LSIO due to: the accuracy of the modelling; where flooding has not been experienced in the past; and where the extent of coverage over the subject land is minimal. Other issues identified in submissions are addressed in the Council Report and relevant attachments.

Submission No.:

Property Address:

Catchment:

Proposed Planning Scheme Control(s):

Maps showing the proposed overlays are attached to this assessment.

Desktop review (Data collection/ assessor comments)

Previous reports of flooding for property (CFS Request Ref No's):

Area of incursion into property (m²):

Percentage of property area affected by incursion:

Officer Desktop Review Comments:

Site visit

Date of inspection (if required):

If site inspection not required, why:

Site photos informing this assessment, if necessary, are attached to this report.

Data and information collected from site visit:

Assessment against criteria

The criteria below have been used to assist in the review and assessment of the written submission content.

Criteria 1: The extent to which the actual terrain differs from LIDAR data, and any potential impacts on the modelling.

Criteria 2: The extent to which the as-constructed drainage infrastructure differs from that modelled, and any potential impacts on the modelling.

Criteria 3: The extent to which a minor flood extent incursion protrudes into a property.

Criteria 4: Other

- The appropriateness of applying a different overlay designation having regard to the flood modelling; or
- The extent to which an anomaly has been identified with the title boundary; or
- The extent to which unexplained isolated small ponding could be removed without affecting the credibility of the flood mapping.

Officer response to submission:

Signed off:	
Date:	

5 Previous Storm Events

The Special Building Overlay (SBO) has been developed based on storm events with a 100 year Average Recurrence Interval (ARI).

ARI is the average or expected value of the periods between exceedances of a given rainfall total accumulated over a given duration (www.bom.gov.au).

A number of the submissions made reference to previous storm events querying why, if a property had not previously been affected by flooding, should it now be included in the SBO. There are two main reasons for the inclusion in the SBO and these reasons include:

1. The previous storm event was a smaller more frequent flood event (with a lower ARI);
2. The duration of the previous storm event differed from (i.e. was longer or shorter than) the critical storm duration for the property. For instance, if the flood mapping showed the property is worst affected by the 15 minute duration storm event, a long duration event (say 1 hour) will not lead to such an extensive flood extent, regardless of whether it has a 100 year ARI.

This section analyses the critical duration for each of the properties, and associates an ARI magnitude to the previous rainfall events of this same duration.

5.1 Storm Events to be Analysed

The storm events which submitters referenced are shown in Table 5-1

Table 5-1 Summary of storm referenced by submitters

Submission ID	Submission Address	Storm Event(s) referenced
1a	10 Louisa Place Templestowe	18/9/1984, 26/12/1999, 3/12/2003, 3/2/2005, 7/3/2010, 4/2/2011, 10/11/2011, 25/12/2011, 31/5/2013, 5/11/2015
124	Applewood Doncaster (15 Grand View Boulevard)	21/5/2002, 4/2/2011
219	36 Henry Street Doncaster	31/12/1991, 21/5/2002, 7/3/2010
265	23 Murndal Drive Donvale	3/12/2003
330	92 Canopus Drive East Doncaster	3/12/2003, 3/2/2005, 7/3/2010
11 Cliveden Crt	11 Cliveden Court Templestowe	22/12/2011
427	Overall Comments	31/12/1991
505	23-31 Tills Drive Warrandyte	25/12/2011

5.2 Rainfall Data Available

To assist in the analysis, Melbourne Water provided data from 4 pluviograph rainfall stations in Manningham as shown in Table 5-2. Pluviograph data is rainfall data recorded from 9 am to 9 am at a time increment of 6 minutes.

Table 5-2 Pluvial Rainfall Stations supplied by Melbourne Water.

Station ID	Station Name
229200B	Yarra River at Forbes Street Warrandyte
286037	Doncaster East Rain Gauge at Zerbes Reserve
586010	Doncaster Rain Gauge at Eastern Golf Course
229135A	Yarra River at Banksia Street Heidelberg

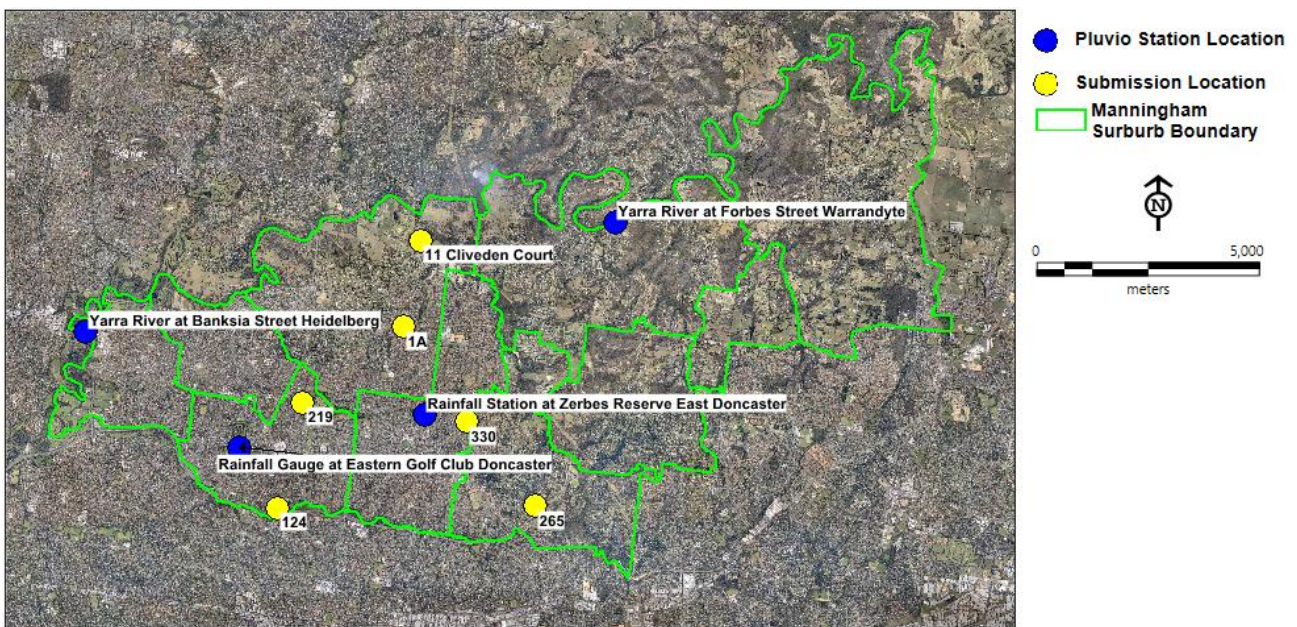


Figure 5-1 Location of pluviograph stations and submitters with specific storm events

For the 4 pluviograph rainfall stations, Melbourne Water supplied a calculated ARI for durations ranging from 6 minute to 72 hour (6, 12, 18, 24, 30 minutes, 1, 2, 3, 4, 6, 12, 18, 24, 36, 48, 72 hours).

5.3 Critical Storm Duration for Properties

The critical storm duration for the submitter addresses are shown in Table 5-3.

Table 5-3 Critical Storm Duration for each submitter

Submission ID	Submission Address	Critical Storm Duration
1a	10 Louisa Place Templestowe	120 minutes
124	Applewood Doncaster (15 Grand View Boulevard)	120 minutes
219	36 Henry Street Doncaster	15 minutes
265	23 Murndal Drive Donvale	120 minute
330	92 Canopus Drive East Doncaster	120 minute
11 Cliveden Crt	11 Clivden Court Templestowe	120 minute
505	23-31 Tills Drive Warrandyte	25-120 minute

5.4 Analysis of Previous Storm Events

5.4.1 18 September 1984

This rainfall event was recorded at two gauges, Yarra River at Warrandyte and Eastern Golf Course Doncaster. The 'at property' analysis for this event is shown in Table 5-4 below.

Table 5-4 Event Details, 18 September 1984

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
1a	10 Louisa Place Templestowe	120 minutes	<1 Year ARI	NA	<1 Year ARI	NA

5.4.2 31 December 1991

This rainfall event was recorded at two gauges, Yarra River at Warrandyte and Zerbes Reserve East Doncaster. The 'at property' analysis for this event is shown in Table 5-5 below.

Table 5-5 Event Details, 31 December 1991

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
219	36 Henry Street Doncaster	15 minutes	< 1 Year ARI	Approx. 100 year ARI	NA	NA

As only two gauges captured the event, and their values differed entirely, analysis of further data was conducted. The location of the rainfall gauges and pluviographs are shown on Figure 5-2. It was found that:

- > The Zerbes Reserve East Doncaster MW pluviograph had a total of 130.2 mm recorded for a 24 hr period – this is the observation which gives an ARI of > 100 year ARI for durations less than 1 hour.
- > The Yarra River at Warrandyte MW pluviograph had a total of 78.2 mm recorded for a 24 hr period giving an ARI of less than 1 year.
- > MW Pluviographs for Eastern Golf Course Doncaster and Yarra River at Heidelberg are not available
- > Warrandyte BOM Rainfall total gauge 86313 recorded 0 mm for 2 days
- > Ringwood North BOM Rainfall total gauge 86379 recorded 40.2 mm over 2 days
- > Ringwood BOM Rainfall total gauge 86101 recorded 49.8 mm over 2 days.

The analysis showed the event was highly spatially variable and it is therefore not possible to determine with confidence the ARI at properties.

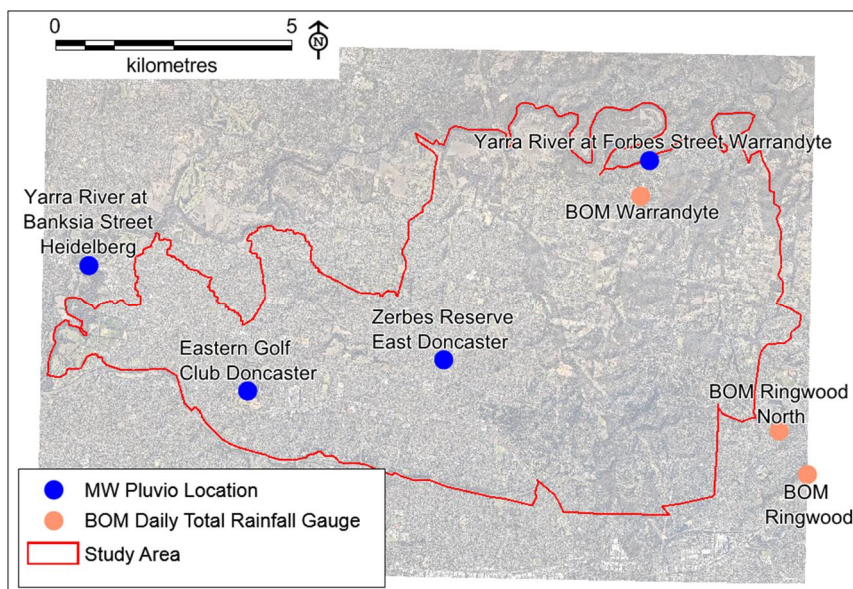


Figure 5-2 Pluviograph and Daily Total Rainfall Gauges

5.4.3 26 December 1999

This rainfall event was recorded at four gauges, Yarra River at Warrandyte, Zerbes Reserve East Doncaster, Eastern Golf Course Doncaster and Yarra River at Banksia Street Heidelberg. The 'at property' analysis for this event is shown in Table 5-6 below.

Table 5-6 Event Details, 26 December 1999

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
1a	10 Louisa Place Templestowe	120 minutes	39 Year ARI	< 1 Year ARI	36 Year ARI	< 1 Year ARI

5.4.4 21 May 2002

This rainfall event was recorded at four gauges, Yarra River at Warrandyte, Zerbes Reserve East Doncaster, Eastern Golf Course Doncaster and Yarra River at Heidelberg. The 'at property' analysis for this event is shown in Table 5-7 below.

Table 5-7 Event Details, 21 May 2002

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
124	Applewood Doncaster (15 Grand View Boulevard)	120 minutes	4 Year ARI	< 1 Year ARI	< 1 Year ARI	< 1 Year ARI
219	36 Henry Street Doncaster	15 minutes	2 Year ARI	< 1 Year ARI	< 1 Year ARI	< 1 Year ARI

5.4.5 3 December 2003

This rainfall event was recorded at four gauges, Yarra River at Warrandyte, Zerbes Reserve East Doncaster, Eastern Golf Course Doncaster and Yarra River at Heidelberg. The 'at property' analysis for this event is shown in Table 5-8.

Table 5-8 Event Details, 3 December 2003

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
1A	10 Louisa Place Templestowe	120 minutes	3 Year ARI	15 Year ARI	>100 Year ARI	>100 Year ARI

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
265	23 Murndal Drive Donvale	120 minutes	3 Year ARI	15 Year ARI	>100 Year ARI	>100 Year ARI
330	92 Canopus Drive East Doncaster	120 minutes	3 Year ARI	15 Year ARI	>100 Year ARI	>100 Year ARI

Bold indicates closest pluviograph gauge.

The geographic spread of the rainfall recorded suggests there was a focussed high ARI storm in the west of Manningham, throughout the rest of the municipality there was significantly less rainfall.

All submitters (1A, 265 and 330) are located closest to Zerbes Reserve East Doncaster, therefore the other rainfall stations should not be considered for these properties.

5.4.6 3 February 2005

This rainfall event was recorded at four gauges, Yarra River at Warrandyte, Zerbes Reserve East Doncaster, Eastern Golf Course Doncaster and Yarra River at Heidelberg. The 'at property' analysis for this event is shown in Table 5-9.

Table 5-9 Event Details, 3 February 2005

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
1a	10 Louisa Place Templestowe	120 minutes	2 Year ARI	1-2 Year ARI	1 Year ARI	1 Year ARI
330	92 Canopus Drive East Doncaster	120 minutes	2 Year ARI	1-2 Year ARI	1 Year ARI	1 Year ARI

5.4.7 7 March 2010

This rainfall event was recorded at four gauges, Yarra River at Warrandyte, Zerbes Reserve East Doncaster, Eastern Golf Course Doncaster and Yarra River at Heidelberg. The 'at property' analysis for this event is shown in Table 5-10.

Table 5-10 Event Details, 7 March 2010

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
1a	10 Louisa Place Templestowe	120 minutes	< 1 Year ARI	1 Year ARI	< 1 Year ARI	2 Year ARI

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
219	36 Henry Street Doncaster	15 minutes	1-2 Year ARI	3 Year ARI	1-2 Year ARI	2-4 Year ARI
330	92 Canopus Drive East Doncaster	120 minutes	< 1 Year ARI	1 Year ARI	< 1 Year ARI	2 Year ARI

5.4.8 4 February 2011

This rainfall event was recorded at four gauges, Yarra River at Warrandyte, Zerbes Reserve East Doncaster, Eastern Golf Course Doncaster and Yarra River at Heidelberg. The 'at property' analysis for this event is shown in Table 5-11.

Table 5-11 Event Details, 4 February 2011

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
1a	10 Louisa Place Templestowe	120 minutes	5 Year ARI	3 Year ARI	2 Year ARI	1 Year ARI
124	Applewood Doncaster (15 Grand View Boulevard)	120 minutes	5 Year ARI	3 Year ARI	2 Year ARI	1 Year ARI
265	23 Murndal Drive Donvale	120 minutes	5 Year ARI	3 Year ARI	2 Year ARI	1 Year ARI

5.4.9 10 November 2011

This rainfall event was recorded at four gauges, Yarra River at Warrandyte, Zerbes Reserve East Doncaster, Eastern Golf Course Doncaster and Yarra River at Heidelberg. The 'at property' analysis for this event is shown in Table 5-12.

Table 5-12 Event Details, 10 November 2011

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
1a	10 Louisa Place Templestowe	120 minutes	4 Year ARI	2 Year ARI	< 1 Year ARI	< 1 Year ARI

5.4.10 25 December 2011

This rainfall event was recorded at four gauges, Yarra River at Warrandyte, Zerbes Reserve East Doncaster, Eastern Golf Course Doncaster and Yarra River at Heidelberg. The 'at property' analysis for this event is shown in Table 5-13.

Table 5-13 Event Details, 25 December 2011

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
1a	10 Louisa Place Templestowe	120 minutes	55 Year ARI	2 Year ARI	15 Year ARI	15 Year ARI
NA	11 Cliveden Court Templestowe	120 minutes	55 Year ARI	2 Year ARI	15 Year ARI	15 Year ARI

5.4.11 31 May 2013

This rainfall event was recorded at four gauges, Yarra River at Warrandyte, Zerbes Reserve East Doncaster, Eastern Golf Course Doncaster and Yarra River at Heidelberg. The 'at property' analysis for this event is shown in Table 5-14.

Table 5-14 Event Details, 31 May 2013

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
1a	10 Louisa Place Templestowe	120 minutes	18 Year ARI	6 Year ARI	6 Year ARI	11 Year ARI

5.4.12 5 November 2015

This rainfall event was recorded at four gauges, Yarra River at Warrandyte, Zerbes Reserve East Doncaster, Eastern Golf Course Doncaster and Yarra River at Heidelberg. The 'at property' analysis for this event is shown in Table 5-15.

Table 5-15 Event Details, 5 November 2015

Submitter ID	Submitter Address	Critical Storm Duration at Address	Yarra River at Warrandyte	Zerbes Reserve East Doncaster	Eastern Golf Course Doncaster	Yarra River at Heidelberg
1a	10 Louisa Place Templestowe	120 minutes	< 1 Year ARI	< 1 Year ARI	< 1 Year ARI	< 1 Year ARI

6 Full Review

The section that follows responds to submissions Council requested that Cardno undertake a full review of. For these submissions, Cardno assessed the claims in the submissions and responded to any hydraulic / hydrological queries.

6.1 10 Louisa Place, Templestowe (1A)

The submitter at 10 Louisa Place, Templestowe objects to the planning layer applied (SBO2) due to historical flooding and observations of flood behaviour. The submitters provided a detailed description of the flood behaviour and observations for flood events from 1984, 1999, 2003, 2005, 2010, 2011, 2013 and 2015.

6.1.1 Key areas of dispute and findings

Summary of dispute: The submitter has noted historic events as evidence of no flooding at the property.

The events supplied were assessed using rainfall gauges located around the catchments. For 10 Louisa Place the nearest gauge was at Zerbes Reserve East Doncaster. Rainfall varies spatially and temporally so this is only an indicator of the likely event severity only. The critical storm event duration for peak flooding at 10 Louisa Place is predicted to be the 120 minute storm event. Events that the submitter mentioned are outlined below.

Events Mentioned	Estimated 120 min ARI at site	Comment
18 th September 1984	~1 year ARI	
26 th December 1999	~1 year ARI	Other gauges recorded a 120 minute events of a 40 year ARI. This event was expected to be well below a 100 year ARI event.
3 rd December 2003	15 year ARI	
3 rd February 2005	1 – 2 year ARI	
6 th March 2011	1 year ARI	
4 th February 2011	3 year ARI	
10 th November 2011	2 year ARI	
25 th December 2011	2 year ARI	
31 st May 2013	6 year ARI	
5 th November 2015	< 1 year ARI	

Each of these events have been assessed using historic rainfall records in Section 5. Please see this section for additional details. Historically it is evident that it is unlikely that there have been any severe events approaching the 100 year ARI event at the property since 1984. The SBO is based on an estimate of the 100 year ARI event and it is unlikely that this has been observed historically at 10 Louisa Place at this stage.

Summary of dispute: The submitter has objected to the SBO2 on the basis that the observed historic flow paths are inconsistent with the current modelling outcomes due to local influences.

The SBO is based on a 3m x 3m grid topography developed from 2008 LiDAR information. In addition to the topography, overland flow paths are represented with hydraulic roughness parameters which influence the runoff rates from the surface. This roughness parameter is also specified at a 3m x 3m spacing and an appropriate value is chosen to represent vegetation, gardens, retaining walls, fences, buildings etc within the model area.

Roughness is used because there is no way the full detail of the ground surface could be included within a hydraulic model covering the full Council study area due to the complexity and the changing nature of the surface. Council prefer to model the catchment this way as influencing factors on-ground often change over time as land is repurposed and developed. The intention of Council is to understand the underlying topography flow directions and flood risks they need to manage going forwards. Localised barriers to flow such as retaining walls, fences, raised garden beds etc are not treated as barriers as they can change over

time. This is a well understood approach of hydraulic modelling and why the model mainly focuses on large flood events such as the 100 year ARI event.

The outcome of this is that the hydraulic model results cannot include the localised information provided and the recommendation of applying the SBO will remain. However, following this review it appears that the depths across 10 Louisa Place are less than 100 mm and as a result it is recommended that the SBO be changed from SBO2 to SBO3.

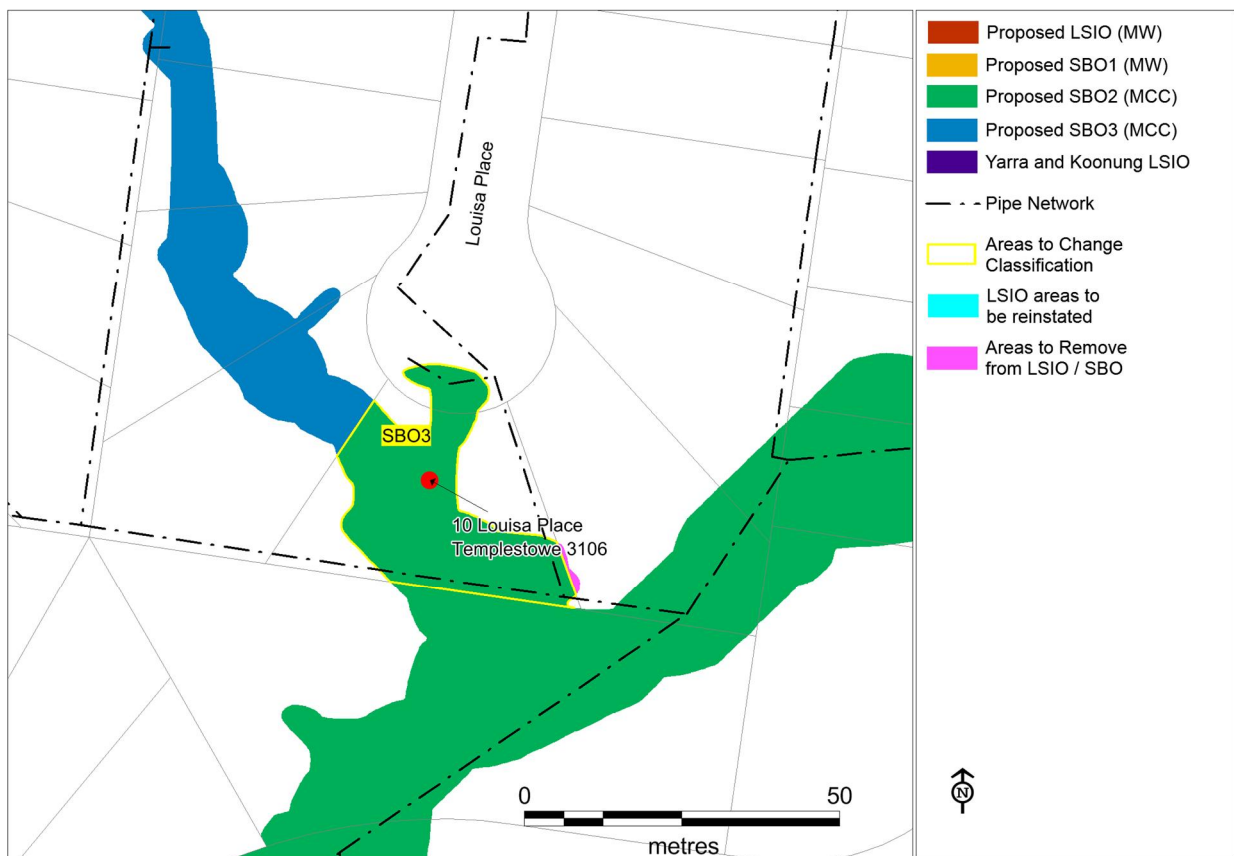
6.1.2 Conclusions and Recommendations

Following the review of 10 Louisa Place it is noted that the historical observations are unlikely to have included an event as large as a 100 year ARI event with a critical duration of around 120 minutes.

Although the discussion of the flooding flow paths and historical information may be accurate, at this stage the hydraulic modelling is based on industry best practice and it is not appropriate to include ground surface details that may change over time.

It is recommended that the SBO remains on 10 Louisa Place, however upon review this SBO is recommended to be changed from SBO2 to SBO3 as predicted depths are all less than 100 mm.

Proposed Resolution for Property



Outcome: Change classification on property from SBO2 to SBO3.

6.2 2/62 Rathmullen Quadrant, Doncaster (130A)

Number 62 Rathmullen Quadrant includes a section covered by SBO3 as the modelling shows the property to be affected by flooding that is shallow in nature. Unit 2 has provided comment regarding the SBO.

6.2.1 Key areas of dispute and findings

The detailed letter outlines the key areas of dispute and include:

ID	Comment	Response
1	Eastern Golf Course (EGC) boundary set as a hard boundary in model causing flows to backup.	The hydraulic model includes the Predevelopment EGC section and surface flows continue across the boundary uninhibited. The flooding within the EGC has not been shown for the SBO and that is why it is shown as a 'straight boundary'.
2	The modelling does not consider the changes Mirvac are making to the EGC site.	The Mirvac site has been assessed hydraulically so that it does not alter flood conditions off site independently to this analysis. As such retrospective changes introduced by Mirvac are not going to be introduced to the hydraulic model and SBO process.
3	Mirvac site not included in this corner, including a manhole/pit and drainage line. Drainage line flows south.	The modelling has been based on the LiDAR in 2008. The flooding occurring and impacting the property is not from the EGC area but rather from overland flows from Bordeaux Street and the drainage line going past the rear of 62 Rathmullen Quadrant. Flows continue south as mentioned in the comment they are just not shown for the EGC area.
4	Request for SBO reassessment once Mirvac Stage 3 EGC is completed as the submitter believes this will change flood behaviour at the site.	Flooding at this property is not impacted by Mirvac EGC, it is sourced from the upstream catchment including overland flows from Bordeaux Street and the drainage line at the rear of properties 52 to 62 Rathmullen Quadrant. Mirvac have had to prove that their changes onsite do not impact off site flooding behaviour. As such there is likely to be minimal impact on flooding offsite post-construction.
5	Why is Bordeaux Street flood affected while Lawford Street is not?	Lawford Street has a larger piped network to convey flood flows including a 525mm diameter system as well as a 300mm diameter system. It is also not the lowest drainage path in the immediate area and some flows end up south of this location (i.e. in Ildinia Ct). Bordeaux Street has a smaller pipe network and has a larger catchment area flowing from the NE to the SW at the EGC site. There is a notable low point on Bordeaux Road immediately north of the property which overflows south in the 100 year ARI event.
6	No depths shown for flooding on the SBO.	The SBO is an overlay based on flood depths for planning. The SBO was created by taking the raw model results and filtering the runoff using depth and risk parameters [defined in Report – Development of the Special Building Overlay (Cardno, 2015)]. The peak depth on Bordeaux Street opposite number 44 is 300 mm which causes overland flows through this location to the rear of 62 Rathmullen Quadrant and to EGC. On the property the peak depth for the 100 year ARI is 100 mm. This places the area under the SBO3 criteria.

ID	Comment	Response
7	Units 2 and 3 of 62 Rathmuller Quadrant are raised by approximately 1m above existing surface therefore are not flood impacted.	The SBO process includes any area where flooding should be considered for future development. It is noted that the buildings are likely to be flood free due to their elevated floor level, however the site has predicted inundation of 100 mm during the 100 year ARI event.
8	Discussion of the problems that cause the flooding and mitigation options.	The modelling has considered existing conditions only. It is acknowledged that potential mitigation options exist but future works are not incorporated into the SBO development process.
9	Sewerage overflows and flow direction comments.	It is acknowledged that an overflow from the SW of the property would flow SW into the EGC drain. This is what the hydraulic model predicts would happen and matches the existing topography. However flooding occurs at the property from upstream locations including overland flows from Bordeaux Street and the drainage line along the rear of properties 52 to 62 Rathmullen Quadrant.
10	Comment regarding insurance premium impacts	Council to respond.
11	Question with regards to Section 32 documentation with relation to the SBO.	Council to respond.
Add 1	What basis data have you used for your analysis?	Cardno have used 2008 LiDAR surface information at a 3m x 3m grid cell resolution. Drainage infrastructure has been derived based on Melbourne Water and Council asset data. Cadastre information was based on Council layers as supplied but this does not impact the hydraulic model.
Add 2	Question relating to the vertical accuracy of the data.	As mentioned the 2008 LiDAR captured the ground surface. The vertical and horizontal accuracies of this data are normally around +/- 10 cm vertical and horizontal accuracy is typically better than this. This is well within current best practice LiDAR accuracies. All data has been captured recently and no 1970 data has been used.
Add 3	Question regarding topography changes in a historic context. Also a comment regarding the importance of flood depth.	The data was captured in 2008 and reflects the surface at this point of time. The depths of flooding are important and reach 10 cm on the property, hence the less restricted SBO3 being applied.
Add 4	Where did the vertical orientation for the house lots come from?	All topography is based on the 2008 LiDAR surface data. No specific site survey has been included in the topography generation. The LiDAR is typically at +/- 10 cm for vertical accuracy.
Add 5	Question regarding the modelling of houses as blockages in the floodplain.	The hydraulic model uses the LiDAR surface to develop the ground surface free of buildings, fences, trees and other built up features. The surface then has a roughness parameter introduced which represents aspects such as blockage to flow. Buildings have a high roughness to represent blockages mentioned in the example. It is important to understand that the modelling cannot capture the specific details of every building, fence, structure type, vegetation etc as these would be too costly to identify and can change over time. The modelled applied to this catchment is in line with industry best practice.

ID	Comment	Response
Add 6	Question regarding barriers to flow in the property such as fences etc.	As mentioned the model uses a roughness parameter to represent the combined influence of fences, garden arrangements, buildings etc within the hydraulic model. It would be impossible to directly account for every fence type, garden orientation and ongoing catchment changes. This is industry best practice and there are many studies and papers validating this method.
Add 7	Omission of the EGC from the analysis.	The EGC Mirvac development is not omitted from the model it has just been excluded from the published SBO as the site is being assessed in an ongoing way due to the proposed development. All flooding concerns that have been raised have been rigorously assessed in a very detailed manner for the development.

6.2.2 Conclusions and Recommendations

Based on the assessment of the flood modelling results and the resulting SBO3 it is recommended that no change is made to the current SBO3 layer at this location.

Proposed Resolution for Property

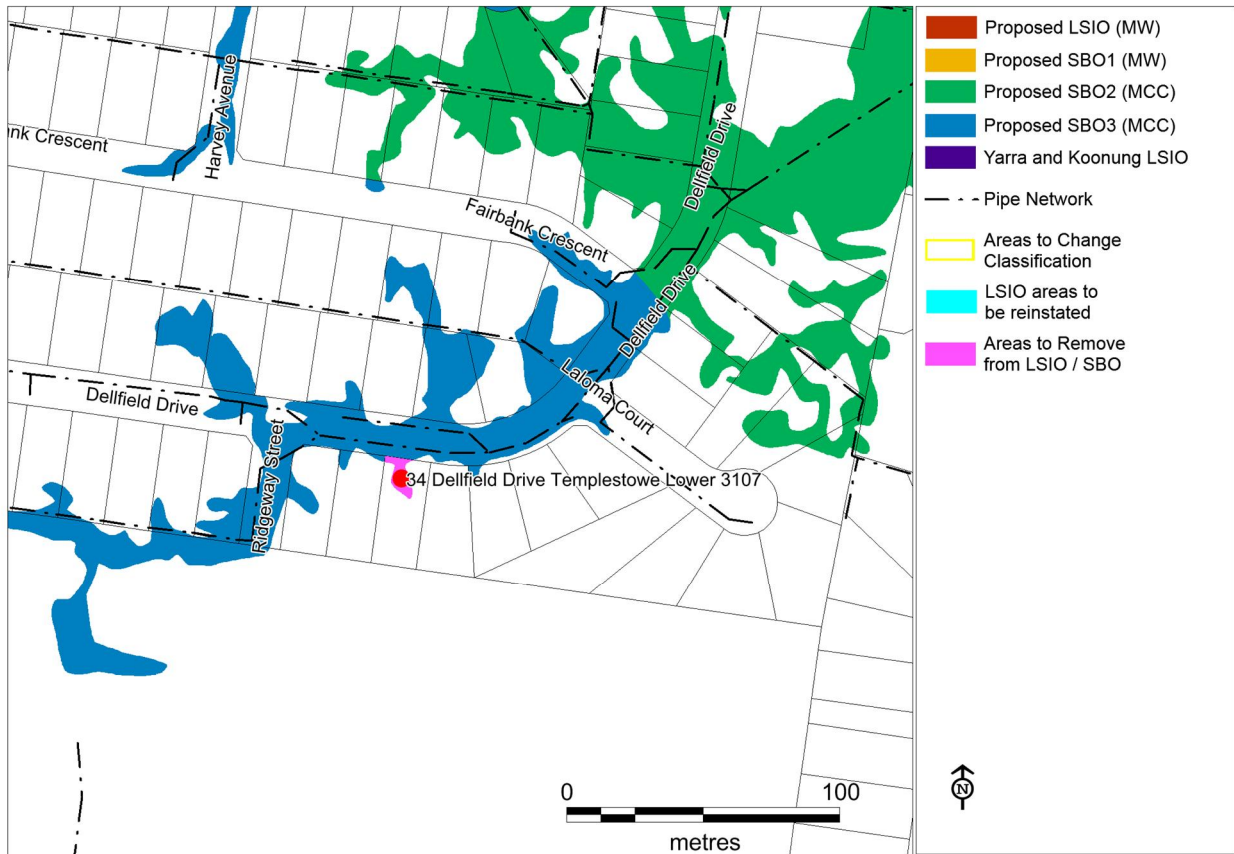


Outcome: No Change Proposed

6.3 34 Dellfield Drive, Doncaster (216)

The submitter disputed the SBO3 on the property. The source of the water had been a path from the rear of the property, however it is shallow and thought to be misrepresentative. It is recommended that this area is removed from SBO3.

Proposed Resolution for Property



Outcome: Remove SBO3 from 34 Dellfield Drive.

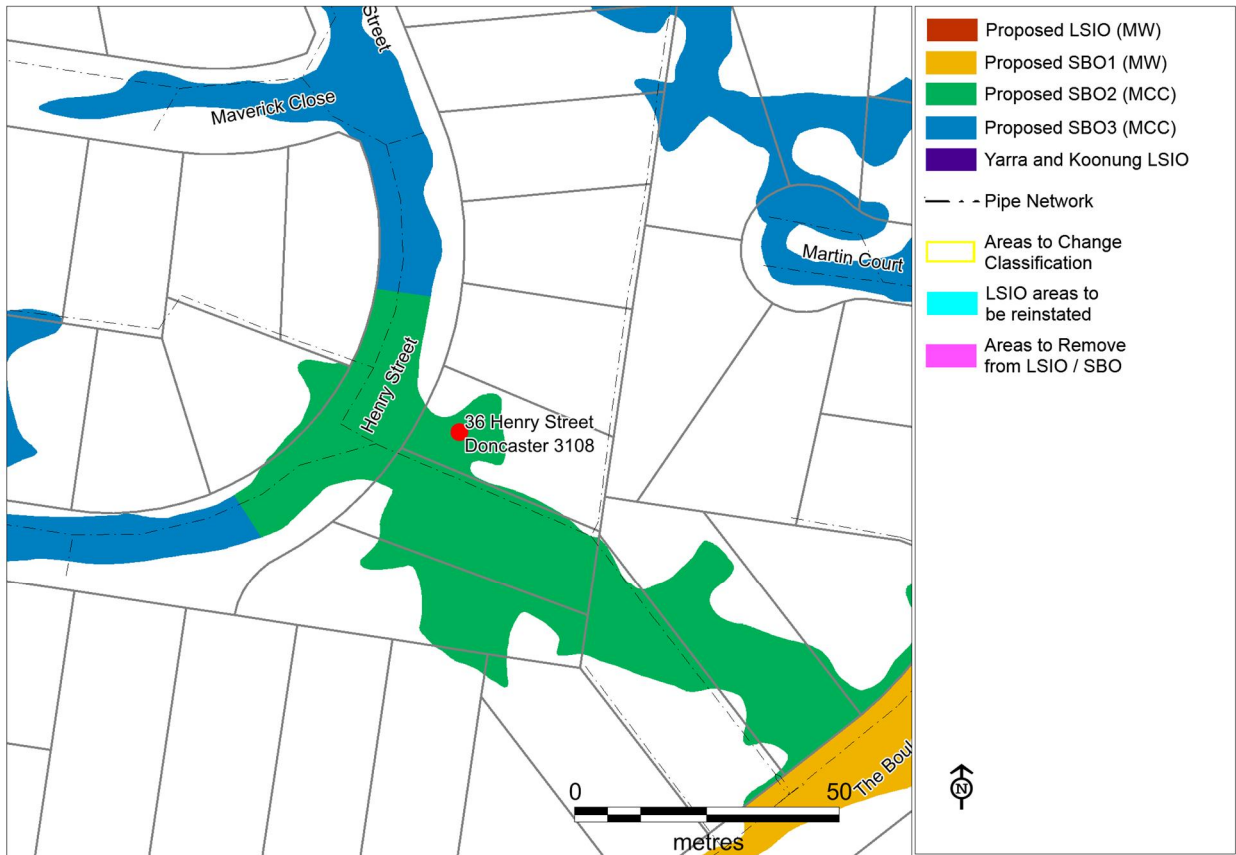
6.4 36 Henry Street, Doncaster (219)

Submitter 219 disputes the SBO2 on the property.

Submitters Concerns	Response
There have been 3 events with an ARI greater than 100 year as follows: 1991, 2002 & 2010. None of these flooded the property.	Both 2002 and 2010 had an ARI of less than 5 years for the property (which is susceptible to flooding associated with the 15 minute storm duration). The 1991 event was likely the largest event that affected this property in recent records. The ARI of this event is highly variable spatially and a conclusive result for this property cannot be found. It is expected that it was between the 1 and 100 year ARI. Refer Section 5.4.2.
The 2010 event caused severe flooding to Ruffey Lake but no damage to the property.	Ruffey Lake is subject to flooding with a longer storm duration (i.e. greater than 15 minute storm). This property is subject to flashier short storms therefore flooding at Ruffey Lake would not necessarily correspond to flooding of the property.
Water would not back up in the property.	Agreed – the source of the water is Henry Street. Water ponds in Henry Street and when the drainage capacity is overwhelmed it travels through this property and number 36 toward The Boulevard.
The path of least resistance would be the 3.5 m gap between 34 & 36 Henry Street (directly over the drainage pipe easement).	This is also shown as flooded in the SBO layer.
The drainage was so efficient that there was no flooding in the 2010 event.	The drainage can cater for lower flows (like the 2010 event which had an ARI of less than 5 years). However the drainage is not sufficient to remove flooding associated with the large events such as 100 year ARI.

It is recommended that the SBO be retained in its current form.

Proposed Resolution for Property



Outcome: No Change Proposed

6.5 23 Murndal Drive, Donvale (265)

The submitter is objecting to the SBO2 being applied to the property. The objection includes discussion of historical flood events and likely flow paths due to topography and local site conditions.

6.5.1 Key areas of dispute and findings

Summary of dispute: The submitter has noted historic events as evidence of no flooding at the site including 3rd December 2003 and 3rd February 2011.

The events supplied were for the 3rd December 2003 and 4th February 2011 rainfall events. For the catchment flood response the critical event from the hydraulic modelling was the 120 minute design duration storm event. These two rainfall events have been assessed in regards to the expected recurrence interval of the 2003 and 2011 events and found that at the nearest gauge location (Zerbes Reservoir East Doncaster) the recorded ARI was approximately a 15 year ARI and 3 year ARI respectively. These two events were much smaller in magnitude than the estimated 100 year ARI event.

As no rainfall event approaching the 100 year ARI has been experienced in recent history it is anticipated that there would not be any events observed where overland flows would be similar to the SBO. The purpose of this model was to anticipate the impacts of such an extreme event which has informed the current SBO recommendations.

Summary of dispute: The submitter has noted previous pipe size of 600 mm through the property but states the pipe is actually a 750 mm pipe. Similarly the submitter notes that the downstream pipe is likely to be a 900 mm diameter pipe.

The hydraulic model includes a 750 mm pipe through 23 Murndal Drive. This then connects to a downstream 825 mm diameter pipe. Council has confirmed these pipe sizes. The model includes appropriate pit sizes and inlet capacities that match the on ground works.

Summary of dispute: The submitter notes that depths would have to exceed 1.2 m within Murndal Drive for overland flooding to occur through their property and they note this is unlikely to occur.

The hydraulic model indicates that for a 120 minute duration 100 year ARI flood event the peak depths on Murndal Drive would be in excess of 1.5 m at the deepest location. As modelled this would overtop the frontage to 23 Murndal Drive and flow overland through the property as shown.

Summary of dispute: The submitter has objected to the SBO on the basis that no historical flooding has occurred and has noted local detail as evidence as to the inaccuracy of the model results.

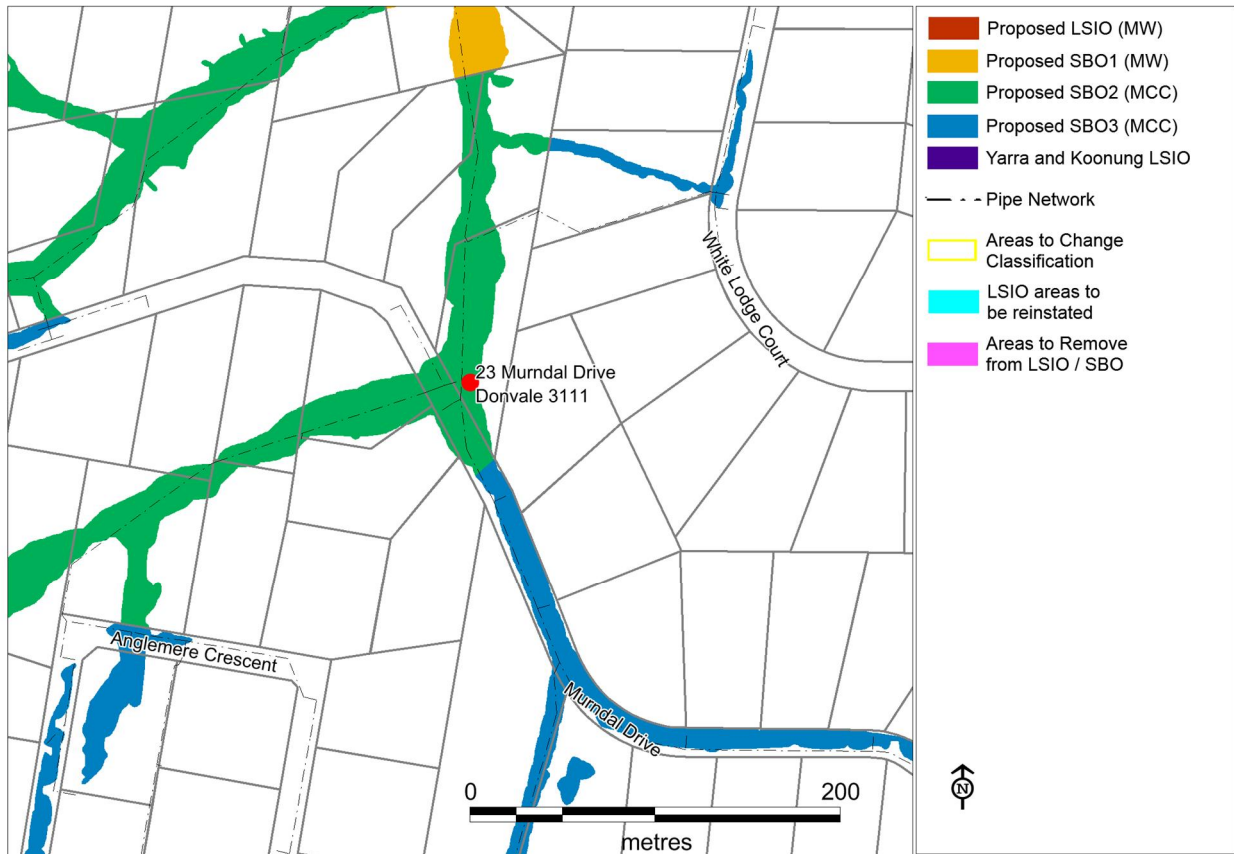
The SBO is based on a 3m x 3m grid topography developed from 2008 LiDAR information. In addition to the topography, overland flow paths are represented with hydraulic roughness parameters which influence the runoff rates from the surface. This roughness parameter is also specified at a 3m x 3m spacing and an appropriate value is chosen to represent vegetation, gardens, retaining walls, fences, buildings etc within the model area.

Roughness is used because there is no way the full detail of the ground surface could be included within a hydraulic model covering the full Council study area due to the complexity and the changing nature of the surface. Council prefer to model the catchment this way as influencing factors on-ground often change over time as land is repurposed and developed. The intention of Council is to understand the underlying topography flow directions and flood risks they need to manage going forwards. Localised barriers to flow such as retaining walls, fences, raised garden beds etc are not treated as barriers as they can change over time. This is a well understood approach of hydraulic modelling and why the model mainly focuses on large flood events such as the 100 year ARI event.

6.5.2 Conclusions and Recommendations

As a result of the review of the location and model results it is recommended that the SBO2 remains in its current form. It is unlikely a 100 year ARI event has been experienced recently for the storm duration that is critical to this property.

Proposed Resolution for Property



Outcome: No Change Proposed

6.6 5 Amberwood Court, Templestowe (284)

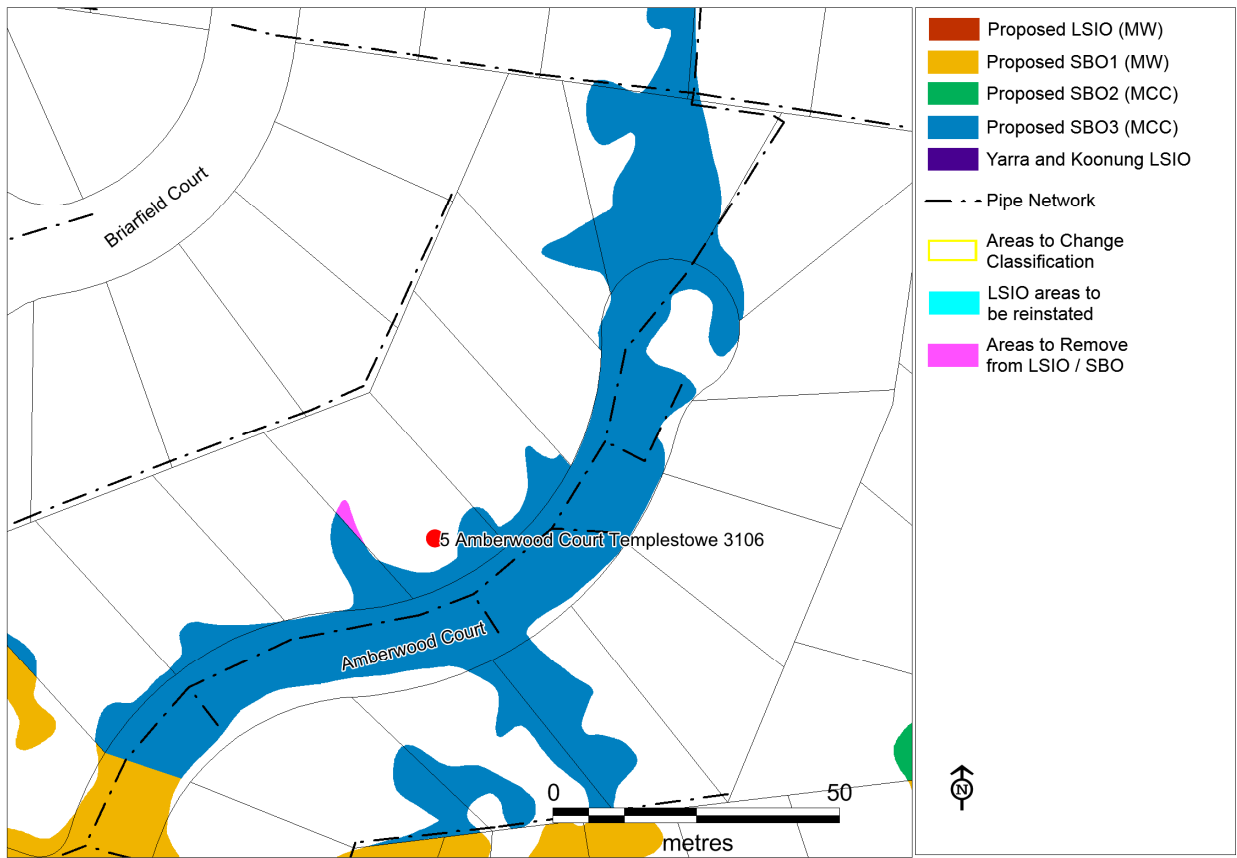
5 Amberwood Court is located in the Ruffey Creek catchment. The property frontage is included in the proposed SBO3.

The submitter discusses two possible mechanisms of flooding as shown below.

Flood Source and Submitter Objections	Response
If source was 2, 3 & 4 Briarfield Court and 21 & 19 Lawanna Drive: > There would be buildings, fences and walls obstructing the flow; > It would be expected that flooding would be on these source properties; > If the source of flooding was from the roads, it would be expected that flood depth would have to be greater than 265 mm which means the area would not be defined as SBO3 it would be SBO2.	The source of flooding is the overland flows and underground drain situated at the rear of 5 Amberwood Court (shown above). Flooding is not shown on these properties to the rear as it is not deep enough to be preserved in the SBO3 after filtering. Buildings, fences and walls have not individually been explicitly considered as blockages to flow in the modelling. This approach is consistent with best practice and is Council's preferred method. Flow over the surface is represented by a roughness which manages barriers to flow such as fences, garden beds, retaining walls etc.
An alternate source mentioned was from Amberwood Court	This is not the source of flooding for the property.

The SBO3 on the property is present as there is shallow flooding. This flooding has passed from the rear of the property to the front. It is recommended that the SBO3 remains, however the SBO3 section higher up on the site can be removed.

Proposed Resolution for Property



Outcome: No Change Proposed

6.7 129 Gosford Crescent, Park Orchards (329)

The submitter has queried the use of a single SBO2 for the two flow paths that are active within their property boundary at 129 Gosford Crescent. They have requested that the SBO be checked to determine if the full extent of flooding lies under SBO2 or SBO3. For reference the east-west flow path classification is not in dispute, rather the north-south flow path is under review.

6.7.1 Key area of dispute and findings

Summary of dispute: The full flood area has been defined as SBO2 and the submitter is querying if this should be a mix of SBO2 and SBO3 for the two different flow paths through the site.

129 Gosford Crescent has two flow paths covering the property. The east-west flow path is the larger of the two with peak flood depths exceeding 1 m within the property. This area must remain under the SBO2 classification and is not in dispute.

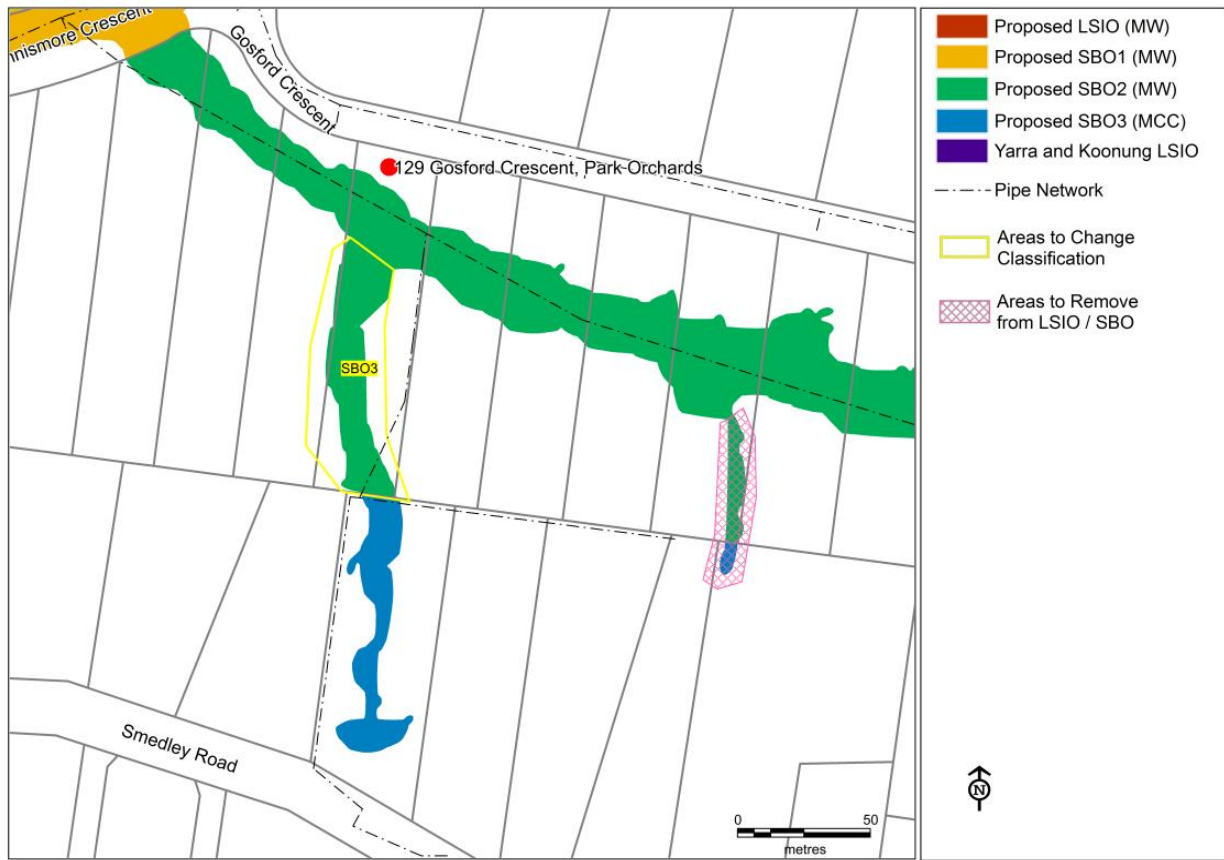
The flow path from south to north through the site has less surface depth than the northern flow path. Whilst a small portion of this flow path has depths greater than 100 mm for the 100 year ARI event, overall it is less than this. Consequently, it is recommended that this is changed from SBO2 to SBO3.

Furthermore, there is a small additional flow path to the east at 133-115 Gosford Crescent. This flow path has been automatically connected to the major flow path during the processing stages of this project even though it is very a small localised ponded area. If the join had not happened, the ponded areas would have been less than 500m² and therefore removed from the flood extent.

6.7.2 Conclusions and Recommendations

Due to the majority of depths being less than 100 mm for the north – south flow path it is recommended that the SBO2 should change to SBO3 for the north – south flow path. Furthermore, it is recommended that the smaller flow path to the east at 113-115 Gosford Crescent be removed from the SBO.

Proposed Resolution for Property



Outcome: Change flow path from SBO2 to SBO3 and remove small eastern flow path from the SBO

6.8 92 Canopus Drive, Doncaster East (330)

The resident has objected to an SBO3 being applied to 92 Canopus Drive. The flooding across the property is minor at depths less than 60 mm.

6.8.1 Key area of dispute and findings

Summary of dispute: The submitter has objected to an SBO3 being applied to the property on the grounds that there has been no experience of any flooding historically and due to the local topography.

A review of the area indicates that the likely cause of the flooding breakout is due to the presence of both a speed hump within the road and the thinning of the LiDAR where a large tree is located immediately in front of 92 Canopus Drive. This has resulted in floodwater within the road reserve being directed into the property.

The recommendation is to remove this property from the SBO3 layer.

6.8.2 Conclusions and Recommendations

As a result of the review of 92 Canopus Drive it is recommended that the property be removed from the SBO3 layer.

Proposed Resolution for Property



Outcome: Remove SBO3 from Property

6.9 Applewood Retirement Village, Doncaster (483)

This assessment is in relation to claims 118, 124, 483 and 483A relating to the proposed SBO for Applewood Retirement Village. A number of claims have been made for the development adjacent to Tram Road in Doncaster. The development forms part of the Koroit Creek model developed by Cardno.

6.9.1 Further information request

The main request for information was from the Applewood Residents Association, their main request is as below:

ID	Information Requested by Resident	Response
483A	Request to review the model	The SBO is being peer reviewed by an independent reviewer for Council. The topography reflects the LiDAR captured in 2008 as this was used within the modelling process.

6.9.2 Key areas of dispute and findings

The key areas of the resident's dispute are shown in this section.

6.9.2.1 *Dispute Item 1*

Summary of dispute: There appears to be ponding occurring at the downstream end of the catchment at the Freeway. VicRoads advised there are 2 x 1,800 mm diameter culverts at this location making this ponding unlikely.

The response has identified that the modelling did not include the existing 2 x 1,800 mm diameter VicRoads culverts at this location. The hydraulic model used information from Melbourne Water and Council only. As these pipes are large, the majority of the area defined as SBO2 is recommended to be removed at the downstream end of the pipe network.

6.9.2.2 *Dispute Item 2*

Summary of dispute: The private drainage network developed as part of the Applewood Retirement Village construction has not been included within the hydraulic model.

Hydraulic modelling only included Council and Melbourne Water assets as private drainage networks lie outside the control and authority of these organisations. The private drainage network will not be included within the hydraulic model. Cardno recommend that if Council approve the SBO2 could be lifted from the Applewood Retirement Village as shown in the recommendation. This change would be reflective of the local drainage network, however this is at Council's discretion.

6.9.2.3 *Dispute Item 3*

Summary of dispute: Since the hydraulic modelling has been completed the site topography has changed.

The hydraulic modelling was completed with the best available LiDAR information at the time of the flood study. The LiDAR was captured in 2008 and retrospective changes are not going to be introduced. Where appropriate, site inspections by Council can be arranged to identify any changes in the SBO that may be relevant. The current recommendation is that the SBO be removed as the topography changes due to the ongoing topography introduce uncertainty to the hydraulic model results. Removal of the SBO as shown in the figure is subject to Council approval.

6.9.2.4 *Dispute Item 4*

Summary of dispute: Applewood main drain (1050 mm, 1350 mm and 1650 mm pipes) and inlet pits have not been appropriately represented within the hydraulic model.

The hydraulic model reflects the LiDAR and pipe network at the time of modelling. Checks of the topography indicate that the drainage system through the development is included but not all of the modified ground surfaces are present (as the development has been ongoing). As a result the modelling may not fully reflect

the current ground surface, but for the purpose of setting the SBO, it is appropriate. The model cannot be continually revised (to remain current) otherwise the SBO process cannot be completed.

The main drainage pits have been adequately included within the model for the 1050 mm, 1350 mm and 1650 mm pipes through the development. As mentioned previously the localised drainage is not modelled as this is a private system. At the downstream end of the model the VicRoads 2 x 1800 mm diameter pipes are not included which does increase the flood extent and depths in this area.

6.9.2.5 Dispute Item 5

Summary of dispute: Localised flooding is indicated at 15 Grand Boulevard resulting in an SBO being applied and the area is less than 200 m² and not connected to a main flow path.

This area was included in the SBO as the underlying topography reflects the 2008 LiDAR. However, as per the SBO development this area should be excluded from the SBO as it forms an isolated ponding area:

- > It has an area of less than 500 m²
- > It is fully disconnected from the main flood extent
- > Situated away from the main underground drainage network.

6.9.3 Conclusions and Recommendations

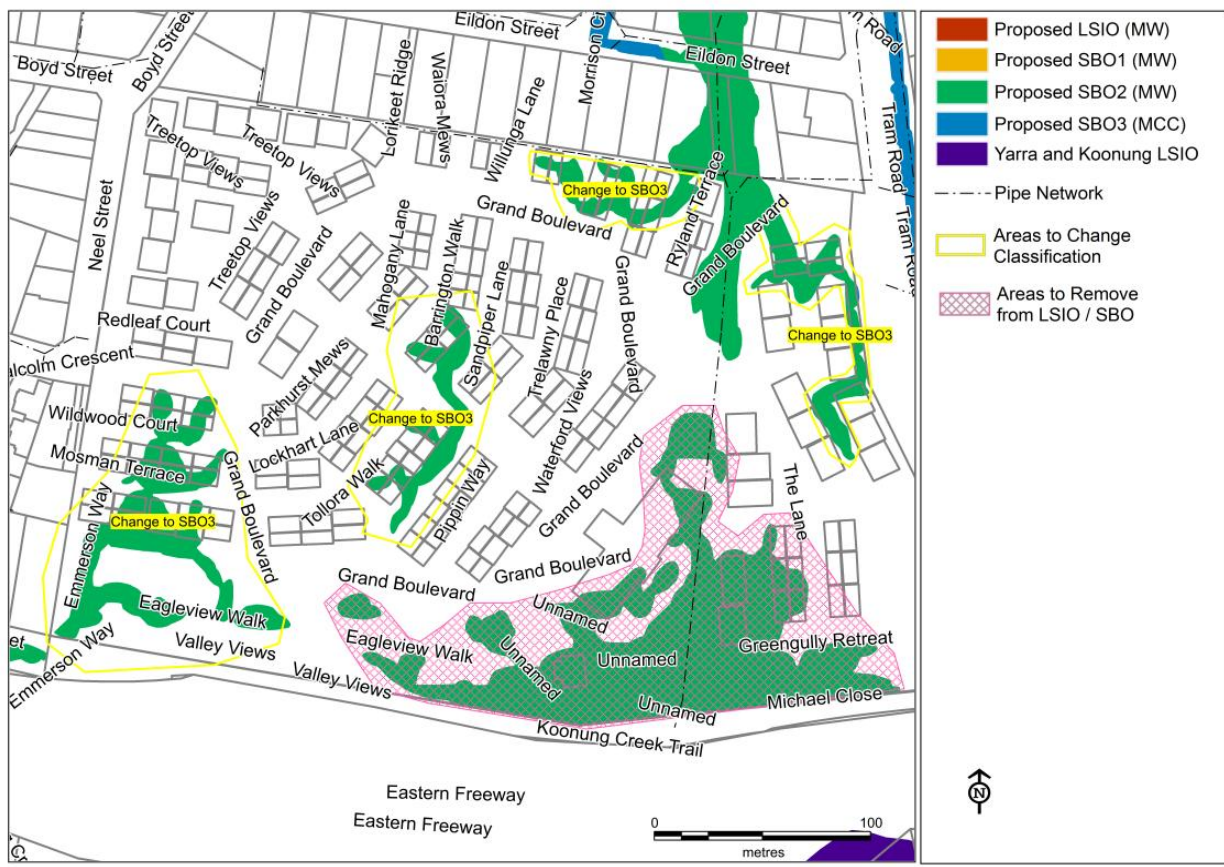
With regards to submission 124, this area falls under the criteria of an isolated island within the flood extent and as such it is recommended that it is removed from the SBO.

The following queries were submitted:

- > Query 483 highlights that there are missing culverts at the downstream end of the main drain through the Applewood Retirement Village.
- > Queries 118, 483 and 483A stated that the local drainage network was not included within the hydraulic model.
- > Queries 118, 124, 483 and 483A all reference that the topography of the site has changed since hydraulic modelling has been completed and as a result the flood behaviour may change.

As a result of these three broad queries it is recommended that the SBO2 be adjusted as per the figure below. Changes of areas of SBO2 to SBO3 are also recommended as per the figure below. These changes reflect the knowledge that the hydraulic modelling was completed without the 2 x 1,800 mm pipes, no local drainage and when the topography was in mid-development stage.

Proposed Resolution for Property



Outcome: Remove SBO2 from area ponding against freeway and change other areas to SBO3

6.10 23 – 31 Tills Drive, Warrandyte (505)

23-31 Tills Drive is affected by the existing Yarra River LSIO on its western boundary. Further to this, modelling has indicated that there is an additional LSIO flow path going through the property caused by local catchment flooding. The flood mapping study was undertaken as a collaboration project between the City of Manningham and Melbourne Water. The resident who owns the property disputes the Land Subject to Inundation Overlay (LSIO) extent.

6.10.1 Key areas of dispute and findings

The key areas of the resident's dispute are shown in this section.

6.10.1.1 *Dispute Item 1*

Summary of dispute: Resident observed that there was no water flow threatening the house during a previous rainfall event on the 25th of December 2011.

Pluviograph rainfall data for station 229200B (Yarra River at Forbes Street Warrandyte) was investigated for the rainfall event on the 25th of December 2011 as explained in detail in Section 5 of this report.

It was found that the critical storm duration on this particular property (2 hour) related to a 55 year ARI storm event. This is much less than the 100 year ARI storm event that the LSIO is based on. Therefore, this could explain why the resident did not observe flooding as per the LSIO on this date.

6.10.1.2 *Dispute Item 2*

Summary of dispute: On the previous rainfall event (25th of December 2011), the resident observed flood behaviour that is not exhibited in the presented map. The resident observed flooding on the northern adjacent property as well as on the south side of their own block.

a) Northern Adjacent Property

The LSIO and SBO extents have been developed by filtering the hydraulic modelling results so that it only represents significant flow paths. Filtering of the results included:

- Removing cells where the both the depth was less and 0.05 m and the velocity x depth was less than 0.008 m.m/s; and
- Removing wet and dry island of less than 100 m²

These parameters are in line with the Melbourne Water Technical Specifications on hydraulic modelling.

These filters removed the flooding that was present at the northern adjacent property which the modelling results indicate as having shallow flood depths of approximately 0.04m and low depth x velocities of approximately 0.005 m.m/s.

The steepness of the flow path entering 23-31 Tills Drive results in high velocity x depth values of up to 0.02 m²/s, which are well above the threshold for filtering.

b) South Side of 23-31 Tills Drive

The south side of this property is already covered by the existing Yarra River LSIO which is separate to this study.

6.10.1.3 *Dispute Item 3*

Summary of dispute: The resident observes that Tills Drive is cambered to the uphill side and thus diverts overland flow into the open paddock to the south side of the property.

The roadway to the north of the property indeed has a slight camber to its uphill side. However, there is shallow-point in the road directly to the north of 23-31 Tills Drive. Flood waters build up in this low point and then still over the road directly into the nominated property.

6.10.1.4 *Dispute Item 4*

Summary of dispute: The resident states that the current absorption and runoff characteristics of the ground are unlikely to change as a product of development. In the event that the upslope land was developed, then the resident would expect a review of the LSIO at that point.

The LSIO has been developed based on existing development conditions.

6.10.1.5 *Dispute Item 5*

Summary of dispute: Resident calls into question the suitability of the Digital Terrain Model (DTM) and states that:

- a) The resident assumes that the bin size is relatively large
- b) Typically Raw LiDAR data has a mean error of 0.24 m +/- 0.24 m
- c) LiDAR models are corrected for vegetation and structures

a) Grid Cell Size of DTM

The grid cell size used in hydraulic model was 3 m. This is in line with Melbourne Waters Technical Specifications on Hydraulic Modelling.

b) Error range of raw LiDAR

The LiDAR used as a base of the DTM for this project is accurate to +/- 0.1 m.

c) Vegetation and structure corrections

LiDAR is able to penetrate dense canopy, enabling the capture of bare earth terrain. A review of the LiDAR as well as the DTM in and around this property was conducted. There were no abnormalities found in the data. Furthermore, the data matched well what has been observed at this location using a desktop study.

6.10.1.6 *Dispute Item 6*

Summary of dispute: The resident states that flood modelling consistently overestimates actual observed flow parameters and given the absence of observed data as to the behaviour of the 1 in 100 year flood, there is little or no data calibration of this model.

Due to the absence of monitoring data in this area, the hydraulic model was not able to be calibrated. This is a typical occurrence as flow data is rarely available within study areas.

In these situations, it is best practice to use validation approaches on the hydrological models in order to ensure that the peak flow estimates being produced by the model are accurate. In this case, hydrological flows were validated to the Rational Method by modifying the lag parameter in the model.

A secondary validation on the hydraulic model flows was then undertaken by modifying the coefficient of runoff. This was done to ensure that the flows in the hydraulic model were similar to those obtained from the hydrological model.

6.10.1.7 *Dispute Item 7*

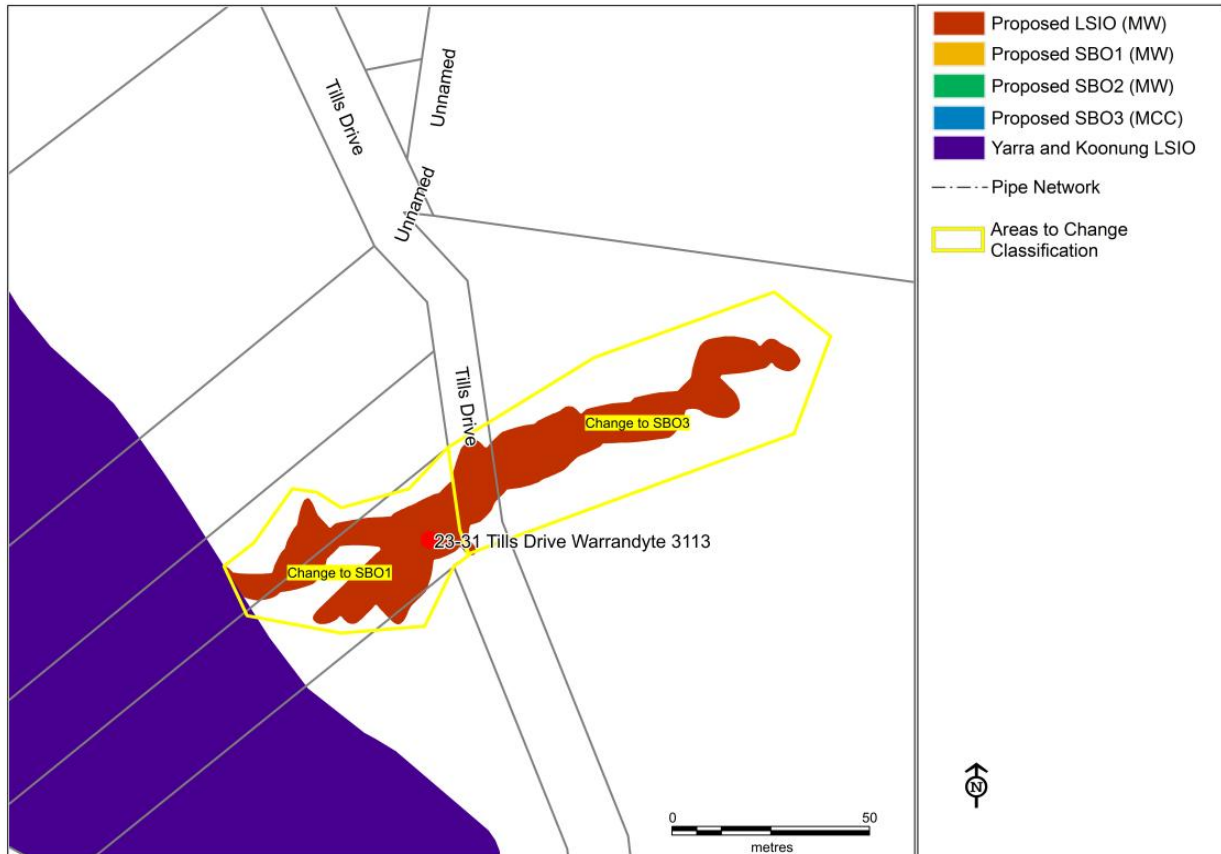
Summary of dispute: Council inquired why the proposed LSIO should not be an SBO instead.

Due to its proximity to the Yarra River, Melbourne Water requested that this area be under its control. It was then designated as an LSIO area as there are no underground assets in this location. However if Council and MW can agree to convert this to Council controlled, it is recommended that it become SBO1.

6.10.2 Conclusion and Recommendation

As outlined above, evidence, methodology and model data has been supplied for all dispute items raised by the resident of 23-31 Tills Drive. The designated flow path through the property has been included due to the high velocity x depth values in this location. This area was originally designated as under Melbourne Water control due to the fact that is already within the existing Yarra River LSIO. Melbourne Water have agreed that this area can be changed to SBO1 as shown in the figure below.

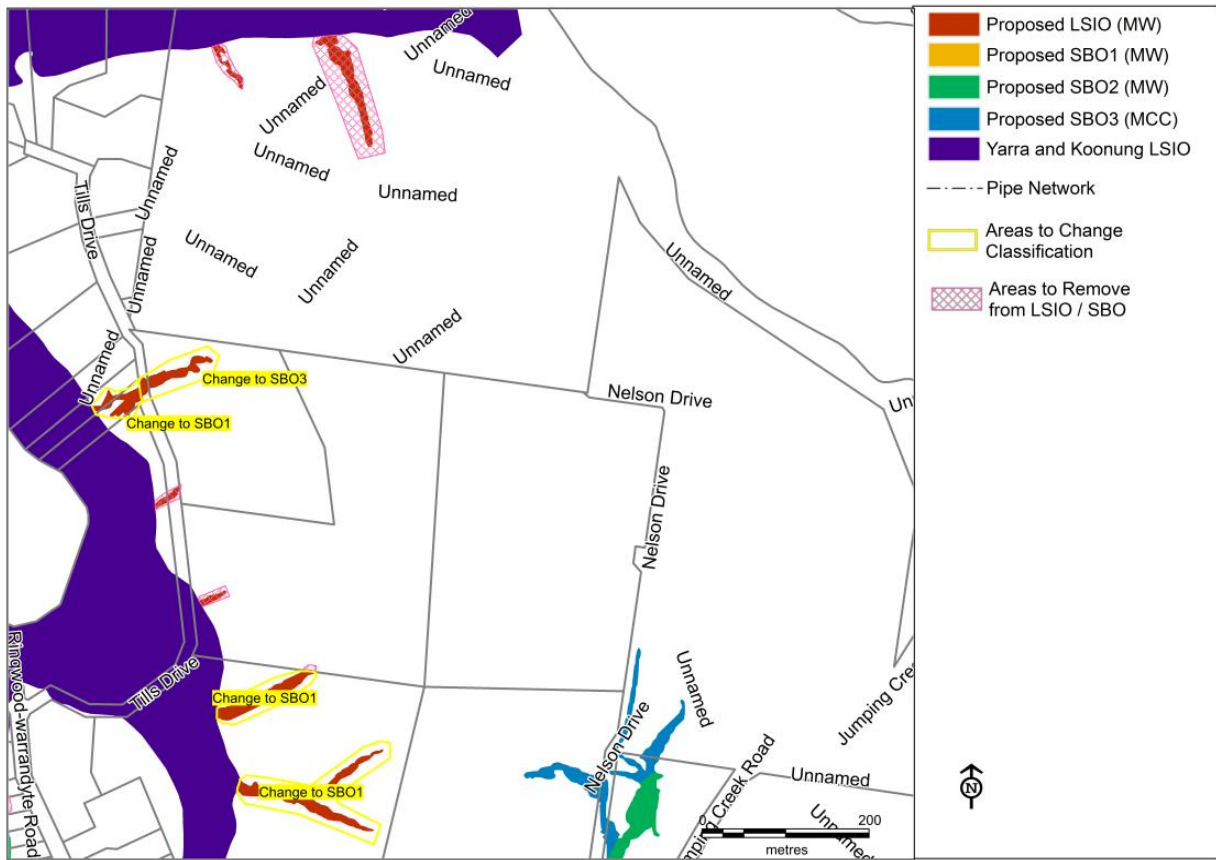
Proposed Resolution for Property



Outcome: Change to SBO1 and SBO3 respectively for south and north of Tills Drive

Further to the advice above, MW have also requested changes to several other similar flood extents within the same area. These are shown in the figure below.

Proposed Resolutions for Area



Outcome: Make changes above as requested by Melbourne Water

6.11 Various Locations (427)

Submission 427 is an overarching submission which relates to a number of locations throughout the municipality.

6.11.1 Submitters Overview of Concerns

The submitter provided opinions on the methodology adopted which are shown with responses in the table below.

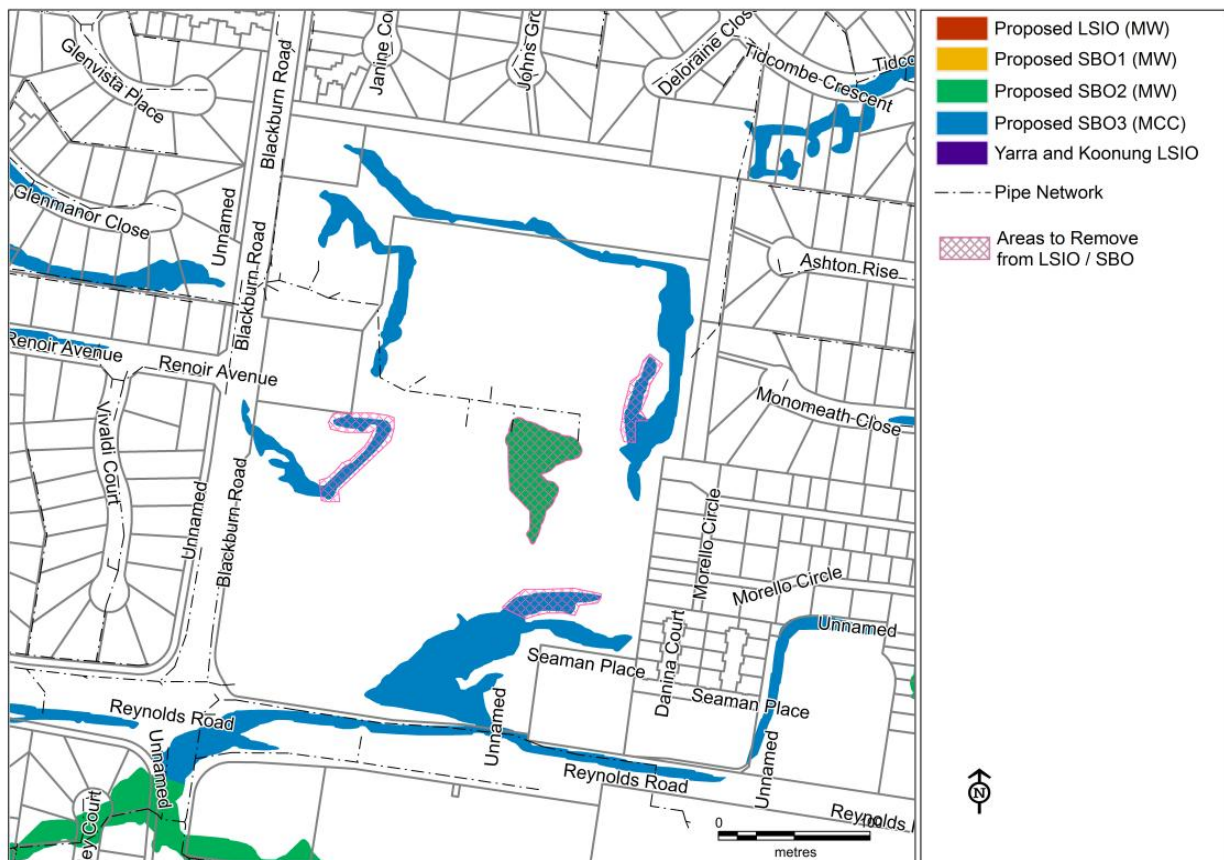
ID	Submitters Comment	Response
A	Use of rainfall on grid in built up urban areas.	<p>Council have chosen rainfall on grid for the catchments they funded. Melbourne Water signed off on rainfall on grid on Bulleen which was jointly funded. A validation exercise was undertaken to demonstrate results were similar to those provided through rainfall to pits. The drawback of rainfall to pits is areas are only shown as flooded if there is a pit in the vicinity (or upstream).</p> <p>The use of direct rainfall in urban areas has been undertaken in Australia on many flood mapping projects over the last 15 years. There have been numerous papers presented at relevant conferences, including on the Bulleen Project specifically. Papers include:</p> <p>Swan, R., Direct Rainfall (2010) - Loss Modelling Approaches, 7th Victorian Floodplain Management Conference</p> <p>Swan, R. (2006), Dealing with Hydrological Uncertainty: A New Modelling Approach, 5th Victorian Floodplain Management Conference</p> <p>Caddis B M, Jempson M A, Ball J E and Syme W J (2008). Incorporating Hydrology into 2D Hydraulic Models – The Direct Rainfall Approach, 9th National Conference on Hydraulics in Water Engineering, Engineers Australia, Darwin, 23-26 September.</p> <p>Clark K M, Ball J E and Babister M K (2008). Can Fixed Grid 2D Hydraulic Models be used as Hydrologic Models?, Water Down Under 2008 Conference, Adelaide</p> <p>Gray S and Ball J, 2009, Coupled One and two dimensional modelling in urban catchments - reducing uncertainty in flood estimation, 32nd Hydrology and Water Resources Symposium Newcastle</p> <p>Rehman H, Zollinger M and Collings G (2003). Hydrological vs Hydraulic Routing – Possibilities with Two-Dimensional Hydraulic Modelling, 28th International Hydrology and Water Resources Symposium, November, Wollongong.</p> <p>Rehman H, Thomson R & Watterson E (2007). Hydrology in Urban Areas – ‘Rainfall on the Grid’ Versus Traditional Methodologies, 47th NSW</p>

		<p>Floodplain Management Authorities Conference, Gunnedah.</p> <p>Swan R & Thomson R (2011). Direct Rainfall – Verifying the Technique Across Two States, 34th IAHR World Congress, 26 June – 1 July, Brisbane, Australia.</p> <p>Syme W J (2008). Flooding in Urban Areas – 2D Modelling Approaches for Buildings & Fences, 9th National Conference on Hydraulics in Water Engineering, Engineers Australia, Darwin, 23-26 September.</p>
B	Filtering of rainfall on grid model results	<p>The filtering used was tested in Bulleen, and it was found that the manual (subjective) filtering Melbourne Water conducted gave similar and results compared with the automated method used.</p> <p>The filtering used is based on the risk profile adopted by Council and is consistent with the approaches and techniques described as part of Project 15 of AR&R</p>
C	Inappropriate application of Melbourne Water Technical Guidelines	<p>Both Bulleen and Ruffey Creek projects were conducted for Melbourne Water and Council. They conformed to the technical specifications. Melbourne Water has accepted these studies. For Mullum Mullum, Andersons and Koonung these projects were funded by Council but Melbourne Water were involved throughout, i.e. they assisted Council in choosing the consultant and assisted in the technical review.</p> <p>Melbourne Water have adopted the results of this study as the basis for updating their flood extents associated with these catchments.</p>
D	Lack of continuity and connectivity of flow paths	<p>Connections are as have been represented based on the topography and underground drainage network (which can sometimes explain a lack of obvious connection). Where filtering of results removed connections these were assessed and re-established if required.</p>
E	Areas included in SBO which are thought to be unsusceptible to flooding	<p>Areas have been mapped using methods that are based on the national guidance document - Australian Rainfall and Runoff. Responses to these specific queries are outlined in the sections below.</p>
F	Areas excluded from the SBO which are thought to be susceptible to flooding	
G	The 31/12/1991 event was 100 year ARI and affected much of the municipality. Information is available and should have been used to validate the models.	<p>This particular event was highly spatially variable, Zerbes Reserve East Doncaster showed a 100 year ARI storm, but all other surrounding gauges showed far less rainfall. Full details are discussed in Section 5.4.2.</p> <p>Validation was completed through the same process as would have been used for comparison to the 1991 flood – anecdotal matching. Council officers who had experienced the flooding and requests for assistance verified the model results against their knowledge of the catchments.</p>

6.11.2 The Pines, Templestowe

Submitters Concerns	Response
The property consists of major roofs and flow paths sit on top of these, in particular Target where there is an SBO2 proposed.	It is recommended that the SBO be removed from the roofs of the buildings
There are flow paths which would not occur as there is an extensive drainage system within the site.	Private drainage infrastructure has not been considered. This is a blanket rule that has been applied across the full municipality. The reasoning for this is Council cannot guarantee that the private drainage infrastructure is appropriately constructed and maintained. The only Council infrastructure on the property is a 375 mm pipe.

Proposed Resolution for Property

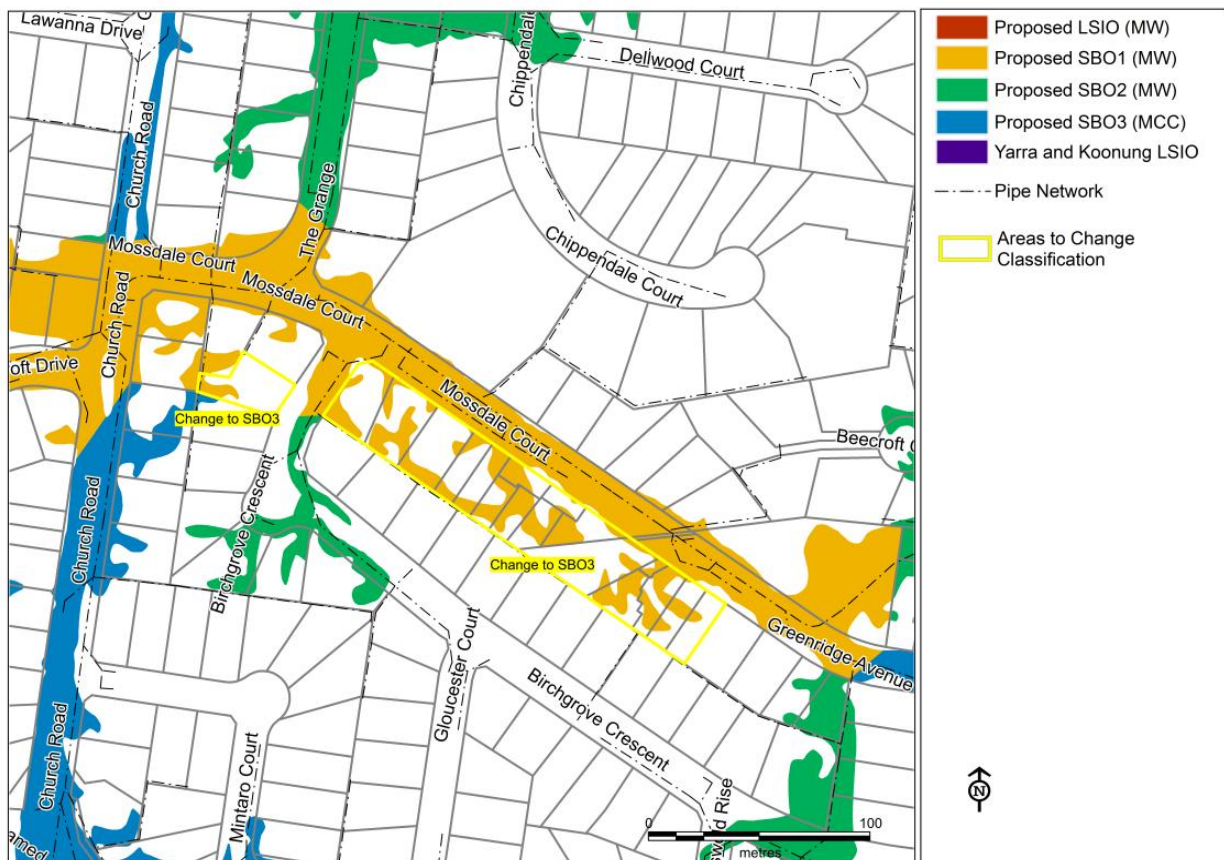


Outcome: Remove SBO from buildings as shown

6.11.3 Mossdale Court, Templestowe

Submitters Concerns	Response
<p>The SBO is appropriate along the main road, however it is not suitable on the steep paths that lead to the road as these are shallow (and fast).</p>	<p>The SBO picks up both deep flow and fast flowing sheet flow. This is entirely appropriate. It should be noted that this model is not rainfall on grid, therefore the source of the water is from flows surcharging from the stormwater network at the rear of properties and flowing toward Mossdale Court. If Melbourne Water and Council can agree, it is recommended that the small flow paths from the properties adjoining Mossdale Court are converted into SBO3 (from SBO1).</p>

Proposed Resolution for Property



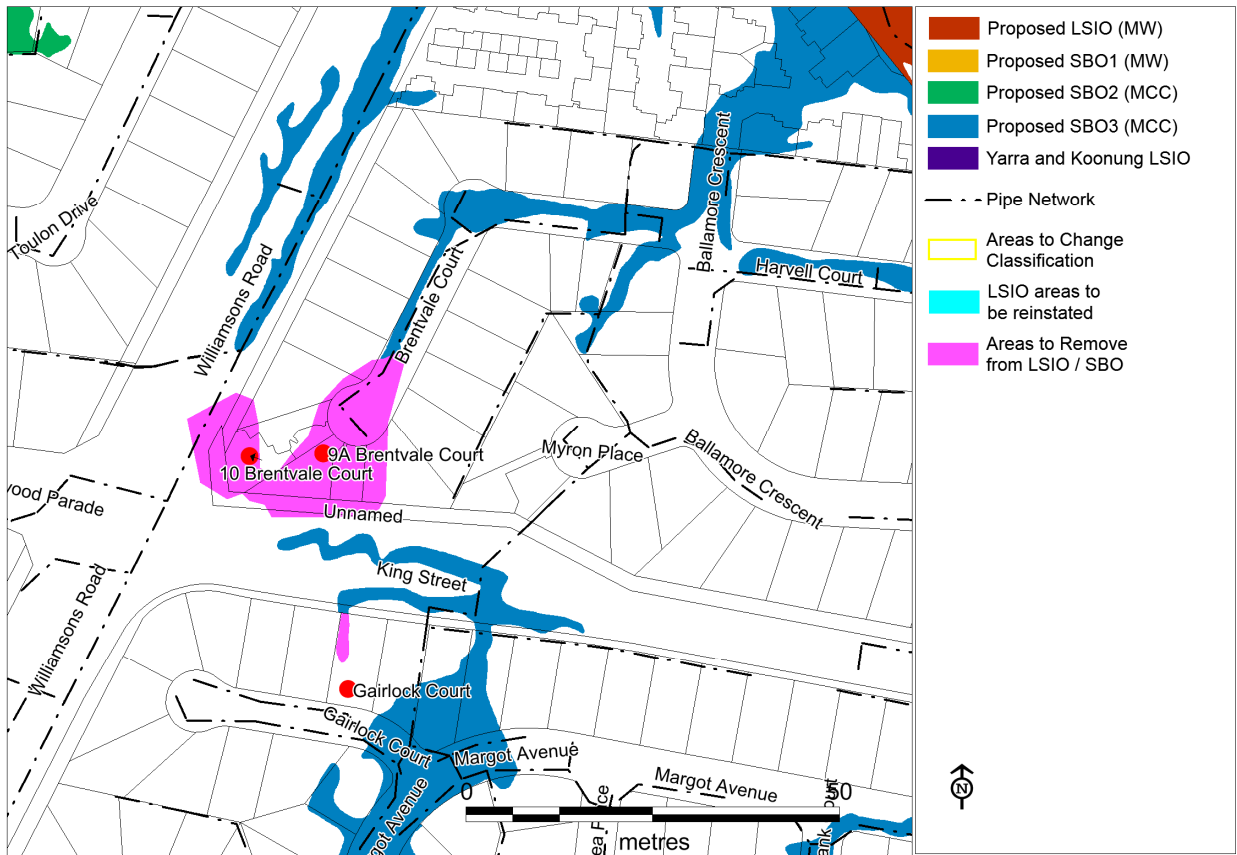
Outcome: Change areas from SBO1 to SBO3

6.11.4 King Street, Doncaster

The submitter discusses 3 specific areas in the Ruffey Creek catchment as shown in the table below.

Submitters Concerns	Response
King Street – there is a zig zag shape in the SBO on the road itself.	This has no implication and does not affect any residents. The zig zag shape is relatively subtle and generally shows flows in the road reserve. Whilst it may differ slightly from the topography on site, it is consistent with the LiDAR aerial survey data. No amendment is proposed.
11 Gairlock Court – the SBO is not realistic.	This was water flowing in from the street, but it has been analysed and determined that the property should be removed from SBO3. This area has a very small localised ponded area that has been joined to the main flow path during the automatic processing stages of the project. If the join had not happened, the ponded area would have been less than 500m ² and therefore removed from the flood extent.
9A & 10 Brentvale Court – the SBO is not realistic	This is ponding on the surface. The area has been analysed and it has been determined that the properties should be removed from SBO3. These areas are very small localised ponded areas that have been joined to the main flow path during the automatic processing stages of the project. If the join had not happened, the ponded areas would have been less than 500m ² and therefore removed from the flood extent.
3 & 4A Myron Place – there appears to be SBO missing.	There is sufficient pipe capacity in this area, particularly as water is retarded upstream at Gairlock Court.

Proposed Resolution for Property

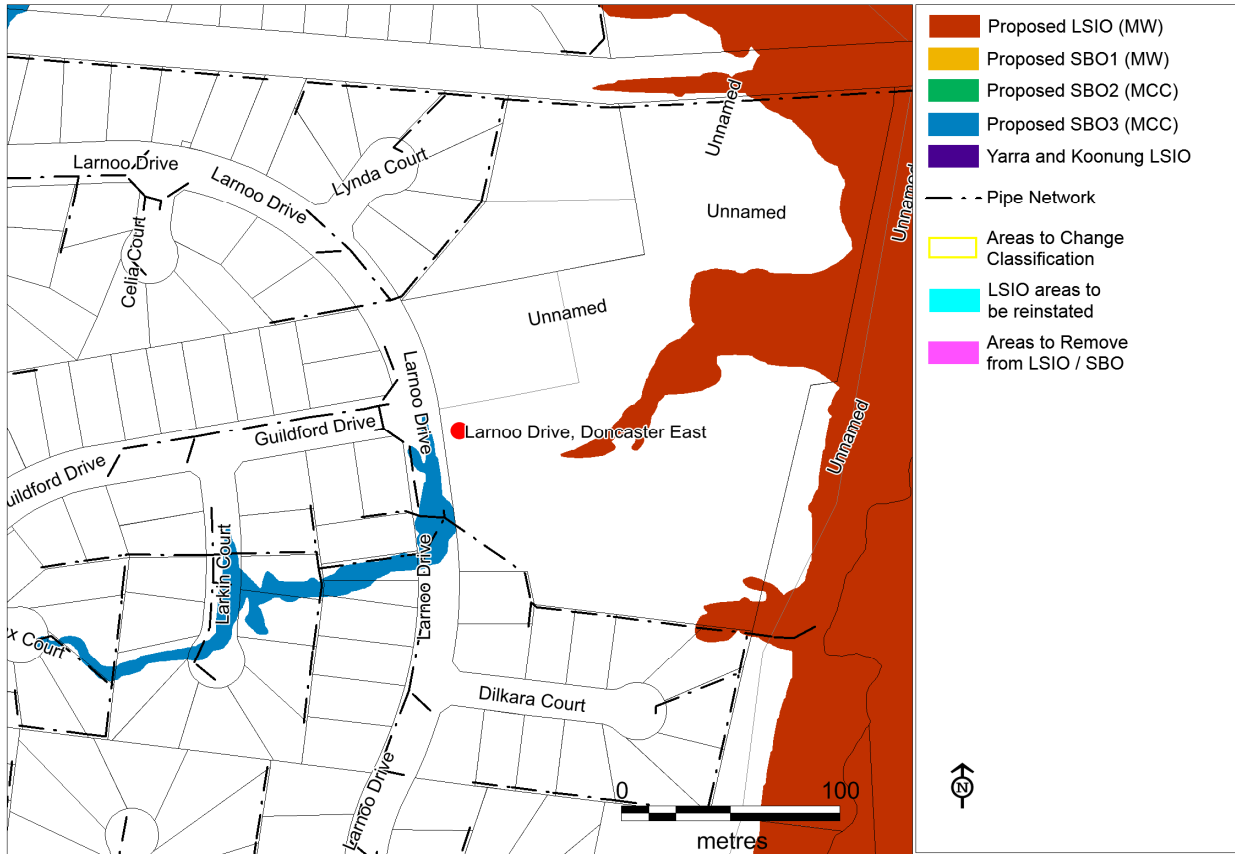


Outcome: Remove SBO2 from properties 11 Gairlock Court, 10 & 9A Brentvale Court

6.11.5 Larnoo Drive (Gum Nut Gully), Doncaster East

The submitter queries why the flow path is shown as discontinuous. The flow path is discontinuous as there is a pipe diameter change. The smaller pipes converge into a 600 mm pipe immediately upstream of where the 'discontinuity' is reported.

Proposed Resolution for Property



Outcome: No Change Proposed

6.12 11 Cliveden Court, Templestowe (1001)

The resident at 11 Cliveden Court opposes an SBO3 being applied to their property.

6.12.1 Key areas of dispute and findings

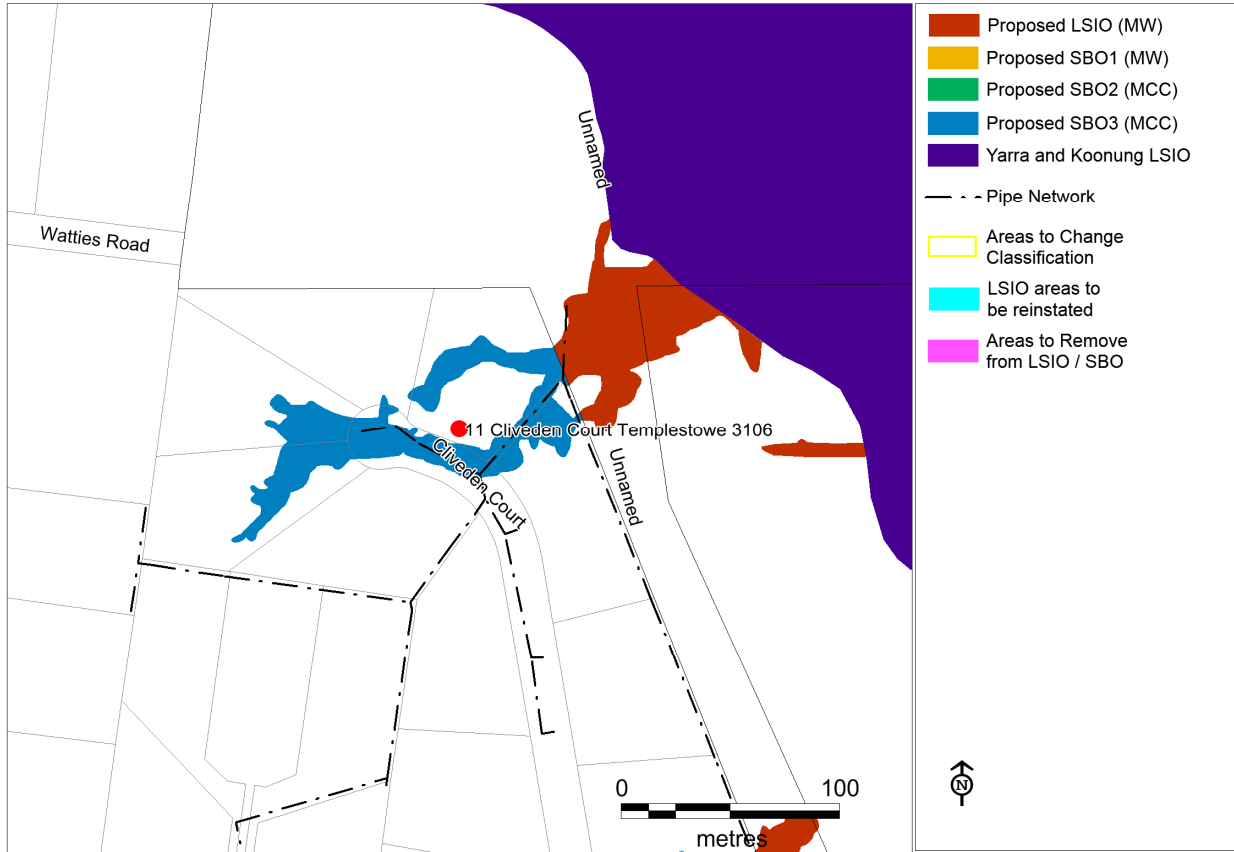
The key comments and issues are presented and discussed.

Comment	Response
Municipal Flood Emergency Plan (MFEP) no reference to flooding at this location	MFEPs are developed to identify and plan for flooding issues. Flash flooding is often discussed but typically cannot be specifically included in these plans as it is difficult to predict and capture. The Plan can also offer little in the way of warning for flash flooding as well which makes emergency planning more difficult. For these reasons any localised flooding in the area is unlikely to be included in the current MFEP.
Removal of riverine flooding from the flood controls.	The riverine flooding has not been removed from the flood controls, the mapping and SBOs displayed do not show this area as they were not updated.
Historical flooding from the street has not occurred on 25 th December 2011 and two preceding events.	The 25 th December 2011 flood event was determined to have rainfall with a recurrence interval of between 2 and 55 year ARI for the critical duration at the site. The location lies between two rainfall gauges. As such this event was not likely to be of a magnitude equivalent to a 100 year ARI event.
Runoff is from adjacent block and not from street.	The SBO applied to the property is as a result of runoff from the neighbouring block in part, but also due to the overland flooding that follows the orientation of the underground pipe alignment along the eastern boundary of the property.
Why was the drain not upgraded and/or maintained on Cliveden Court? Increase in permits due to the SBO application, impacts on insurance premiums, impacts on property values	These are questions for Council
When was the last 100 year ARI flood?	<p>In recent history it is unlikely that there have been any 100 year ARI floods recorded. A localised storm in 1991 generated 100 year ARI rainfalls at Zerbes Reserve East Doncaster for durations less than 1 hour. Due to the limited observations available, it is not possible to determine if rainfall was high elsewhere in the municipality as the closest observations showed far lower records.</p> <p>The 100 year ARI flood is derived based on observed information and statistical analysis. There has been rigorous analysis and background in developing this information. Australian Rainfall and Runoff is a guide to the estimation of these rainfall and flood events. This investigation has utilised best practice in developing the predicted rainfall associated with the 100 year ARI flood event.</p> <p>If analysis was restricted to observed floods only, in almost all areas the flood risk would be grossly under predicted and the likelihood and impact of a catastrophic extreme event would increase. Council are proactively trying to plan and manage future flood risk via the adoption of the SBO overlay.</p>

6.12.2 Conclusions and recommendations

As a result of this assessment for 11 Cliveden Court it is recommended that the proposed SBO3 remains on the property.

Proposed Resolution for Property



Outcome: No Change Proposed

6.13 14 – 16 Stanley Drive, Doncaster (1002)

Number 14 and 16 Stanley Drive are affected by SBO3 as modelling shows them to be affected by flooding that is shallow in nature. The properties fall into the Ruffey Creek flood mapping study area. The flood mapping study was undertaken as a collaboration project between the City of Manningham and Melbourne Water. The Ruffey Creek Flood Mapping results were originally developed by AECOM and were reviewed as part of developing the planning scheme overlays for this area. The resident who owns both properties disputes the Special Building Overlay 3 (SBO3) extent.

6.13.1 Further information request

The resident requests further information which has been provided in the table below.

ID	Information Requested by Resident	Response
A	The catchment boundary used to calculate the total runoff rate at 14-16 Stanley Drive	It is not possible to provide this information. An individual catchment area to this point has not been derived, instead the full Ruffey Creek catchment was subdivided into representative areas, and flows from the hydrological model were equally distributed to the underground drainage pits within these areas in the hydraulic model.
B	The estimated maximum flow time for this catchment area to contribute to this calculated runoff rate.	The model was run with storm durations ranging from 15 minutes to 9 hours. The storm durations which led to the most significant flooding of this area were the 15 and 25 minute events.
C	The critical rainfall rate and duration corresponding to this time period.	Again it is not possible to provide this information due to the way flows were introduced to the model. The pipe flows have been provided in response to item E and the overland flows are as follows: <ul style="list-style-type: none"> ▪ Along Stanley Drive: 0.2 - 0.5 m³/s ▪ Through number 14 & 16: 0.1 m³/s
D	The calculations of the corresponding total runoff rate for the catchment at 14 Stanley Drive.	Pipes in Stanley Drive have a diameter of 375 mm and generally have a grade of between 0.5 - 1.5%. These are running full with between 0.1 – 0.2 m ³ /s in the 15 – 25 minute storm events. Pipes at the rear of the Stanley Drive properties have a diameter of 300 mm and generally have a grade of between 0.3 - 2%. These are running full with approximately 0.05 – 0.1 m ³ /s in the 15 – 25 minute storm events. Pipes in Viscount Drive are 150 – 225 mm in diameter and have a grade of around 2%. These are running full in the 15 – 25 minute storm events with a flow rate of approximately 0.05 m ³ /s.
E	The flow capacity of the underground drainage pipe.	The maximum depth of water overtopping the driveway is 3 cm. The maximum depth of ponded water in the roadway at this location is 12 cm.
F	For the proportion of runoff in excess of the drainage pipe capacity, the calculations of the surface water depth on Stanley Drive corresponding to the grade of Stanley Drive from the Viscount Drive intersection to 14 Stanley Drive.	

ID	Information Requested by Resident	Response
G	Details of all the measured survey levels of the footpath, kerb, gutter and road profile that were used in the estimation of the road water depth.	The survey used was aerial (LiDAR) survey. The grid used in the flood model is shown in Section 6.13.2.2 below.

6.13.2 Key areas of dispute and findings

The key areas of the resident's dispute are shown in this section.

6.13.2.1 *Dispute Item 1*

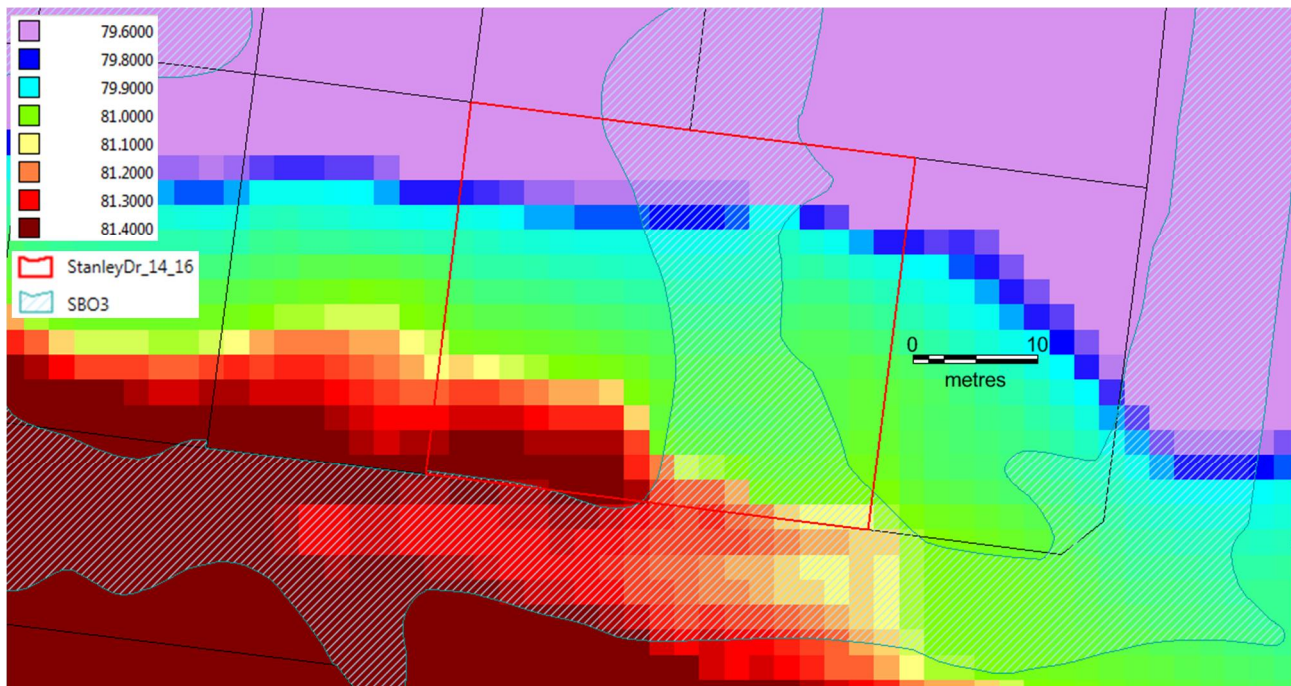
Summary of dispute: The road is located lower than the footpath crest and water would preferentially flow down the road toward Viscount Drive.

The flood model shows the water uses the road as an overland flow path, however it is also able to cross the footpath threshold and flow (at a shallow depth) in a northerly direction through property 14-16 Stanley Drive.

6.13.2.2 *Dispute Item 2*

Summary of dispute: The threshold of the footpath is maintained across property 14 Stanley Drive (including the drive way) and the footpath to the east of the property represents the lowest point.

Whilst the resident's survey shows the footpath threshold as being maintained, the aerial (LiDAR) survey (in figure below) shows a subtle lowering of threshold at 14 Stanley Drive. It is at this point the water is able to overcome the threshold and flow in a northerly direction through the properties.



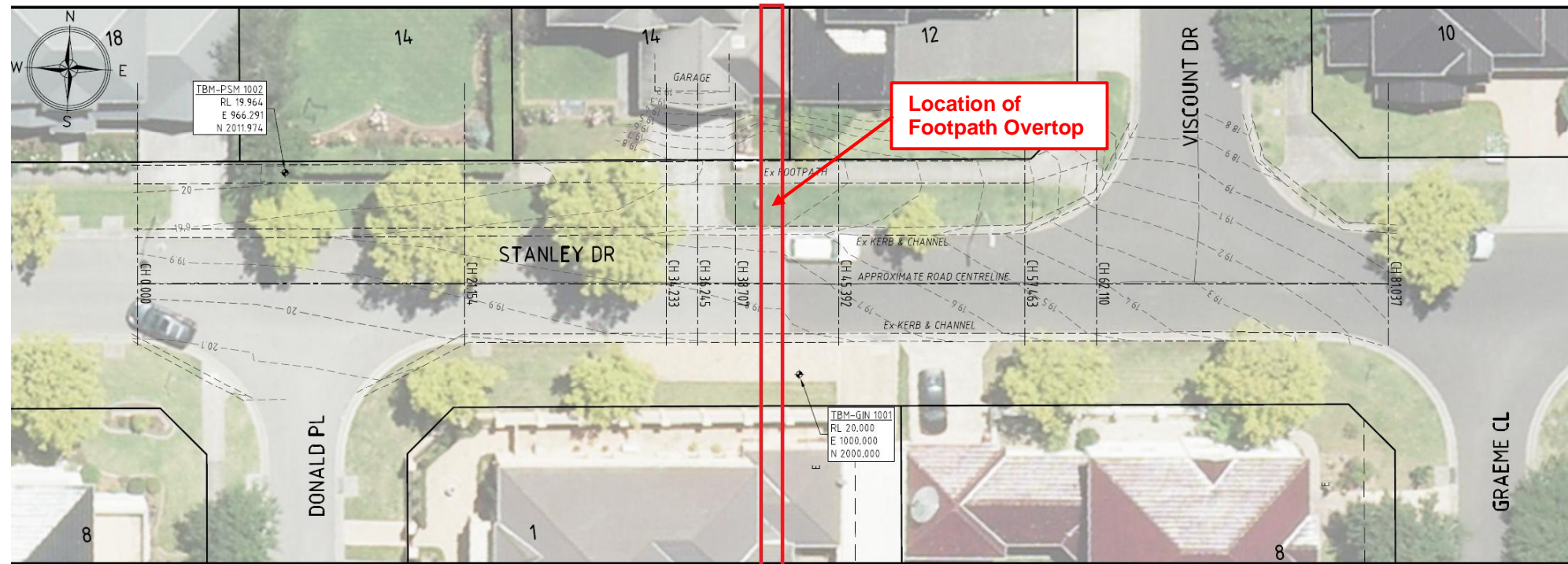
As part of the investigation into this submission, Manningham City Council undertook a detailed survey of this location (as shown below). At the location where the model results show flood overtopping the footpath, there is only approximately 10 cm of flood storage available on the roadway. This aligns well with the results of the model which indicate a 12 cm flood depth on the roadway at this location and 3 cm of water overtopping the footpath and entering 14 Stanley Drive.

MANNINGHAM CITY COUNCIL



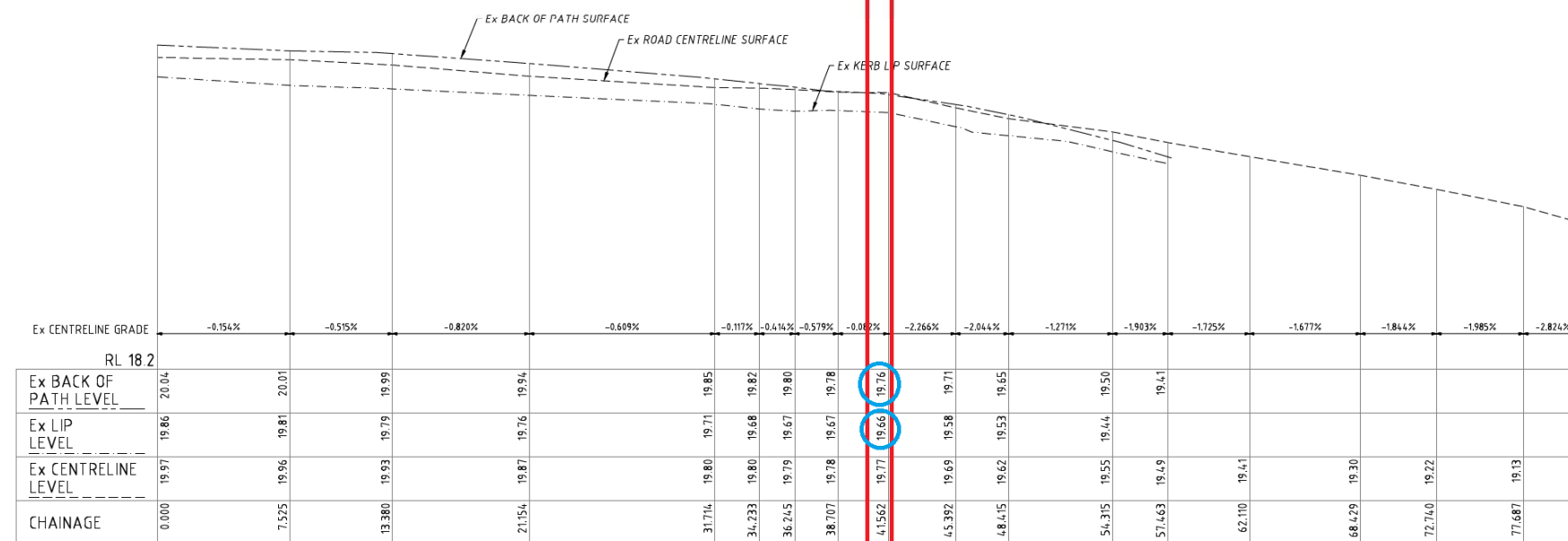
14-16 STANLEY DRIVE, DONCASTER

EXISTING CONDITIONS PLAN DRAWING No. - 4560



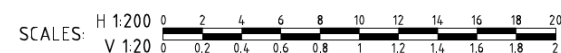
EXISTING CONDITIONS PLAN

SCALE: 1:200



EXISTING LONGITUDINAL SECTION

SCALE: HORIZONTAL 1:200 VERTICAL 1:20



NOTES

1. SURVEY TO ARBITRARY LEVELS AND DATUM.
2. THE LOCATION OF THE PROPERTY BOUNDARIES SHOWN ON THIS PLAN ARE APPROXIMATE ONLY.
3. UNDERGROUND SERVICES HAVE NOT BEEN LOCATED OR INVESTIGATED FOR THE PURPOSE OF THIS PLAN. THE LOCATION OF UNDERGROUND SERVICES SHOULD BE CONFIRMED WITH THE RELEVANT AUTHORITY.

6.13.2.3 Dispute Item 3

Summary of dispute: The upstream contributing catchment is not sufficient to generate flows that would overtop this footpath threshold.

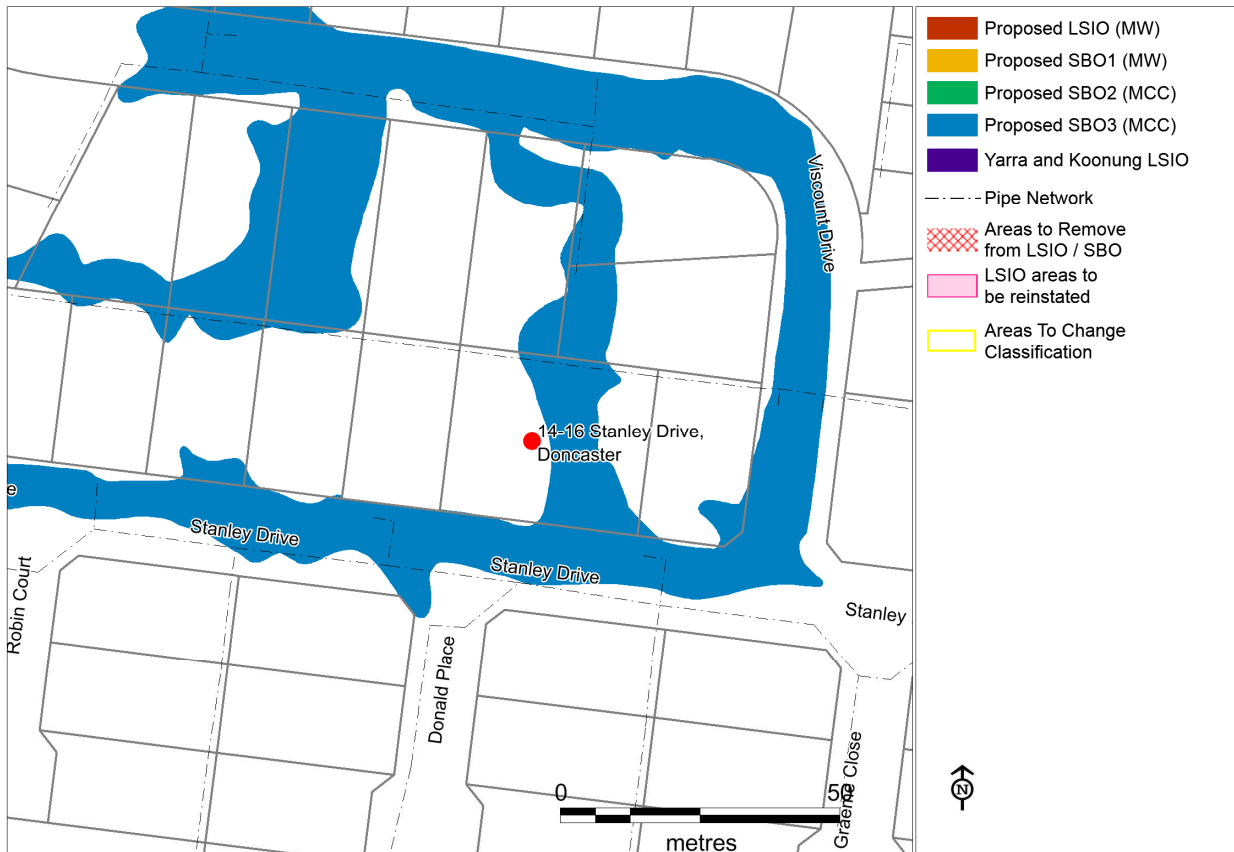
The volume of water is not excessive, but the intensity of rainfall is high enough to both fill the underground drainage pipes and overtop the footpath. As mentioned, the flows that overtop the footpath are only small but are enough to accumulate to a noteworthy depth of flooding due to the significant drop-off in surface elevation on the property side of the footpath.

6.13.3 Conclusion and Recommendation

As outlined above, the results of the flood model align well with survey undertaken by Manningham City Council. The flows overtopping the footpath are shown to be minimal (3 cm in depth / 0.1 m³/s) but as discussed, the drop-off in elevation on the property side of the footpath is significant and therefore leads to an accumulation of water at the at the low point of 14 Stanley Drive.

Considering the analysis of the data discussed above, it is recommended that the SBO3 is retained in its current form at this location.

Proposed Resolution for Property



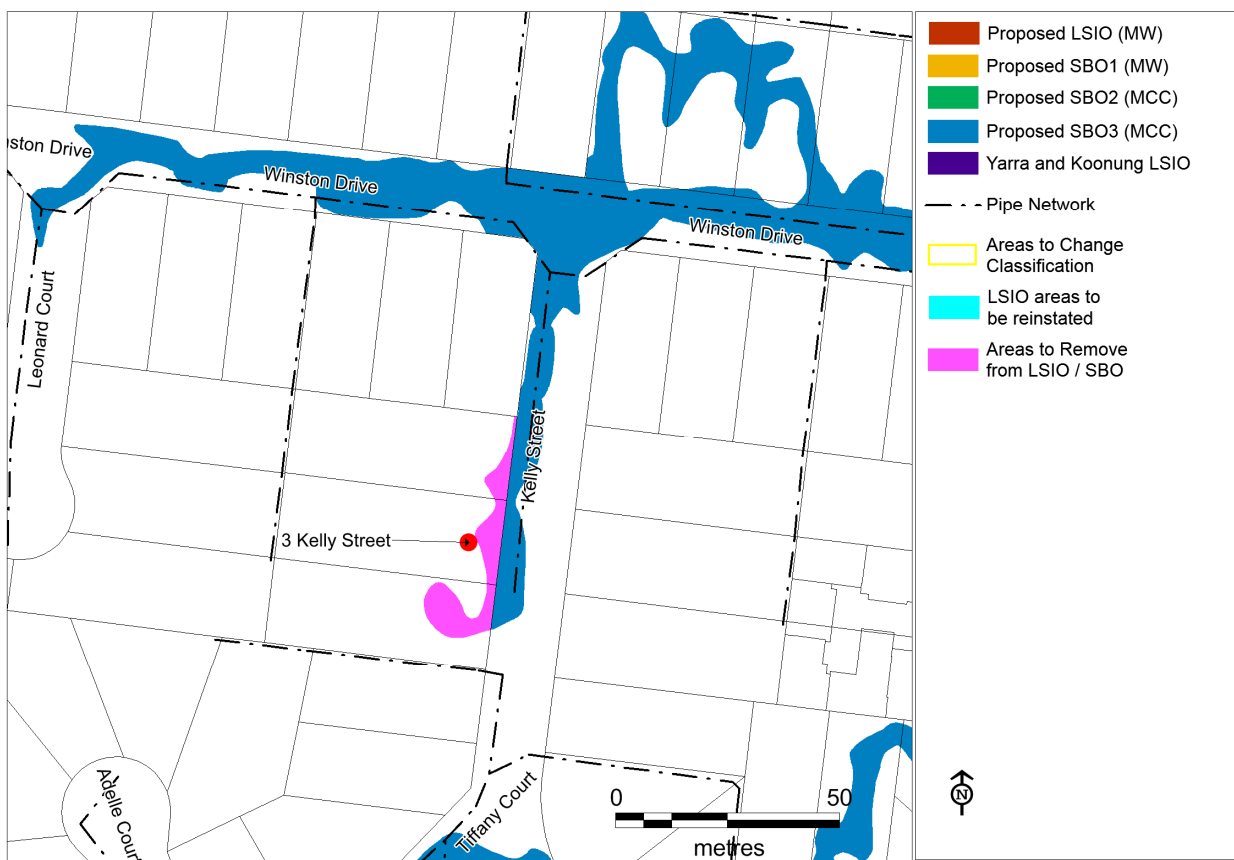
Outcome: No Change Proposed

6.14 3 Kelly Street, Doncaster (1004)

The modelling results have indicated that the fronts of 1, 3 and 5 Kelly Street are affected by shallow flooding and hence an SBO3 was adopted for this area as shown in the figure below. The flood mapping study was undertaken as a collaboration project between the City of Manningham and Melbourne Water. The resident who owns the property disputes the Special Building Overlay (SBO) extent.

A detailed study of the area was undertaken and it was found that the modelled surface was not representative of actual conditions at the resolution analysed. The resolution of the model has not adequately picked up the gutter as well as large brick fences that would block water from flowing into the property at the depths recorded in the modelling results. Upon inspection of the street, it is more likely that flood waters will remain within the roadway. Therefore, it is recommended that 1, 3 and 5 Kelly Street be removed from the SBO3.

Proposed Resolution for Property



Outcome: Remove SBO3 from 1, 3 and 5 Kelly Street



26 July 2016

Barnaby McIlrath
Maddocks
140 William Street
Melbourne Victoria 3000

Dear Barnaby

Our ref: 4337-01L01v02

Amendment C109 to the Manningham Planning Scheme – Peer Review

In accordance with your letter of instruction of 11 February 2016 and subsequent correspondence I have undertaken a peer review of the methodology used to develop the flood mapping that forms the basis of the proposed Land Subject to Inundation (LSIO) and Special Building Overlays (SBO). This letter describes my review and opinion in relation to the proposed planning scheme amendment maps.

BACKGROUND

Purpose of the Amendment C109 is to make changes to the Manningham Planning Scheme to incorporate updated flood-related controls in the form of a Land Subject to Inundation overlay and 3 Special Building Overlays. The LSIO represents areas that may be subject to flooding from overbank flows associated with rural and urban waterways. SBO's define areas that are susceptible to flooding from urban runoff that exceeds the capacity of the drainage system. Much of the municipality comprises development that is many decades old and does not have drainage infrastructure that meets current design standards. This means that drains do not have the capacity to convey nominal urban design flood flows (typically a minimum of the 5 year ARI design flood). Similarly, overland flow paths are either not available or do not have sufficient capacity to convey surface runoff without impacting private property.

Four overlays are proposed as follows:

- LSIO – relates to overland flooding along Melbourne Water waterway assets
- SBO1 – relates to overland flooding along Melbourne Water drainage assets
- SBO2 - relates to overland flooding along Council drainage assets
- SBO3 – relates to overland flooding along Council drainage assets, however the flood risk, impact and planning requirements are reduced compared to SBO2.

BASIS OF REVIEW

This review is based on the following documents and files.

- Manningham Planning Scheme Amendment C109 – Explanatory Report, 2015



- Manningham Planning Scheme Amendment C109 – Proposed Special Building Overlay Maps, Nos 1 - 4, 6 – 9 and 11.
- Development of the Special Building Overlay Technical Report, Cardno September 2015.
- Bulleen North Drain Catchment Mapping, Cardno November 2013.
- Final Study Report Flood Mapping of Koonung, Mullum Mullum and Andersons Creeks, Cardno March 2015.
- Ruffey Creek Flood Mapping, AECOM September 2013.
- Ruffey Creek – TUFLOW Model Review, WBM March 2012
- Ruffey Lake Flood Mapping Data Review, Cardno January 2015
- Bulleen North Flood Mapping Data Review – Technical Note, Cardno March 2015
- Ruffey Lake Flood Mapping – Technical Note, Cardno March 2015
- Managing Stormwater Flooding Risks in Melbourne, Auditor General Victoria July 2005
- ARR Project 15 Two-Dimensional Modelling in Urban and Rural Floodplains – Stage 1&2 Report, Engineers Australia November 2012.

BASIS OF LSIO AND SBO FLOOD OVERLAYS

The new overlays are based on flood mapping for 5 catchments within the Manningham City Council area. The approximate locations of these main drainage lines are shown in Figure 1. A brief description of each of the catchments is provided below.

- **Bulleen North Drain** – This catchment is located entirely within the western end of the municipality and flows broadly in a north-west before discharging into the Yarra River. It is mostly urbanised and has an area of approximately 225 ha. This catchment was modelled and mapped by Cardno between approximately 2008 and 2013.
- **Ruffey Creek** – Is situated north and east of Bulleen North Drain. It also flows in a north-west direction and discharges into the Yarra River. It is entirely within the municipality and has a catchment area of just over 1,000 ha. This catchment was modelled and mapped by AECOM between approximately 2009 and 2013.
- **Mullum Mullum Creek** – This waterway originates to the east of Manningham City and flows west, crossing the south-east municipal boundary. It then flows in a north-west direction before joining with the Yarra River. It is located to the north of Ruffey Creek and has a catchment area of approximately 2,700 ha within the municipality. This catchment was modelled and mapped by Cardno in 2014/2015.
- **Koonung Creek** – Essentially forms the southern boundary of the Municipality. It flows from east to west with the northern part of the catchment in the Manningham City area and the area south of the main channel in another local government area. The catchment has an area of approximately 1,500 ha within the Municipality. This catchment was modelled and mapped in parallel with Mullum Mullum Creek and Andersons Creek by Cardno in 2014/2015.
- **Andersons Creek** - This catchment is located on the eastern side of the municipality and has an area within the council boundary of approximately 1,800 ha. This is a small part of the catchment to the east. It flows in a northerly direction to the Yarra River. It was modelled and mapped by Cardno in 2014/2015.

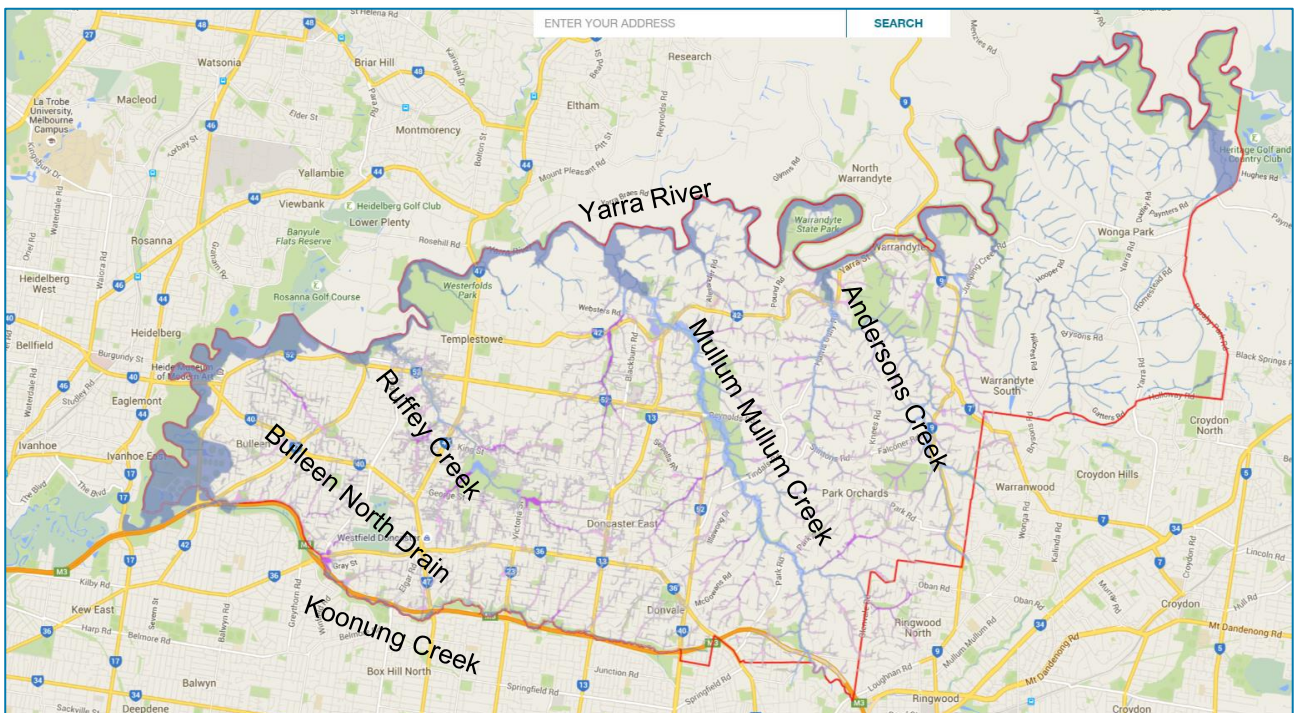


Figure 1- Location of study area catchments

FLOOD MODELLING METHODS

The 5 catchments were modelled in 3 separate studies with the Bulleen North Drain and Ruffey Creek being undertaken by Cardno and AECOM respectively between 2008 and 2013. The Koonung Creek, Mullum Mullum Creek and Andersons's creek catchments were modelled together by Cardno in 2014/15. Each modelling study used similar but slightly different flood modelling methods, however the use of LiDAR aerial survey to inform the models and mapping was common across all the studies.

A summary of the method for each study is provided below:

Bulleen North Drain

This catchment was modelled using a two-dimensional Rain on Grid (RoG) or Direct Rainfall Method (DRM) approach to generate overland flow distributions, depths and velocities. The SOBEM software package by Deltares was used for the modelling. The model utilised a grid resolution of 2 m which is in the range of appropriate values for detailed urban flood modelling.

Standard design rainfalls and losses were applied to the model, along with typical values of hydraulic roughness to characterise the impact of different land-uses on flooding. Appropriate Yarra River tailwater levels were applied for boundary conditions.

The full council pipe network was incorporated into the hydrodynamic model.

As part of this study a sensitivity analysis of the model results was undertaken to assess the potential variability of the model results under a range of conditions. This included; testing of the RoG method against alternative hydrologic approaches, testing the impact of changes to hydraulic roughness and the potential impact of removing part of the council pipe network from the model.



Ruffey Creek

The Ruffey Creek catchment was modelled using a rainfall-runoff approach to develop the design hydrology and a TUFLOW hydrodynamic model for the overland flow routing. The hydrodynamic model used a 4 m grid resolution to define the topography which is within the range of appropriate values for this type of urban flood mapping study.

Standard design rainfalls and losses were applied to the model, along with typical values of hydraulic roughness to characterise the impact of different land-uses on flooding. Appropriate Yarra River tailwater levels were applied for boundary conditions.

The full council pipe network was incorporated into the hydrodynamic model with sub-catchment flows evenly distributed to nearby manholes.

As part of this study a validation of the hydrology and overland routing was undertaken.

Koonung, Mullum Mullum and Andersons Creek

This catchment was modelled using a two-dimensional Rain on Grid (RoG) or Direct Rainfall Method (DRM) approach to generate overland flow distributions, depths and velocities. The TUFLOW software package was used for the modelling, which is a standard requirement of Melbourne Water. The model utilised a grid resolution of 3 m which is in the range of appropriate values for detailed urban flood modelling. The study area was split into a number of sub-areas in order to ensure each model was of a manageable size for simulation and processing purposes.

Standard design rainfalls and losses were applied to the model, along with typical values of hydraulic roughness to characterise the impact of different land-uses on flooding. Appropriate Yarra River tailwater levels were applied for boundary conditions.

The full council pipe network was incorporated into the hydrodynamic model.

As part of this study a detailed reconciliation and validation analysis was undertaken to test the RoG method against alternative hydrologic approaches. This was performed for both the 100 year ARI and 5 year ARI design floods. This resulted in the adoption of higher pervious area runoff coefficients to compensate for the mitigating impact of surface storage on design flow peaks on RoG model.

Discussion

The modelling techniques applied for the different catchment are all considered appropriate for mapping urban flood extents. Discussion on key aspects of the modelling approach for the different areas is provided below.

Model Grid Resolution

It is noted that different hydrodynamic model grid resolutions have been applied in the different catchments; 2 m resolution for Bulleen North Drain, 4 m in Ruffey Creek and 3 m in the Koonung, Mullum Mullum and Anderson Creek catchments. I consider these are all in the range of appropriate resolutions for detailed urban flood mapping studies. There is no single, ideal model resolution that should be applied to these type of studies. The selection of a model set-up for a particular study will typically be based on a number of factors including topographic characteristics of the area, the size of the model domain and expected simulation times. Over the years, model resolutions have generally become finer as computing power has increased, allowing larger grids to be computed in a reasonable time. Through previous investigations and sensitivity testing it has been demonstrated that, in general, a 5 m grid resolution is sufficient to characterise urban flood behaviour. Whilst finer grids may provide a better visual presentation and represent some local topographic features more clearly, it has been found that peak flood depths and extents do not vary greatly with increased model resolution.



For the resolutions utilised in these studies I do not believe there is likely to be any discernible difference, between the areas, in the level of accuracy or reliability in the model outputs, such as flood depth and extent.

Modelling Method

As described in the previous section, 4 of the 5 catchments used the ROG hydrology method whilst the 5th catchment, Ruffey Creek, used a more traditional lumped rainfall-runoff method. The reasoning for the difference in approach is primarily one of timing, although user or authority preference may have played a role in this as well. Until fairly recently (within the last 5 years) the ROG approach to urban flood modelling was not widely accepted by drainage authorities in Australia. There has been caution in adopting the method as many people were not familiar with it and industry standards had not necessarily been updated to incorporate it. This may explain why the Ruffey Creek modelling project, which started around 2008, adopted a more traditional approach that was the accepted practice at the time. Whilst the Bulleen North Drain study occurred at a similar time, it was by a different consultant that may have been more familiar and confident with the use of the ROG method.

Experience over recent years suggests that a RoG approach is better suited to detailed council mapping studies where it is desirable to define flood impact down to the local scale. As described above, it is recognised that the Ruffey Creek study was undertaken some years ago and hence employed a different method to the other studies. The way in which storm flows interact between the pipe network and the surface is considered less “realistic” when a lumped hydrologic model is used and sub-catchment flows are split between manholes in a somewhat arbitrary way. Despite this, the accumulation of excess stormwater flow in low points within the topography, which is where local flooding typically manifests, will generally still be well represented using this method.

The lumped hydrology method assumes a high degree of efficiency in the drainage network and effectively unlimited inlet capacity at manholes as runoff is entered directly into the drainage system. Through this approach shallow surface storage in the upper catchment may be slightly underestimated and local surcharging of pipes overestimated. Subsequently, the Ruffey Creek model could be considered to be slightly conservative in areas where flows have been assumed to enter the pipe system by being evenly distributed to pits within a sub-area. This would typically be in parts of the upper catchment and be represented by slightly greater flood extents in some areas. However, the overall impact on flood depths, velocities and mapped extents is expected to be small.

Model Validation

Each model used some form of validation to reconcile or check design flows against a Rational Method and in some instances, against a RORB model for peak flows. This provides confidence in the flood mapping outputs. Sensitivity testing indicated that peak design flows though the catchments were higher for the RoG models when using standard parameters. This is consistent with literature and suggests that the RoG models explicitly take account of surface ponding that would otherwise flow directly to a catchment outlet in a lumped hydrologic model such as RORB.

Overall, there are sufficient checks on each model to provide confidence that the models developed and results obtained are of an appropriate standard for the planning amendment.



FLOOD MAPPING AND OVERLAY DEVELOPMENT

The development of flood mapping outputs has been consistently applied by Cardno for all 5 catchment areas. This mapping process has used an industry standard approach to filter out unnecessary flood data including areas with very shallow depths and low velocity x depth. Once this filtering is done, it is often common practice to further “thin” the data based on a minimum “puddle” area. That is an area that becomes isolated from the rest of the flood extent because the connecting flow path is too shallow and becomes removed. It is understood that thinning of “puddles” has been undertaken for the proposed flood mapping and overlays based on standard Melbourne Water criteria.

One issue that I have observed in the mapping outputs is the existence of multiple areas of isolated flood extent, particularly in the SBO3 layer. Figure 2 below shows an example section of the online flood overlay map from the Council website. This illustrates there are small sections of SBO3 that are mostly, if not entirely, within the road reserve. It could be argued that these areas do not serve a strong purpose compared to other areas connected to the main flow paths or ponding areas. In many of these places depths are very shallow, no property is directly affected and planning controls or conditions are unlikely to be required. It appears that these areas of shallow depth within the road reserve are unlikely to restrict access or impose any safety risk for evacuation or emergency service access. In my experience this information can be very useful to council officers for understanding nuisance flooding and planning maintenance or mitigation works. However, it is not necessary to include all flood information into an overlay and some manual thinning or cleaning up of the SBO3 layer may be beneficial. Such flood mapping extents may cause unnecessary anxiety within the community and additional work for council planning officers.

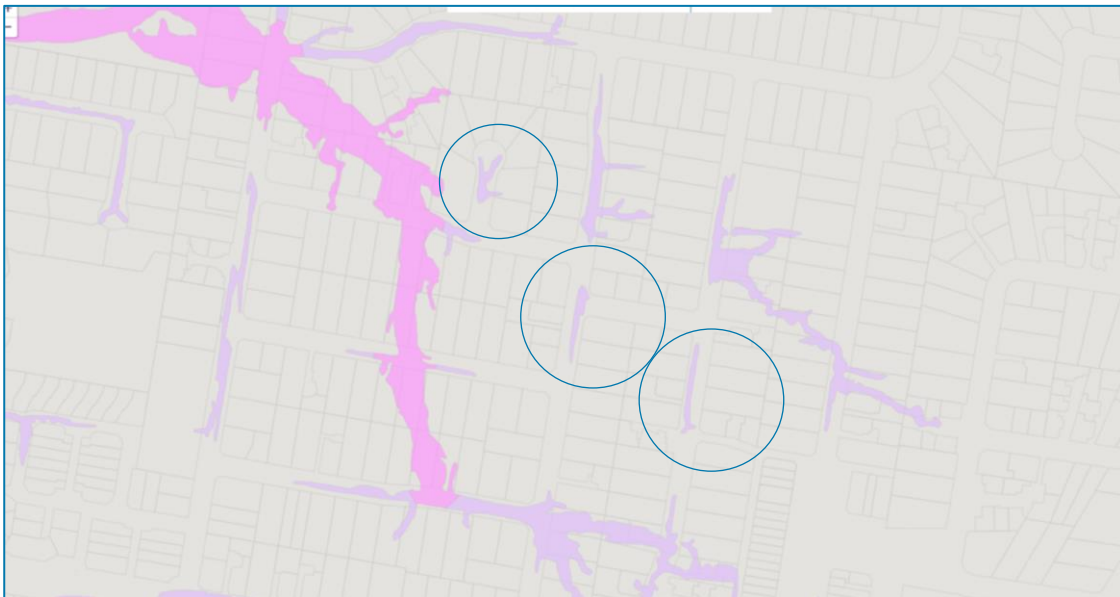


Figure 2- Bulleen North Drain – example isolated areas of SBO3



CONCLUSIONS

It can be concluded that:

- The methods and outputs for the 5 catchment areas comprising the Amendment are appropriate for urban flood mapping and the development of flood-related planning overlays.
- Appropriate checks and validation have been made in each study such that the design flow estimates are considered robust.
- A consistent and appropriate method has been applied to the processing of model results to produce mapping outputs and overlays that are relatively consistent across the Municipality.
- It is considered that a number of small, isolated areas of inundation that are not expected to represent any significant threat to life or property could be removed from the SBO3 layer without compromising the appropriate management of flood risk within the area.

Please let me know if you have any questions regarding this information.

Yours sincerely

Warwick Bishop
Director

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WATER TECHNOLOGY

AMENDMENT C109

**Review of the Land Subject to Inundation Overlay and Special Building
Overlay**

**SUMMARY OF INDIVIDUAL SUBMISSIONS, OFFICER RESPONSE &
RECOMMENDATION**

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

The following table summarises the individual submissions received (by issue) during and after the exhibition period of Amendment C109, including an officer response and recommendation.

Fourteen key issues have been identified for the 523 submissions received, the categorisation of which will assist in the review and analysis of the submissions.

The fourteen key issues are listed below:

1. Individual properties have not experienced flooding in the past and should therefore not be subject to the overlays.
2. The modelling is inaccurate and does not reflect real life flood events and/or existing site/area characteristics, such as existing topography.
3. Council and/or Melbourne Water drainage works have already addressed any potential flooding impacts.
4. The Council/Melbourne Water drains have not been properly maintained and/or are inadequate.
5. Council and Melbourne Water should review and upgrade the drainage system to cope with overland flow and flooding from the one in 100 year flood event.
6. New development and the increase in density across Manningham has increased the level of overland flow and flooding.
7. Property values and property resale will be impacted, accordingly, Council rates should decrease / may increase as a result of the overlays and compensation should be payable.
8. Insurance costs/premiums will be impacted.
9. Buildings or structures on a property are unaffected by the proposed overlays, and therefore the overlay will impact the site unnecessarily.
10. There will be a financial or administrative burden for future development – including additional costs associated with seeking planning permission and raising floor levels.
11. The proposed overlay will only have a minor impact on the property due to a minimal incursion or the overlay falling over an existing easement or driveway, and should therefore be removed.
12. Built features (such as existing floor levels, on site drainage, retaining walls etc.) on the subject property and adjoining properties may currently divert water away or prevent water from entering a property. Therefore question relevance of overlay.
13. Consultation process and information provided was inadequate.
14. Other miscellaneous issues – these will be responded to individually in the table below.

Please refer to the 'Officer Response to Submissions' table at Attachment 4 for an overview of the issues raised and a generic response.

Abbreviations:

AHD – Australian Height Datum

AEP - Annual Exceedance Probability

ARI - Average Recurrence Interval

BoM – Bureau of Meteorology

DELWP – Department of Environment, Land, Water and Planning

OSD – On-site detention

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
1.	10 Louisa Place, Templestowe	Mullum Mullum Creek	SBO2	2, 4, 12	Refer to Attachment 7 for the Further Technical Review of this submission.	Yes. Change overlay on property from SBO2 to SBO3. Also remove SBO from south western boundary. Refer to map at Attachment 10.
2.	24 Mullens Road, Warrandyte	Andersons Creek	SBO2	8, 11	The submission content contained no objection and the submitter asked to be kept updated. Further clarification was also sought. Additional information was sent on 2 February 2016. No further submission was received.	No
3.	16 Larne Avenue, Donvale	Mullum Mullum Creek	SBO1		The submission contained no content. Clarification sought by Council. None provided.	No
4.	49 Dellfield Drive, Templestowe	Ruffey Creek	SBO2	1, 2, 3	The submission states that the terrain of the area is inconsistent with the proposed flood shape. The terrain data used in the model was captured in 2009 by DELWP and is the best available data for this type of modelling. Site visits have been undertaken throughout the municipality by engineers to verify the modelled flood shape against the terrain where required. A site visit was undertaken from the street for this property. Given the size of the catchments involved, each area has been broken up into a grid with 3m x 3m	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>cells. This approach is considered to provide adequate resolution to define topographical features within the catchment. The proposed overlays identify flood prone land. Structures and buildings have not been modelled individually as they can be subject to change in the event of property redevelopment. Consideration has been given to the impact of structures such as buildings and walls through the application of surface roughness in accordance with industry guidelines. The submission also refers to areas around Heath Street where the submitter has experienced flooding in the past. This area is not within a catchment that has been mapped as part of this proposed amendment and will be included in a future amendment. The submission refers to the removal of controls along the Yarra River. The existing LSIO will be retained in these areas. The outcome of the review is that the exhibited flood shape be retained.</p>	
5.	55-57 Ennismore Crescent, Park Orchards	Mullum Mullum Creek	SBO1	4, 5	<p>The property is located near a Melbourne Water main drain and the depths of flooding are consistent along the overland flow path. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	
6.	368 George Street, Templestowe Lower	Ruffey Creek	SBO3	2	The submitter mentions the elevated nature of the property as a basis for the impossibility of flooding; however the SBO represents flow out of the property and onto the street via the driveway cut into the slope. A site visit confirmed surrounding topography and that overland runoff in excess of the pre 1970s drainage infrastructure could reasonably be expected to occur in the manner indicated by the SBO. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
7.	53 Bowen Road, Doncaster East	Koonung Creek	SBO2	11	The submission states that the SBO does not cover a significant portion of the property. A desktop review has confirmed that the property is adjacent to a main overland flow path which encroaches significantly onto the submission property. Due to the percentage of SBO coverage on the subject property and the modelled depth of flow, it is not recommended to remove the SBO from the property as it would compromise the integrity of the flood shape in this area.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
8.	12 Olympus Drive, Templestowe Lower	Ruffey Creek	SBO3		The submission did not contain an objection to the proposed amendment, however further clarification was sought. Additional information was sent to the submitter on 2 February 2016. No further submission was received.	No
9.	20 Beaufort Rise, Warrandyte	Mullum Mullum Creek	SBO1	14	The submission did not contain any comments. A further letter was sent on 22 January 2016 seeking comments, however, no further submission was received.	No
10.	3 Anton Court, Doncaster	Ruffey Creek	SBO2	2	The submitter is correct that the property slopes up from the level of the street; however the source of flow in this case is shallow overland runoff in excess of the capacity of the Council drains to the rear of the property, which flows through the property and onto the street, where it is largely contained within the roadway. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. The flood extent was modelled on a 1 in 100 year ARI or 1% AEP rainfall event in accordance with industry practice. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
11.	393 Heidelberg-Warrandyte Road, Warrandyte	Andersons Creek	SBO3	14	The submission contained no content. A further letter was sent on 22 January 2016 seeking	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					comments, however, no further submission was received. The submission property is located near the Yarra River and contains the upstream extent of a minor flow path connecting to the existing LSIO overlay along the river.	
12.	626 Ringwood-Warrandyte Rd., Park Orchards	Andersons Creek	SBO3	4	The submission does not object specifically to the SBO. The large property contains a narrow gully which drains to the creek at the front of the property along Ringwood-Warrandyte Road, with the SBO designated along the lines of the gully. Based on a desktop review, the flood shape is consistent with contours and catchment size and should be retained at this location.	No
13.	74 St Clems Road, Doncaster East	Koonung Creek	SBO2	1, 3, 7, 8	The submission states that no flooding has been experienced by the submitter in the last 28 years at the property. It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. In addition, the submission may be indicating the dwelling has never been flooded above floor level. The SBO identifies flood prone land, not where buildings are flooded above floor level. The submission also references Council drainage upgrades in the area. The Council drainage upgrade from 1995 serves to drain the roadway but does not protect from flooding at the rear caused by runoff from the larger catchment. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
14.	10 Michael Street, Templestowe Lower	Bulleen North	SBO2	2, 5, 7	The submission does not object specifically to the SBO. The property is located in a gully, is in the centre of the flow path and could reasonably be expected to be flood prone during a major storm event. Although Council is incrementally upgrading older drainage infrastructure, it cannot build a drainage system that can cope with all floods. However, it can ensure new buildings and works are constructed to reduce flooding in areas of greatest flood risk. The outcome of the review is that the extent of the SBO be retained at this location.	No
15.	20 Riverwood Lane, Templestowe Lower	Ruffey Creek	Remove LSIO SBO2	Withdrew submission	The submission objected to the proposed SBO2 from a property development perspective. The submission was subsequently withdrawn.	No
16.	3 Ridout Place, Bulleen	Koonung Creek	SBO3	1, 2	The description of flooding in the submission is consistent with the application of the SBO at this location. A site visit has confirmed the surrounding topography, with the submission property located downstream of a gully in Morris William Reserve. Runoff could reasonably be expected to occur during storm events in the manner indicated by the SBO, with the flow path cutting the corner of no. 3. The properties on the low side of the street are affected by a flow path to the rear, with the flow largely contained by the roadway of Ridout Place. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
17.	2/47 Chippewa Avenue, Donvale	Mullum Mullum Creek	SBO2	4	The submission suggests that flooding is not a problem at the property provided the drains on Amy's Grove are regularly maintained. Due to the modelling being undertaken on the assumption that the drainage network is operating at capacity, this is an issue separate to the extent of the flood shape. Should the modelling be undertaken with pits partially blocked, the flood shape would be more extensive than that indicated by the SBO. A site visit confirmed that the property is located in a sag and below road level of Amy's Grove and can reasonably be expected to experience overland flow when the capacity of the Council drain outside the property is exceeded during a major storm event. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
18.	33 Beckett Road, Donvale	Mullum Mullum Creek	SBO2	2, 11, 14 Measures should be taken to prevent dirt/rocks from adjacent properties washing onto neighbouring properties.	The submitter's description of runoff patterns is largely in line with the application of the SBO at this location. The submission takes issue with a small lobe of the flood shape and states there has not been flooding experienced in this manner. Based on a review, this area is consistent with the shallow modelled depths and slight depression in the land surface. The submission states that there have been "some 1% events" experienced at this location. Without knowing the dates of the events the submitter is referring to, it is not possible to ascertain whether or not these storms were representative of 1 in 100 year ARI events of	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					critical duration. Manningham experienced significant flood events in 1991, 1992, 2003 and more recently 2011 and 2016, resulting in inundation and damage to properties across the municipality. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
19.	32 Fairbank Crescent, Templestowe Lower	Ruffey Creek	SBO3	2, 5, 7, 9, 11	<p>The submission argues that the model should be used as a tool to improve drainage infrastructure. The proposed overlays will be valuable in identifying areas for critical drainage improvements. Council has a policy of prioritising upgrades where flooding of habitable floor areas occurs.</p> <p>The submission is correct in identifying that the flood shape incursion is minor. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under certain conditions, development within an easement or in an area previously designated as a shared driveway may be permitted in some cases. Existing properties may be redeveloped in the future and the overlay will assist in the assessment of the impacts of any future development. In this case, the incursion is not considered to be significant and application of the SBO in this case would not yield any significant planning or risk mitigation benefit. Thus, the exhibited flood shape is recommended to be amended accordingly.</p>	Yes. Remove SBO3 incursion from the property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
20.	3 Daws Road, Doncaster East	Ruffey Creek	SBO3	1, 11	The submission states that no flooding has been experienced in the last 10 years on the property. It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under conditions, development within easement or in an area previously designated as a shared driveway may be permitted in some cases. Existing properties may be redeveloped in the future and the draft overlay will assist in the assessment of the impacts of any future development. In this case, the incursion is associated with an area of isolated ponding and is not considered to be significant. Thus, the ponding is recommended to be deleted from the exhibited flood shape.	Yes. Remove SBO3 ponding from the property.
21.	74 Thompsons Road, Bulleen	Koonung Creek	SBO3	7, 8	The submission contains no objection to the exhibited flood shape. The outcome of the review is that the extent of the SBO be retained at this location.	No
22.	98-100 Corriedale Crescent, Park Orchards	Mullum Mullum Creek	SBO2	2	The submission states that the flood shapes accuracy is questionable. No specific observations of drainage patterns were provided in the submission, but it is possible the submitter has not experienced a 1 in 100 year ARI rainfall event of critical duration at this location. A site visit from the street has confirmed the topography with the submission property contains a gully which would reasonably be expected to	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					experience runoff in the manner indicated by the SBO during major storm events. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
23.	37 Scarlet Ash Drive, Templestowe Lower	Ruffey Creek	SBO3	2, 3	The submitter's description of historical flooding is in line with the application of the SBO in this area. There was a drainage upgrade in the vicinity of the submission property in 1998 and this was included in the modelling. In addition, the submission property is not downstream of the upgrade so it does not impact the flood extent at this location in any case. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
24.	31 Hampshire Road, Doncaster	Koonung Creek	SBO2	12	31 Hampshire Road is located in a valley running from Wetherby Reserve to Koonung Creek. The adjacent property to the north is almost completely covered by the SBO. That the SBO does not encroach across a significant portion of the submission property reflects both the upgraded Council drainage infrastructure and the raised nature of the ground above natural levels, which has been mentioned in the submission. A site visit confirmed that the drainage infrastructure in the area was modelled correctly, and the topography is largely consistent with the modelled terrain. There is also a risk that the filling on the property could be removed if the property is developed in the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					future. It is considered that the Lidar data adequately represents the ground conditions and that the SBO2 should be retained in this case.	
25.	10A (2/10) Millicent Ave., Bulleen	Koonung Creek	SBO2	14 No objection at this stage.	This submitter requested further information prior to the information session that was held in November 2015. Information was emailed on 23 November 2015, and no further submission was received.	No
26.	39 Scarlet Ash Drive, Templestowe Lower	Ruffey Creek	SBO3	3	The submitter's description of historical flooding is in line with the application of the SBO in this area. There was a drainage upgrade in the vicinity of the submission property in 1998 and this was included in the modelling. In addition, the submission property is not downstream of the upgrade so it does not impact the flood extent at this location in any case. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
27.	3 Hampden Court, Templestowe	Ruffey Creek	SBO2	14 Object to amendment. No reasons given.	The submission objects to the amendment, but no specific basis for objection is provided. Based on a desktop review, the flood shape is consistent with contours and catchment size. The outcome of the review is that the extent of the SBO be retained at this location.	No
28.	20 Russell Street, Bulleen	Bulleen North	SBO1	3, 7	The updated modelling has identified the property is in an overland flow path.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					The flow path needs to be retained in the flood extent as the Council flow path to the south has been retained. However, it is necessary to connect this flow up to the main flow near the Melbourne Water drain (Bulleen North Drain). It has been selected as a Melbourne Water parcel so there is only one authority responsible for providing flood advice. The flood shape should remain as exhibited at this location.	
29.	76 The Grange, Templestowe	Ruffey Creek	SBO2	7, 8	The submitter has expressed concern regarding insurance and devaluation of the property. The property is in a gully adjacent to the Grange Reserve; has a drainage easement running along the east boundary; is in the main flow path and can reasonably be expected to experience overland runoff once the capacity of the Council drain is exceeded. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
30.	87-89 South Valley Road, Park Orchards	Andersons Creek	SBO2	1, 2	The submission states that flooding was experienced during construction of a nearby property. This suggests that the natural path of water is consistent with the application of the SBO. The submitter also may not have experienced a 1 in 100 year rainfall event of critical duration at this location. Although the submission takes issue with the extent of the flood shape running through the property compared to neighbouring properties, a site visit has confirmed the overall topography,	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					with a slight depression between upstream properties contributing to the flood shape. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
31.	4 Berrima Road, Donvale	Mullum Mullum Creek	SBO3	14	This submission contained no content. A further letter was sent on 22 January 2016 seeking comments, however, no further submission was received. Due to the proximity of the subject property to the flood extent it is reasonably expected to be flood prone. The outcome of the review is that the exhibited flood shape remain at this location.	No
32.	70 Melissa Street, Donvale	Mullum Mullum Creek	SBO2	5	Council's drainage system design is typically designed for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. The SBO is based on a 1 in 100 year ARI event. Due to the proximity of the property to the flood extent it is reasonably expected to be flood prone. The results of flood mapping have been used to identify potential drainage upgrades. The exhibited flood shape should remain at this location.	No
33.	14 Olympus Drive, Templestowe Lower	Ruffey Creek	SBO3	2, 3, 5	The submission states that the property is elevated and unlikely to experience flooding. The flood shape at this location represents shallow overland runoff flowing downhill as a result of the upstream catchment to the south east rather than rising floodwater. This type of flooding is still considered a risk. The submission also refers to recent	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					drainage upgrades. The upgrade in the Olympus Drive/Cassinia Rd catchment constructed in 2012 has been reviewed and found not to be represented in the model, however, the submission property is upstream of the works and the omission is unlikely to affect flooding at this property. The exhibited flood shape is consistent with the topographical contours of the property. The flood shape is recommended to be retained at this location and any updated drainage infrastructure is recommended to be included in a future review of the modelling.	
34.	11 Gairlock Court, Doncaster	Ruffey Creek	SBO3	2	Refer to Attachment 7 for the Further Technical Review of this submission.	Yes. SBO3 to be removed from property. Refer to map at Attachment 10.
35.	66 Knees Road, Park Orchards	Andersons Creek	SBO2	11	The submission states that the flood shape incursion is on a shared driveway and should not apply. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under conditions, development in close proximity to property boundaries, on shared driveways or within easements may be permitted in some cases. In this case, the incursion is not considered to be significant and application of the SBO in this case would not yield any significant planning or risk mitigation benefit. Thus, the	Yes. Remove SBO2 incursion from the property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					exhibited flood shape is recommended to be amended accordingly.	
36.	12 -14 Redhill Terrace Cherry Hill Estate (previously 141-161 Andersons Creek Road), Doncaster East	Mullum Mullum Creek	SBO2	12	The submission states that the modelling used to determine the extent of the SBO fails to recognise the development on the site. The On Site Detention system and private drains constructed for the development have been implemented to benefit properties downstream of the development and will not result in a change to the extent of flooding on the property. In addition, across the municipality, private drainage assets have not been included in the modelling for several reasons. Usually, OSD systems are only designed to minor storm event standards, with an overflow bypass for high intensity events. The drains constructed as part of the development are private assets which Council does not maintain and therefore cannot guarantee their effectiveness in high intensity events. Although in this case the OSD system has been constructed to major storm event standards, it will only impact the flood shape downstream of the asset, which is in the north east corner of the development. The changes made to the terrain as part of the development are not reflected in the LiDAR data which was captured in 2009. This data reflects the terrain at a point in time and will be updated in the future as new LiDAR data is made available. It is recommended to retain the flood shape at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
37.	4 Birchgrove Crescent, Templestowe	Ruffey Creek	SBO1	2, 9, 11	The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. However, based on a review of the associated flow depths, and discussion with Melbourne Water, it is proposed to amend the designation from SBO1 to SBO3.	Yes Amend flood shape designation from SBO1 to SBO3
38.	Parks Victoria Land	Multiple	Multiple	14 Parks Victoria. No submission.	This submission from Parks Victoria notes that comments, if any, will be included in a DELWP submission. A submission from DELWP was not, however, received.	No
39.	5 The Parkway, Templestowe	Mullum Mullum Creek	SBO2	2	The submitter does not provide any technical objection to the overlay placed on the property. The flood shape is reasonable in this instance due to the proximity of the subject property to the flood extent, as well as the levelling of the terrain within the property. As such, it is reasonably expected to be flood prone during major storm events. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
40.	4 Cavalier Street, Doncaster East	Ruffey Creek	SBO3	5	Council's drainage system is typically designed for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. The SBO is based on a	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					1 in 100 year ARI event. Due to the proximity of the property to the flood extent it is reasonably expected to be flood prone. The results of flood mapping have also been used to identify potential drainage upgrades. Council is working through a process to prioritise these capital works. As a result of these overlays, Council is better positioned to consider future drainage works across the municipality. The issue of the modelling being undertaken on the assumption that the drainage network is operating at capacity, is an issue separate to the extent of the flood shape. The flood shape should remain as exhibited at this location.	
41.	21 Caringal Avenue, Doncaster	Koonung Creek	SBO3	1, 5, 6	The submission states that no flooding has been experienced at this address and that poor planning on Council and Melbourne Water's behalf will result in future flooding, if it occurs. The flood shape at this location encroaches in at three points along three boundaries. The small flood shapes encroaching on this property are part of the main flow paths and cannot be trimmed as this would show an interruption to the main flow paths. Although the flood shapes are small and will not affect this property greatly, it is recommended that the overlay remains in place.	No
42.	17 McCallum Road, Doncaster	Ruffey Lake	SBO2	1	The submission states that the residents have experienced two 1 in 100 year ARI storm events and not been flooded. No details of the date of the events have been provided so it is not possible to	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					verify whether the events referred to were true 1 in 100 year ARI storms of critical duration. The flood shape in this area represents overland runoff in excess of pre-1970s drainage infrastructure travelling in a north westerly direction towards Ruffey Lake and is defined with a combination of depth, velocity and duration in line with industry practices. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
43.	5-7 Rainbow Valley Road, Park Orchards	Mullum Mullum Creek	SBO2	2	While the SBO2 only covers a small percentage of the property, the property has a defined gully and is predicted to be partially flood affected in a 1 in 100 year ARI event of critical duration. If the property is redeveloped in the future, it would be appropriate to ensure that the flood path is considered when siting dwellings. The pipe system within the property to divert overland run off is considered private drainage. It is beyond the scope of Council to consider private drains and functionality for the flood modelling which underpins the SBO. A site visit confirmed the fall of the property as stated by the resident in the submission and following addendums. As the area of overlay coverage does not fulfil the minimum incursion criteria, the SBO2 is not recommended to be amended in this case.	No
44.	6 Marshall Avenue, Doncaster East	Koonung Creek	SBO2	14	The submission contained no objection to the proposed amendment but asked to be kept	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					informed of the process. The submission property experiences runoff from the north east and the flood shape is consistent with topographical contours.	
45.	20 Sinclair Avenue, Templestowe Lower	Ruffey Creek	SBO3	2	The existing Council drainage in the area surrounding the submission property does not provide complete protection for 1 in 100 year ARI rainfall events. Typically, underground drainage systems are designed to cope with 1 in 5 year ARI events with overland flow occurring once the capacity of the drains is exceeded. While the resident may not have observed flooding, the property is in the expected flow path based on the aerial survey data and observations on the site visit. The SBO3 is based on flood prone land, not specifically where dwellings are flooded above floor level. While the SBO3 only covers a small section of the property, the property has a defined gully and is predicted to be partially flood affected in a 1 in 100 year ARI event of critical duration. The SBO should be retained at this location to allow for re-development in the future and ensure that the buildings are located appropriately with respect to the overland flow path. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
46.	112-126 Old Warrandyte Road, Donvale	Mullum Mullum Creek	LSIO & SBO2	12, 14 Object to the amendment	The submission argues that due to the current construction of Mullum Estate including earthworks and stormwater infrastructure, the	Yes. It is recommended to

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				<p>on the basis that the new overlay boundaries do not project any further into the subdivision than the existing overlay boundary. Issues to do with flooding were addressed as part of the original permit for subdivision which was granted in 2009. The permit adequately dealt with flooding concerns on</p>	<p>exhibited flood shape should not apply to the property. This work has occurred since the capture of the LiDAR survey data used in the modelling. This LiDAR data and the derived flood shape are reflective of the ground conditions at a point in time. The exhibited flood shape is reflective of the conditions at the time of modelling. The addendum also argues that the extension of LSIO up the tributary gullies should be designated with an SBO rather than an LSIO. The intent of the amendment is that each property be subject to overlays solely under either Council or Melbourne Water control. Based on current data it is recommended to amend the designation of the flood shape on the main tributary gully to LSIO resulting in the entire gully being under Melbourne Water control. In recognition of the progress of the Stage 1 subdivisional works and lack of information available to incorporate into the model on new assets and levels, it is further proposed to delete the flood shape within the extent of Stage 1 of the subdivision, including the extension of the flood shape into 7 Yileen Court. In respect of 116-126 Old Warrandyte Road (Stage 2), two dams have been noted in the landscape which will be removed when Stage 2 works proceed. Further review of the flood shape has also determined that the remaining overland flows at 116-126 Old Warrandyte Road are relatively shallow and given the pending civil construction works, it is</p>	<p>amend the designation of the flood shape on the main tributary gully to LSIO resulting in the entire gully being under Melbourne Water control. Further, it is proposed to delete the flood shape from Stages 1 and 2 of the subdivision and 7 Yileen Court. Refer to map at Attachment 10.</p>

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				the subject land.	recommended that the LSIO flood shape be deleted from the Stage 2 land.	
47.	17 Estelle Street, Bulleen	Bulleen North	SBO3	11	The submission states that the overlay incursion is on the driveway of the affected property and questions why other neighbouring properties do not have a similar incursion. While the SBO2 only covers a small section of the property, the surrounding topographical features concentrate runoff to the driveway that is almost flat and would increase the depth of flow and partially flood in a 1 in 100 year ARI event of critical duration. If the property is redeveloped in the future, the overlay will be important in ensuring this is undertaken in a manner that considers the stormwater overland flow path from behind this property. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
48.	16 Pamela Court, Warrandyte	Mullum Mullum Creek	SBO2	2, 5, 7, 8	The submission states that flooding has been experienced on the property but not in the way shown by the SBO. A review has found the flood shape is true to terrain and characteristic of drainage pit overflow on Margaret Court. Council's underground drainage system design standard is typically for a 5 year ARI event, with flows in excess of the pipe system travelling overland. The submission also refers to historical issues with blockages or maintenance of drains in the area.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					Whilst an important issue, it is not relevant to the SBO as the flood shape is modelled with the assumption all drains are working at capacity and no blockages exist in the system. Assuming blockages would increase the extent of the SBO beyond that currently shown. The review has confirmed the surrounding topography and drainage assets and that the property falls within the flow path of the SBO. The flood shape should remain as exhibited at this location.	
49.	32 Worthing Avenue, Doncaster	Mullum Mullum Creek	SBO1	2, 3, 14 Would like the overlay to be reduced to cover only the southern portion of the property.	The property is located near a Melbourne Water main drain and the depths of flooding are consistent along the overland flow path. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	No
50.	12 Alder Court, Park Orchards	Koonung Creek	SBO1	8, 10, 11	There is minor flooding along the north western property boundary. This is updated modelling for an existing SBO flood shape. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					The outcome of the review is that the exhibited flood shape be retained at this location.	
51.	91 South Valley Road, Park Orchards	Koonung Creek	SBO2	11	The SBO shape is sizable and the entire width of the flood extent flows through the property near the rear boundary. In addition, the flood extent for the 1 in 100 year ARI event is wider than the easement that traverses the property located in the gully which would convey storm water from the major rainstorm events. Removal of the SBO is not recommended as limitations for development along the easement alone do not reflect the flood extent. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
52.	3 Wren Court, Templestowe Lower	Bulleen North	SBO3	2, 7	Although the property is located on a slope and in a high area, there are higher points in the surrounding terrain. The catchment area above is a medium size catchment and it would produce significant overland flows. The site visit confirmed that the site conditions and flood shape are relatively consistent with the contour data used for the flood modelling. Drainage systems upstream of the property are designed typically for a 1 in 5 year ARI event. The slight gully above the property would direct overland flows starting at this property which are consistent with the SBO3 shape. The SBO is consistent with the expected overland flows and will assist in controlling any future development of the land, it is recommended that the SBO3 is retained on this site. The review	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
53.	3 Parkside Court, Warrandyte	Mullum Mullum Creek	SBO2	2, 7, 8, 11	The submission states that the incursion of the flood shape is minimal and should not apply. A review has found that the small incursion of the flood shape on the common boundary of 2 and 3 Parkside Court is minor and would not provide any significant planning or risk mitigation benefit and can be trimmed to the property boundary. However, there is a second incursion of the flood shape through the battleaxe access to the property which corresponds with the main flow path and cannot be removed without compromising the integrity of the flood shape in this area. It is recommended that the aforementioned trimming be carried out as part of this amendment but the property as it stands will remain encumbered by the second SBO2 incursion.	Yes. Incursion of SBO2 on the common boundary between 2 and 3 Parkside Court to be removed. Second incursion of SBO2 through battleaxe access to property to remain. Refer to map at Attachment 10.
54.	18 Bali Hi Boulevard, Templestowe	Mullum Mullum Creek	SBO2	1, 2	Council's drainage system design standard is typically for a 1 in 5 year ARI event, with flows in excess of the pipe system travelling overland. The SBO is based on a 1 in 100 year ARI event. The fact that the submitter has not reported any flooding issues does not necessarily mean that the property is not flood prone in a 1 in 100 year ARI event. The rear of the property is characterised by a small gully and due to insufficient drainage is susceptible to inundation. The outcome of the review is that the extent of the SBO be retained at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
55.	2/13 Baratta Street, Doncaster East	Koonung Creek	SBO2	7	The submitter does not provide any technical objection to the overlay placed on the property. The flood shape is reasonable in this instance due to the proximity of the subject property to the flood extent as well as the levelling of the terrain within the property. As such it is reasonably expected to be flood prone during major storm events. The outcome of the review is that the extent of the SBO be retained at this location.	No
56.	21 Tandarook Crescent, Donvale	Koonung Creek	SBO2	2, 11	The submission states that a small portion of the property is affected by the SBO and that the house is located away from these areas. Although the property experiences a minor incursion in terms of percentage of the property affected, it does not meet the criteria for trimming as a minor incursion as it is over 30m ² . Although the current dwelling is situated away from the flood shape, the property may be subdivided in the future and it would be appropriate for the SBO to remain in place. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
57.	4 Skye Place, Doncaster East	Ruffey Creek	SBO3	1, 2, 3, 7	The submitter states that the property has not flooded in 30 years and asserts that the existing drains have enough capacity to handle stormwater runoff. Pluviograph data for Zerbes Reserve indicates that the most significant event impacting this area in the last 30 years was estimated to be between a 10 and 20 year ARI event. While the submitter may not have observed flooding, the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					property is within an expected flow path based on the aerial survey data and observations during the site visit. Although an upgrade has been done to increase the number of drainage pits in the court, the modelling indicates that in a 1 in 100 year ARI storm event, the easement drain capacity will be exceeded and, with flows in excess of the pipe capacity travelling overland. The flood shape is based on a 1 in 100 year ARI event of critical duration. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
58.	28 Hall Road, Warrandyte South	Andersons Creek	SBO2	2, 7, 8, 10, 12	While the SBO2 only covers the dam area of the property, the property has a significant area for overland run off from the road front to the rear and is predicted to be flood affected in a 1 in 100 year ARI event of critical duration. If the property is redeveloped in the future, it would be appropriate to ensure that the buildings are located to ensure that the floor levels are above flood levels. The enlargement of the dam has been reflected in the LiDAR data used in the modelling which was captured in 2009. The outcome of the technical review is that the SBO remain in place at this location.	No
59.	4 Whitefriars Way, Donvale	Mullum Mullum Creek	SBO2	5, 14 Council should not be applying	Manningham's current design of drainage system is consistent with other Councils in that they are designed for a 1 in 5 year ARI. The implementation of an Overlay better positions Council to consider	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				controls retrospectively. The use of the term flooding is incorrect and misleading.	future drainage works across the municipality. The site investigation confirmed that the topography of the property is consistent with contours and the road front boundary is within a defined gully. The outcome of the technical review is that the SBO remain in place in this location. In response to the issue raised that Council should not be applying controls retrospectively and the use of the term flooding is incorrect and misleading, it is considered that the proposed controls are not retrospective as they identify land that is currently at risk of flooding in a severe storm event. The use of the term flooding is derived from the State planning controls and referred to in the SBO and LSIO Victoria Planning Provisions. This is not something that Council can change as it is a State administered control. It is also important to note that the local schedules which sit under the State provisions do not refer to 'flooding' in any of the documentation.	
60.	40-42 Hertford Road, Doncaster East	Ruffey Creek	SBO2	3, 6	A discrepancy has been found between the modelled and actual drainage infrastructure at this location. The upgrade was undertaken prior to the flood modelling exercise which underpins the SBO and additional modelling is required to quantify the impact of the upgrade on the flood shape. The flood shape is recommended to be reviewed in this area following additional modelling, which is expected to be completed prior to the Panel hearing.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
61.	9 Mahoneys Court, Warrandyte	Mullum Mullum Creek	SBO3	1, 7	The submission refers to the existence of private drains which have mitigated against flooding of the property in the past. The site investigation confirmed that the topography of the property is consistent with contours. In addition, as the extent of the SBO3 area is bigger than 30sqm (even though it is less than 6% of the total land area), it is recommended that the overlay as exhibited should remain. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
62.	2/51 Beecroft Crescent, Templestowe	Ruffey Creek	SBO2	1, 2 12	The location of the property is on a sloping site and a larger catchment to the north west results in significant overland runoff across the property. The natural topography controls the overland flow. The drainage infrastructure and the sloping land surface has been correctly represented in the model and therefore the analysis which has resulted in the application of the SBO2 is accurate. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
63.	29 McCallum Road, Doncaster	Ruffey Creek	SBO2	2	The submission states that the flood shape is not representative of the existing contours of the property. The LiDAR terrain data used in the modelling represents the latest and most complete terrain data available for this type of modelling. The site investigation confirmed that the topography of the property is consistent with these	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					contours. The flood shape is recommended to be retained accordingly.	
64.	1/14 Chippewa Avenue, Donvale	Mullum Mullum Creek	SBO2	3	The submission states that the nearby 2012 Whitehorse Council drainage upgrade protected the property from flooding and the poor maintenance of the Council drainage system needs to be addressed. However, the fully maintained Council drainage would cater for only the runoff from the 1 in 5 year ARI event and the SBO2 is associated with a 1 in 100 year ARI event. The submission also demands for updated flood mapping and further drainage upgrades if the property is to remain under SBO2. Since the property is located at the middle of a natural gully, modelling of the Whitehorse Council drains is not expected to significantly impact the flood extent. The property is wholly under SBO2 and the depths of flow through the property exceed 100mm. The review has confirmed the surrounding topography and Manningham drainage assets. The flood shape should remain as exhibited at this location.	No
65.	20 Montpellier Crescent, Templestowe Lower	Ruffey Creek	LSIO	3	The majority of the overland flow across the parcel are from the south, not from Ruffey Creek. The overlay designation has been reviewed and reconfirmed as being appropriate as each property must be subject to overlays solely under either Council or Melbourne Water control. No property shall be subject to overlays under both Council and Melbourne Water control. Based on the direction of flow, the proposed overlay is considered to be	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					appropriate. The outcome of the review is that the exhibited flood shape be retained at this location.	
66.	3 Laloma Court, Templestowe Lower	Ruffey Creek	SBO2	2, 7, 8, 12	<p>The submission states that the property is not at risk of flooding because it is elevated and the resident has upgraded their private drainage system.</p> <p>Although the property is elevated, it is sloping and the area to the south is even more elevated, with topographical gully-like features concentrating the shallow runoff in this area. In addition, private drainage systems have not been modelled as they can be removed at any time and Council cannot guarantee their effectiveness. Also, they do not significantly impact the flood extent during major storm events. The intent of the overlay is not to restrict future development but to ensure it is undertaken in a manner that considers the overland flow path of runoff. Different construction methods will be considered provided the developer can demonstrate appropriate ways to manage stormwater runoff. A site visit undertaken confirmed that the topography of the area and Council drainage assets are consistent with that modelled. The flood shape is recommended to be retained at this location.</p>	No
67.	26 Jocelyn Court, Doncaster East	Ruffey Creek	SBO3	1, 2	<p>The submission states that the property is on a slope and no flooding has ever been experienced. It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					location. The drainage system implemented in the immediate area is designed typically for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. The proposed overlays are based on a 1 in 100 year ARI event in accordance with industry guidelines. A site visit has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
68.	10 Hotham Street, Templestowe Lower	Bulleen North	SBO3	2, 3, 4, 5, 7, 8, 11	The submission states that Council should upgrade the drains if flooding is a problem and that the drainage upgrade along Balmoral Avenue should be included in the modelling. A review has found that these upgraded drains (2012) were included however the submission property is on a different flow path and does not directly benefit from the upgrade. It is recommended that the incursion of the flood shape in to the property be retained.	No
69.	59 Fyfe Drive, Templestowe Lower	Ruffey Creek	SBO2	1, 7	The submission states that they have lived in the property for 15 years and have never flooded. In addition, the submission indicated that prior to buying the property research indicated no flooding liability. It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. The proposed SBO3 applies to more than 50% of the property. The review has confirmed the surrounding topography and drainage assets.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					The flood shape should remain as exhibited at this location.	
70.	1/24 Roger Street, Templestowe Lower	Koonung Creek	SBO2	1, 12	The submission refers to experiences of flooding across the property, however, argues that the dwelling has never flooded. The flood shape incursion represents the lower lying area of the property adjacent to a floodway and does not extend over the dwelling footprint. A site visit has found the flood shape to be consistent with site conditions and evidence described in the submission. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
71.	8 Chaim Court, Donvale	Koonung Creek	LSIO	1	The submission states that the property was purchased 42 years ago and that there has never been water from the Mullum Mullum Creek or from the road entering this property in all that time, although the road has flooded in a few occasions in very intense rainfall events in the past. It is acknowledged that the LSIO is not an appropriate overlay affecting this property and it should be reclassified as SBO3, as the flooding to this property would be as result of the Council drains overflowing in rainstorm events larger than the 1 in 5 ARI. Council officers and Cardno consultants are in agreement that the overlay should be reclassified as SBO3 and the flood shape is consistent with the expected flooding in the 1 in 100 ARI rainstorm event. It is recommended that	Yes. The overlay be reclassified to SBO3 and not be removed from this property. These changes also impact 3 and 5 Chaim Court and 59 Beckett Road. Refer to map at Attachment 10.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					the overlay is reclassified to SBO3 and the overlay is not removed from this property.	
72.	11 Apple Blossom Court, Templestowe	Mullum Mullum Creek	SBO2	2, 14 Request a change from SBO2 to SBO3.	The submission states that due to the elevated nature of the property it will not experience any significant overland flow and refers to other lower lying properties not being affected by the overlay. The flood shape in this area represents overland flow to the north and east. It does not represent rising or standing water, so references to low lying properties is not relevant. The review has found that the flood shape is consistent with the topography and Council drainage assets and is recommended to be retained.	No
73.	10 Tennyson Court, Templestowe	Mullum Mullum Creek	SBO3	1	The submission states that the property has never experienced flooding with the exception of on one occasion following a drain blockage. It is possible that the submitter has not experienced a 1 in 100 year ARI rainfall event of critical duration at this location. The Council drainage infrastructure to the rear is only designed for a 1 in 5 year ARI rainfall event, so it is reasonable for overland flow to occur in the manner indicated by the SBO once the capacity of these drains is exceeded in the 1 in 100 ARI event. The property is located at the end of the court and a significant portion of the roadway is under the SBO3. The site visit confirmed that the terrain of the site and drainage infrastructure is consistent with that modelled. The outcome of the review is	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					that the exhibited flood shape be retained at this location.	
74.	13/1 Daws Road, Doncaster East	Ruffey Creek	SBO3	7, 11, 12	The submission states that the existing drainage in the vicinity of the property is adequate. It is possible that the submitter has not experienced a 1 in 100 year ARI storm of critical duration at this location. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under certain conditions, development within an easement or in an area previously designated as a shared driveway may be permitted. Existing properties may be redeveloped in the future and the overlay will assist in the assessment of the impacts of any future development. In this case, the incursion is partly associated with an area of isolated ponding and is not considered to be significant and it is recommended that the ponding area be deleted from the exhibited flood shape.	Yes. Remove isolated ponding area of the SBO3.
75.	65 Dehnert Street, Doncaster East	Ruffey Creek	SBO1	2, 12	The property is located adjacent to the Melbourne Water George Street Main Drain. The applicable flood level for the property is 78.01 metre AHD. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
76.	99 The Grange, Templestowe	Ruffey Lake	SBO2	2, 3, 7, 8, 12	<p>The submission and addendum references the higher level of the land and associated retaining walls of the property with respect to the neighbouring properties.</p> <p>In general, the area is located in the middle of a natural floodway connecting Serpells Community Reserve and The Grange Reserve. Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the catchment. Private infrastructure, such as retaining walls, structures and buildings are not individually modelled as they are not protected and can be subject to change in the event of property redevelopment.</p> <p>Consideration has been given to the impacts of structures, such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No
77.	8 Lalani Terrace, Templestowe	Mullum Mullum Creek	SBO3	3, 12	<p>The submission refers to recent drainage upgrades in addition to observed overland flow along the easement running along the eastern boundary.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					The recent upgrade mentioned in the submission relates to the reconstruction of the corner of Serpells Road and Tuckers Road which was undertaken in 2010, however, no drainage pipes were installed as part of that work and the land surface is not considered to be substantially altered. A site visit has confirmed that the local topography and drainage assets and the flood shape are considered to be consistent with site conditions. The outcome of the review is that the exhibited flood shape be retained at this location.	
78.	7 Myers Court, Doncaster	Koonung Creek	SBO2	2, 3	The submission refers to drainage upgrades along the valley from Arthur Street to Frank Street. These have been checked and found to be modelled consistently in the flood mapping. The comparison with the other properties on Frank Street with respect to land elevation may not be relevant as they are in a different flow path. The south west corner of the property is located at the lowest point of the gully line that runs along north east to south west direction at that location and the modelled depths at the lowest point are consistent with this depression. The extent of the SBO means that during the event of flood there would be certain depth of flow with certain duration and velocity over those areas. Water will accumulate to that depth at that part of the land for certain duration and then flow downwards. When the natural surface is developed to a constructed surface, the runoff will be increased	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>but the submitter points out that the ground water runoff (possibly subsurface flow) will be reduced. This reduction is due to the fact that infiltration would be reduced. Drainage assets have been modelled correctly with a site visit verifying the referenced upgrade works. Although upgrades have taken place in the past, these serve to remove flooding of habitable floor areas but do not remove all nuisance flows because there are existing deficiencies in the surrounding network. The review has confirmed the surrounding topography and drainage assets. The flood shape in this area is significant and should remain as exhibited at this location.</p>	
79.	4 Cypress Avenue, Templestowe Lower	Ruffey Creek	SBO3	1, 2	<p>The submission states that, due to the slope of the property and existence of drains to the rear, flooding is unlikely to be an issue. The flood shape in this area represents overland runoff travelling in a southerly direction, in line with the topography of the area and the upstream catchment. The proposed overlay will assist in ensuring redevelopment is undertaken in a way that considers the extent of this runoff. Although the submitter may not have experienced flooding, it is possible that a 1 in 100 year ARI rainfall event of critical duration has not been experienced at this location. The Council drains in the easement along the eastern boundary would provide a 1 in 5 year ARI level of service. The review has confirmed the topography and drainage assets in this area. The</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					outcome of the review is that the exhibited flood shape be retained at this location.	
80.	12 Speers Court, Warrandyte	Mullum Mullum Creek	SBO3	1, 5, 7, 8	<p>The submission states that no flooding has been experienced on the subject property. The submission also states that if the drainage infrastructure is unable to cope with the amount of runoff, Council or Melbourne Water should upgrade the drains.</p> <p>It is possible that the submitter has not experienced a 1 in 100 year ARI storm event of critical duration at this location. Council cannot build a drain that can cope with all storm events. Typically, underground drainage systems are designed to cope with minor (1 in 5 year ARI) storm events with flows in excess of the underground network travelling overland. The SBO was based on modelling for a 1 in 100 year ARI event in line with industry practices. This identifies flood prone land during major storms and assists in ensuring development occurs in a way that considers the natural flow path and sites dwellings in a safe location. A site visit has confirmed that the flood shape is consistent with the site conditions and topography. The outcome of the review is that the exhibited flood shape be retained at this location.</p>	No
81.	43 Knees Road, Park Orchards	Andersons Creek	SBO3	2	The submission takes issue with the flood shape encroaching over the house footprint. The upstream catchment for the property is located to the north east and the property contains a small	Yes. The flood shape at this location is to be amended

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					gully. A review and site visit has found there is a limited basis for the connection of the flood shape between the ponding on the house footprint and the gully. The outcome of the review of the flood shape at this location is to recommend removal of the SBO from part of the house footprint, but retention in the gully running through the property.	to remove the SBO from the house footprint, however, the flood shape is recommended to be retained in the gully running through the property. Refer to map at Attachment 10.
82.	9 Bayles Court, Donvale	Mullum Mullum Creek	SBO1	2, 12	The property is located adjacent to the Melbourne Water Hunt Street Main Drain. The applicable flood level for the property is 53.08 metres AHD. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	No
83.	6 Robyn Street, Doncaster	Ruffey Creek	SBO2	1, 2	The submission states that flooding will not be an issue for the property. The property contains a minor incursion at the rear that is not considered to be significant. Having the overlay on the property is not expected to yield any significant planning or risk mitigation benefits.	Yes. Remove the SBO2 incursion from property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					The outcome of the review is to recommend that the flood shape be deleted from the property.	
84.	51 Larne Avenue, Donvale	Mullum Mullum Creek	SBO3	2, 7, 14 Waste of Council revenue	The submission states that the terrain has not altered since subdivision and therefore the risk of flooding has not changed. The flood shape does not represent a recently increased risk of flooding and does not aim to prevent development, but rather to ensure that development is undertaken in a manner which considers overland runoff. The review has found that the flood shape is consistent with the topography of the site and Council drainage assets in the area is recommends that the overlay be retained in the gully running through the property. In response to the issue that the introduction of the overlay controls is a waste of Council revenue, it is considered that the introduction of the SBOs is essential for the community to better understand flood impacts in major storm events and inform future development proposals, to minimise the risk of exacerbation of flood impacts for abutting properties and to set proposed habitable floors above flood levels. The flood extent and frequency information arising from the associated flood mapping project will also inform the prioritisation of future Council drainage improvement works.	No
85.	20 McLeod Street, Doncaster	Koonung Creek	SBO2	7, 8, 11	The submission states that the incursion of the flood shape is minimal and should not apply. The purpose of the proposed overlays is to ensure	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					that future development is protected from flooding. Subject to conditions, development in close proximity to property boundaries, on shared driveways or within easements may be permitted in some cases. In this case, although the incursion represents a small percentage of the property size, the property may be subdivided in the future. The incursion is over 30m ² and does not meet the criteria to be trimmed. In addition, the property is close to areas of flooding in excess of 500 mm in depth and this is considered a higher risk area. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
86.	41 Botanic Drive, Doncaster	Ruffey Creek	SBO1	1	The property is located adjacent to the Melbourne Water Roseland Grove Main Drain. The applicable flood level for the property is 70.99 metres AHD. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	No
87.	106 Rathmullen Quadrant, Doncaster	Koonung Creek	SBO2	2, 6	The property receives runoff from the north east. The relative position of the property to the surrounding areas is consistent with the contour map and the SBO3 map including depths of overland flow. The front excavation of the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					property at 108 Rathmullen Quadrant has been correctly picked up by the depths of overland flow at that location. The drainage infrastructure has been checked and found to be consistently modelled. The proposed overlays will ensure that any possible future redevelopment will be done in a way that considers the path of overland runoff. The review confirmed that the terrain of the site and drainage infrastructure is consistent with that modelled. The outcome of the review is that the exhibited flood shape be retained at this location.	
88.	43 Eucalypt Avenue, Templestowe Lower	Ruffey Creek	SBO3	1, 2	The submission states that flooding has not been experienced and that the drainage system is sufficient. It is possible the submitter has not experienced a 1 in 100 year ARI storm event of critical duration at this location. Council drainage systems are typically designed to cater for a 1 in 5 year ARI event. The property slopes down from road level and contains a drainage pipe along the rear boundary. The review confirmed that the terrain of the site and drainage infrastructure is consistent with that modelled. The outcome of the review is that the exhibited flood shape be retained at this location.	No
89.	36 Hotham Street, Templestowe Lower	Bulleen North	SBO3	2, 7	The submission states that the existing topography of the property is sloping and is not reflected accurately in the proposed overlay. The flood shape at this location represents concentrated runoff from the west due to the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					topography and water flowing onto Hotham Street. A site visit has found that the flood shape is consistent with site conditions. The intent of the proposed overlays is not to prevent future development but to ensure that it is undertaken in a manner which considers the overland flow path. The site visit confirmed that the terrain of the site and drainage infrastructure is consistent with that modelled. The outcome of the review is that the exhibited flood shape be retained at this location.	
90.	42 Winston Drive, Doncaster	Ruffey Creek	SBO2	5	The content of the submission acknowledges that flooding occurs which supports the application of the SBO in this case. The flood modelling which underpins the SBO will be used to prioritise drainage upgrades. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
91.	25 Amersham Drive, Warrandyte	Mullum Mullum Creek	SBO3	2	The flood extent indicates shallow flooding of the driveway area which is located in a gully and collects runoff from the east and south. Currently the property is under construction and the planning permit may have been issued before the commencement of the amendment. Although the driveway is the only part of the property affected by the SBO, it is not considered a basis for removal from the overlay as future redevelopment may occur and it is important to have the overlay to identify flood prone land. In addition, removal of the SBO would disconnect the adjacent flood shape	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					and it is not recommended for removal. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
92.	20 Bullen Street, Doncaster East	Koonung Creek	SBO2	1, 14 Flood overlay should be reduced in size.	The submission describes flooding along the easement at the rear, however, questions the extent of the proposed overlay. Although the flooding that has been experienced may not have been as extensive as that indicated by the flood shape, it is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. A site visit has confirmed that the flood shape is consistent with the topography and drainage assets at this location and the SBO is recommended to be retained.	No
93.	43 Botanic Drive, Doncaster	Ruffey Creek	SBO1	1, 2	The property is located adjacent to the Melbourne Water Roseland Grove Main Drain. The applicable flood level for the property is 68.76 metres AHD. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	No
94.	14 Coleridge Court, Templestowe	Mullum Mullum Creek	SBO3	2	Although the incursion of the flood shape on the property is minor compared to the size of the property, the purpose of the proposed overlay is to ensure that future development is protected from	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					flooding and the property may be subdivided in the future. In this case, it is not recommended to amend the flood extent as the incursion makes up almost the entire width of the flow path at this location and trimming would compromise the integrity of the flood shape in this area. The site visit confirmed that the terrain of the site and drainage infrastructure is consistent with that modelled. The outcome of the review is that the exhibited flood shape be retained at this location.	
95.	17 Thea Grove, Doncaster East	Koonung Creek	SBO1	2, 3, 5, 12	<p>The property is located adjacent to a Melbourne Water Main Drain (Leeds Road MD). The applicable flood level is 76.17 metre AHD. The SBO1 provides a link between SBO2 & SBO3 to the LSIO.</p> <p>The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents.</p> <p>The outcome of the review is that the exhibited flood shape be retained at this location.</p>	No
96.	6 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 2	<p>Property is located adjacent to a Melbourne Water Main Drain (Greenridge Avenue Drain). The overlay extent has been reviewed and reconfirmed as being appropriate based on the direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. A</p>	Yes, It is recommended that the flood shape be retained but the overlay

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					review of the flow depths has however revealed that the property flooding results from shallow flows primarily associated with flows from the rear of the property. It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3. This recommendation has been agreed with Melbourne Water.	designation be changed from SBO1 to SBO3. Refer to map at Attachment 10.
97.	34 Anthony Avenue, Doncaster	Koonung Creek	SBO3	2, 11, 14 Future fencing exemptions in SBO3 will result in security issues for people and animals as the plinth will need to be constructed 400mm above the surface level.	The submission requests for the flood shape to be trimmed due to the minimal incursions into the property. A review has found the modelled flood shape to be consistent with site conditions as the property is adjacent to the main flow path through Anthony Reserve. The purpose of the proposed overlays is to minimise flooding risk for redevelopment. However, due to the minimal incursion and limited planning and risk mitigation benefit afforded by the incursion into this property, the flood shape is recommended to be deleted from the property. An issue has also been raised that future fencing exemptions in SBO3 will result in security issues for people and animals as the plinth will need to be constructed 400mm above the surface level. In response to this issue, it is recommended to amend the wording in the SBO 3 to include a minor text change to the Schedule to SBO3 to address some potential ambiguity with the controls. Specifically, in Schedule 3 to the Special Building Overlay, it is recommended to change the last dot	Yes. Remove SBO3 incursion from the property. In Schedule 3 to the Special Building Overlay, it is recommended to change the last dot point under <i>Clause 1.0 Permit requirement</i> as follows; <i>“New fencing with at least 25% openings <u>or</u> with a plinth at least 400mm above</i>

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					point under <i>Clause 1.0 Permit requirement</i> as follows; <i>“New fencing with at least 25% openings <u>or</u> with a plinth at least 400mm above the natural surface level”.</i>	<i>the natural surface level”.</i>
98.	6 Judith Court, Doncaster	Ruffey Creek	SBO2	2, 6, 11	The submission refers to the impact of surrounding development infrastructure on drainage system capacity. The flood shape has been found to be consistent with the topography and Council drainage assets, however fulfils the minor incursion criteria and is recommended to be deleted from the property.	Yes. Remove SBO2 incursion from the property.
99.	22 Saxon Street, Doncaster	Ruffey Creek	SBO2	12	The property is located at a low point of three roads, Winbrook Court, The Glades and the south part of Saxon Street. The confluence of these streets contributes to the overland flow towards this property. The private drainage mentioned in the submission is beyond the scope of Council's responsibility, even though it caters for the 1 in 5 ARI event. The SBO2 is a result of the 1 in 100 ARI event. The extent of SBO2 is significant and the depths are also more than 100 mm. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
100.	8 Larne Avenue, Donvale	Mullum Mullum Creek	SBO2	2	The submission states that the backyard has had earthworks undertaken since 2009 that affect the potential flood risk and therefore the extent of the SBO that should be revised.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					A desktop review and site visit has found the submission property has probably had these works undertaken since the capture of the LiDAR survey data used in the modelling. The LiDAR data and the derived flood shape are reflective of the ground conditions at a point in time and will be updated in the future as changes are made to the existing ground surface around the municipality. Further amendments to the flooding overlays that would incorporate changes to ground levels will be undertaken in the future. The outcome of the review is that the exhibited flood shape be retained.	
101.	2A Sunhill Road, Templestowe Lower	Bulleen North	SBO3	2, 7, 8	The submission states that, due to the elevated nature of the property, flooding is implausible. The property experiences runoff in a south westerly direction from the small catchment to the north east. The review confirmed that the terrain of the site and drainage infrastructure is consistent with that modelled. The outcome of the review is that the exhibited flood shape be retained at this location.	No
102.	6 Drummond Close, Donvale	Mullum Mullum Creek	SBO1	2, 3, 7, 8, 12	The property is traversed by a Melbourne Water main drain (Larne Avenue Drain) and the applicable flood level for the property is 72.15 metres AHD. The property is located at the confluence of two significant overland flow paths, a Melbourne Water SBO1 and a Council SBO2 and the flow paths are consistent with a 1 in 100 storm event when all Council drains and private drains are at full	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>capacity and the balance of the storm event follows overland flow paths.</p> <p>The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents.</p> <p>The outcome of the review is that the exhibited flood shape be retained at this location.</p>	
103.	41 Chippewa Avenue, Donvale	Mullum Mullum Creek	SBO2	1, 2	<p>The submission describes living at the address for some time and never having experienced any flooding.</p> <p>It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. Based on the topography and the size of the catchment, the area indicated by the SBO can reasonably be expected to experience overland flow when the capacity of the drain outside 2/47 Chippewa (on Amys Grove) is exceeded. The review confirmed that the terrain of the site and drainage infrastructure is consistent with that modelled. The outcome of the review is that the exhibited flood shape be retained at this location.</p>	No
104.	33 Balmoral Avenue, Templestowe Lower	Bulleen North	SBO3	1, 7, 8, 11	<p>The submitter is correct in identifying that the area affected by the SBO3 is less than 2m² and entirely within the easement at the rear of the property.</p> <p>The purpose of the proposed overlays is to ensure that future development is protected from flooding. In this case, the incursion is not</p>	Yes. Remove the SBO3 incursion on property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					considered to be significant and application of the SBO will not yield any significant planning or risk mitigation benefit. Thus, the exhibited flood shape is recommended to be amended accordingly.	
105.	8 Habitat Park Drive, Doncaster East	Mullum Mullum Creek	SBO2	14 Only the common property is affected by the overlays.	The submitters property is not affected by the SBO, although the surrounding body corporate land (the Canowinda Owners Corporation) is affected. The drainage assets at this estate at the time of modelling were privately owned and managed and have not been included in the flood modelling. The review has confirmed that the overlays on body corporate land are reflective of the surrounding topography. The flood shape should remain as exhibited at this location.	No
106.	9 Whittlenoom Street, Doncaster East	Koonung Creek	SBO3	2, 9	The submission states that Whittlenoom Street is flood prone but that it is unlikely to have an impact on the subject property as it is elevated above street level. The observed flooding is consistent with the application of the SBO in this area, with the flow path encroaching onto the submission property, representing overland runoff onto the street rather than water rising up from the street. The submission also states that existing walls and landscaping do not impede water flow during storm events. Features such as buildings and other structures have not been modelled individually, but allowances have been made in the model for typical obstructions to flow by adopting appropriate roughness factors in accordance with industry practices.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>In addition, the submission states that the incursion of the flood shape onto the property is outside of the likely building envelope. Whilst the flood shape may not encroach into the current building footprint, the purpose of the proposed overlays is to ensure that any future development is protected from flooding. Under certain conditions, development outside the normal building envelope or in easements may be permitted in some cases. The review confirmed that the terrain of the site and drainage infrastructure is consistent with that modelled. Due to the narrow width of the flood shape at this location, it is not recommended to remove the SBO from the property as it would compromise the integrity of the flood shape in this area. The outcome of the review is that the exhibited flood shape be retained at this location.</p>	
107.	14 Habitat Park Drive, Doncaster East	Mullum Mullum Creek	SBO2	14 No objection at this stage. Requested further information. Information provided. No further response received.	The submitters property is not affected by the SBO, although the surrounding body corporate land (the Canowinda Owners Corporation) is affected. The drainage assets at this estate at the time of modelling were privately owned and managed and have not been included in the flood modelling. The review has confirmed that the overlays on body corporate land are reflective of the surrounding topography. The flood shape should remain as exhibited at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
108.	393 Park Road, Park Orchards	Mullum Mullum Creek	LSIO	5,7, 8, 12, 14 Overland flow may come from adjacent owned Council property and it is Council's responsibility to contain this water. Concerned about erosion from Mullum Mullum Creek which flows onto property.	The overlay designation has been reviewed and is recommended to be amended by removing part of the LSIO as shown on the attached plan. The area circled in pink is to be removed from the flood overlay. The exhibited flood shape is to be amended as shown on the attached plan. In response to the issue that overland flow may come from adjacent owned Council property and it is Council's responsibility to contain this water and concern about erosion from Mullum Mullum Creek which flows onto property, the following response is offered. In general, public drainage systems are designed and constructed to cater for runoff from minor or 1 in 5 year ARI storm events. Under the provisions of Council Policy, Council will upgrade its drainage infrastructure to protect habitable floors from flooding in a major or 1 in 100 year ARI storm event. Containing storm water runoff from a major or 1 in 100 year ARI storm event on any land may not be a feasible solution but in some cases, detention of major stormwater flows can be considered. Action to achieve this objective would have a low priority in cases where downstream habitable floors are unaffected. Mullum Mullum Creek is a State Government responsibility and concerns regarding associated erosion should be directed to Melbourne Water.	Yes. Remove part of the LSIO – refer to map at Attachment 10.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
109.	33 Thiele Street, Doncaster	Ruffey Creek	SBO3	1, 2, 7, 8	Thiele Street is a major flow path for stormwater runoff in the area and the encroachment onto the front of the submitter's property is reasonable given that the flood shape shows the roadway completely covered by water. The submission questions what information has led to this area marked as being flood prone where it was not before. The flood modelling that underpins the SBO has been undertaken recently by Council and Melbourne Water using the latest available data and aims to protect future development from flooding. The submission states that the properties at the end of the street which have flooded are not subject to the overlay. There have been significant drainage upgrades undertaken at the intersection of Thiele and Ambrose Streets around 1993. This has resulted in the excess floodwater on Thiele Street during storm events being accommodated by the numerous grated pits at this intersection rather than flowing through the properties to the north. The review has confirmed the flood shape is consistent with the topography and drainage assets at this location and the SBO is recommended to be retained.	No
110.	4 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 2, 12	Property is located adjacent to a Melbourne Water Main Drain (Greenridge Avenue Drain). However only effected by two grid points less than 50mm deep. Therefore not considered flooding from Melbourne Water SBO1.	Yes. SBO1 incursions are recommended to be removed from the property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					Recommend that the exhibited flood shape is deleted so the property is not included in the overlay, as agreed with Melbourne Water.	Refer to map at Attachment 10.
111.	36A Talford Street, Doncaster East	Koonung Creek	SBO3	3, 7, 8, 12	The submission states that the drainage infrastructure which has been constructed in the area should remove the risk of flooding. The property is located in a position vulnerable to overland runoff, being in a local gully. The private drainage infrastructure constructed as part of the development is not considered to have a significant impact on the modelled flood extent for a 1 in 100 year ARI storm event as they are usually designed to cater for minor storm events. In addition, Council underground drainage infrastructure is usually designed for a 1 in 5 year ARI event with runoff in excess of this flowing overland. A review has confirmed the flood shape is consistent with the topography and drainage assets at this location and the SBO is recommended to be retained.	No
112.	23A Morna Road, Doncaster East	Koonung Creek	SBO2	3, 12	The submission states that, due to recent drainage upgrades and development of the neighbouring property, the risk of flooding has been removed from the subject property. A review has found that the upgrades to the Council drains along Mantell Road have been included in the modelling; however, this does not reduce the risk of flooding for the submission property as the upgrade is downstream of the property. In addition, the flood shape does not indicate any flooding from the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					neighbouring property to the east. The submission property experiences overland runoff from the north east which follows the natural gully but is not entirely contained within the floodway for a 1 in 100 year ARI event which forms the basis of the SBO. A site visit has confirmed the flood shape is consistent with the topography and drainage assets at this location and the SBO is recommended to be retained.	
113.	10 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 2, 8, 12	Property is located adjacent to a Melbourne Water Main Drain (Greenridge Avenue Drain). The overlay extent has been reviewed and reconfirmed as being appropriate based on the direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. A review of the flow depths has however revealed that the property flooding results from shallow flows primarily associated with flows from the rear of the property. It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3. This recommendation has been agreed with Melbourne Water.	Yes. It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3. Refer to map at Attachment 10.
114.	60 Millicent Avenue, Bulleen	Koonung Creek	SBO2	1, 11	The submission states that the property is affected in a minimal way by the flood shape and that flooding has not been experienced at this location. The purpose of the proposed overlays is to ensure that future development is protected from flooding. In this case, the incursion is not	Yes. Remove SBO2 incursion on property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					considered to be significant and application of the SBO would not yield any significant planning or risk mitigation benefit. Thus, the exhibited flood shape is recommended to be amended accordingly.	
115.	286 Church Road, Templestowe	Ruffey Creek	SBO2	1, 2, 7, 8, 10, 11	The submission states that the property has never been affected by flooding. The property contains a small incursion from the upstream extent of the flood shape. A site visit confirmed the flood shape is consistent with the terrain and drainage infrastructure. The submission is correct in identifying that the flood shape incursion is minor. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Existing properties may be redeveloped in the future and the proposed overlay will assist in the assessment of the impacts of any future development. In this case, the incursion is not considered to be significant and application of the SBO in this case would not yield any significant planning or risk mitigation benefit. Thus, the exhibited flood shape is recommended to be amended accordingly.	Yes. Remove SBO2 incursion on property.
116.	4 Janet Street, Templestowe Lower	Bulleen North	SBO3	1, 2, 7, 8, 10, 11	The submission states that there is no experience of flooding at the subject property. It is possible that the submitter has not experienced a 1 in 100 year ARI rainfall event of critical duration at this location, which the flood extent is modelled on, in line with industry practices. The SBO represents flow out of the property and onto the street via the driveway. A	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					site visit confirmed surrounding topography and that overland runoff in excess of the pre 1970s drainage infrastructure could reasonably be expected to occur in the manner indicated by the SBO. The review has confirmed the flood shape is consistent with the topography and drainage assets at this location and the SBO is recommended to be retained.	
117.	2 Athunga Court, Doncaster	Koonung Creek	SBO3	3	The submission makes reference to previous experiences of flooding prior to the drainage upgrade undertaken in 1996, and describes having no experience of flooding since the upgrade. A desktop review and site visit has confirmed that the upgraded drains have been included in the modelling. Council drains are typically designed to convey a 5 year ARI event. Even with the upgraded drains running through the property, excess overland runoff could be reasonably expected to occur during a 1 in 100 year storm event of critical duration as a result of drainage inadequacies in the upstream catchment. The review has confirmed the flood shape is consistent with the topography and drainage assets at this location and the SBO is recommended to be retained.	No
118.	13-19 Tram Road, Doncaster	Koonung Creek	SBO2	12	Refer to Attachment 7 for the Further Technical Review of this submission.	Yes Amend SBO2 refer to Attachment 7
119.	15 Kersey Place, Doncaster	Ruffey Creek	SBO3	2	The submission states that flooding is not seen as a risk at the property.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. In addition, the submission may be indicating that the dwelling has never been flooded above floor level. The SBO identifies flood prone land, not where buildings are flooded above floor level. The purpose of the proposed overlays is to ensure that future development is protected from flooding. The review has confirmed that the flood shape is consistent with the topography and drainage assets at this location and the SBO is recommended to be retained.</p>	
120.	8 Tiffany Court, Doncaster	Ruffey Creek	SBO3	2, 12	<p>The submission references garden landscaping as a basis for implausibility of the flood shape. Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the catchment. Private infrastructure such as retaining walls, structures and buildings are not individually modelled as they are not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					development for individual sub catchment areas. A site visit has confirmed the local topography and Council drainage infrastructure. Although the submission mentions they are near the top of a hill, the terrain and presence of Council drainage infrastructure suggest the exhibited flood shape is in line with the existing drainage patterns at this location. The review has confirmed the flood shape is consistent with the topography and drainage assets at this location and the SBO is recommended to be retained.	
121.	14 Kelly Street, Doncaster	Ruffey Creek	SBO3	1, 2, 12	The key theme of the submission is that runoff patterns experienced by the residents are not consistent with the proposed flood shape. The exhibited flood shape covers part of the footprint of the house at the submission address, with the submission stating that the underfloor area has remained dry over the past 35 years. The flood modelling that underpins the proposed SBO identifies flood prone land, with private structures such as buildings and retaining walls not individually modelled as they are not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					type and density of development for individual sub catchment areas. A site visit has confirmed the local topography and Council drainage infrastructure. The private spoon drain mentioned in the submission was not modelled as it is accepted that such private assets do not significantly impact the flood extent during major storm events such as the 1 in 100 year ARI. Overall, it is possible that the submitter has not experienced a 1 in 100 year ARI rainfall event of critical duration at this location and, in combination with the modelling methodology, this results in the proposed flood shape being different to the submitter's expectations. The review has confirmed that the flood shape is consistent with the topography and drainage assets at this location and the SBO is recommended to be retained.	
122.	30 South Valley Road, Park Orchards	Andersons Creek	SBO2	1,2	The key issue raised in the submission is that runoff patterns experienced on the property are not as extensive as that indicated by the SBO. In addition, the submission states that the flood shape should be more extensive over a neighbouring property and that the flood shape should be closer to the house footprint. It is possible that the submitter has not experienced a 1 in 100 year ARI rainfall event of critical duration at this location. The neighbouring house is elevated 4-5 metres above the bottom of the gully and the exhibited flood shape at this location (1 South Valley Rd) is consistent with the	Yes. Change the SBO2 designation to a SBO3.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					terrain. The exhibited flood shape, which is modelled on a 1 in 100 year ARI event, is consistent with the terrain on the submission property. However, based on the review of the modelled depths on the submission property, the SBO designation on the submission property is recommended to be changed to SBO3.	
123.	8 Board Street, Doncaster	Ruffey Creek	SBO2	3, 7	The submission states that Council has upgraded drainage in the area in 1991, increasing the capacity of the drains. The flood modelling has included these upgraded drains. It is possible that this upgrade has assisted in reducing the extent of flooding but not removed the risk completely for a major storm event. A site visit has confirmed the local conditions, with the property being located in an area prone to flooding. The review has confirmed that the flood shape is consistent with the topography and drainage assets at this location and the SBO is recommended to be retained.	No
124.	15 Grand Boulevard, Doncaster	Koonung Creek	SBO2	7, 8, 12	Filtering of the flood shape data originally involved deletion of isolated flood shapes less than 500 square metres in area, subject to meeting conditions. The flood shape impacting 15 Grand Boulevard can be deleted under this criteria.	Yes. Delete SBO2 overlay from 15 and 17 Grand Boulevard and from 10 and 12 Eagleview Walk. Refer to map at Attachment 10.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
125.	2 Roslyn Court, Donvale	Mullum Mullum Creek	SBO2	5	<p>The submission acknowledges that the property is prone to flooding and states that Council should upgrade the drains in the area.</p> <p>The observed flooding of this property is consistent with the application of the SBO at this location. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
126.	12 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 12	Property is located adjacent to a Melbourne Water Main Drain (Greenridge Avenue Drain). The overlay extent has been reviewed and reconfirmed as being appropriate based on the direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. A review of the flow depths has however revealed that the property flooding results from shallow flows primarily associated with flows from the rear of the property. It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3. This recommendation has been agreed with Melbourne Water.	Yes. It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3. Refer to map at Attachment 10.
127.	9 Nambour Road, Templestowe	Ruffey Creek	SBO2	1, 2, 14 Can justify a change from SBO2 to SBO3 with a reduction in the flood shape.	The submission states that there has never been any flooding or standing water on the property. The extent of the SBO does not necessarily represent static water but overland runoff. It is possible that the submitter has not experienced a 1 in 100 year ARI storm event of critical duration at this location. The modelled flood depths at the lowest point on the property are in excess of 500 mm which is consistent with the natural valley and	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>the filling of neighbouring properties during development which created a basin like feature on the submission property. The submitter also states that the small incursion at the front of the property is not consistent with experiences of flooding. This incursion represents overflow from the side entry pit located adjacent to the driveway of the submission property. Council underground drainage infrastructure such as this is typically designed to convey minor (1 in 5 year ARI) storm events. The proposed flood shape is modelled on a 1 in 100 year ARI event of critical duration as per industry practice. The submission raises the issue of overlay designation and states that areas with shallower flooding should be designated SBO3 rather than SBO2. Council has differentiated between SBO2 and SBO3 by looking at flow paths where the depth of water is generally greater than 100mm. Although the edges of the flood shape experience shallower depths, the majority of the flood shape in the northern section of the property and parts of the flood shape incursion on the property driveway experience modelled depths in excess of 100mm. There is no requirement for there to be only one designation of overlay on any property, however there is a requirement for only one referral authority (Council or Melbourne Water) where possible. In this case, a review of the modelled depths has found the designation of SBO2 to be appropriate for both the front and rear</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					incursions of the flood shape on the submission property. The outcome of the review is that the SBO remain as exhibited at this location.	
128.	14 Rangeview Road, Donvale	Mullum Mullum Creek	SBO3	1, 2, 3	The submission refers to recent drainage upgrades as a basis for the arguing that the flood shape is incorrect. The desktop review and site visit have confirmed the as-constructed drainage assets have been included in the modelling. Although recent upgrades have taken place, Council's drainage system design is typically for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. The SBO is based on a 1 in 100 year ARI event. The review has confirmed that the flood shape is consistent with the topography and drainage assets at this location and the SBO is recommended to be retained.	No
129.	5 The Parkway, Templestowe	Mullum Mullum Creek	SBO2	13	Requests extension of time to lodge a detailed submission.	No
130.	2/62 Rathmullen Quad, Doncaster	Koonung Creek	SBO3	2, 7, 8, 12	Refer to Attachment 7 for the Further Technical Review of this submission.	No
131.	20 Springwood Close, Donvale	Mullum Mullum Creek	SBO3	1, 5, 7, 14 Council subsidy required to allow implementation of additional	The submission is correct in stating the dwelling is not proposed to be impacted by the flood extent. The SBO is based on the flood prone land, not specifically where dwellings are flooded above floor level. The submission also states that Council should upgrade the drains in the area rather than imposing the SBO. Underground drainage systems are usually designed to a 1 in 5 year ARI level of	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				on-site drainage	<p>service with flows in excess travelling overland in major storms. Council cannot build a drainage network that can cope with all storm events. Council spends \$2 million annually upgrading drainage infrastructure with priority given to alleviating flooding of habitable floor areas. Although the flood incursion into the property is minor, due to the width of the flow path at this location, removal of the SBO would compromise the integrity of the SBO flood shape in its entirety. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location. The submission also states that a Council subsidy is required to allow implementation of additional on-site drainage. In response to this issue, drainage of private properties is an owner responsibility under the Water Act. Council can facilitate the construction of public drainage infrastructure to convey storm water flows emanating from private property, but as such infrastructure provides a special benefit to the affected land owners, property owners will be required to contribute to the associated costs.</p>	
132.	3 Peter Budge Avenue, Templestowe	Ruffey Creek	SBO2	1, 2, 3, 12	<p>The submission refers to topographical features, including a retaining wall, that are not reflected in the exhibited flood shape, in addition to recent drainage improvement works in The Grange Reserve. The desktop review has found that the</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					improvements were largely related to pit enlargement and no upgrade to the 975 mm drainage pipe running through the reserve was undertaken, and that the drainage pipes in this area are the limiting factor in the drainage system capacity during the modelled storm event which underpins the SBO. A site visit confirmed the existence of the retaining wall at the north boundary of the property. The flood shape indicates water running towards the walkway from inside the property at depths less than 150mm adjacent to the northern boundary. Private infrastructure such as retaining walls, were not individually modelled but allowance was made for such structures through the application of roughness factors. As private infrastructure is not protected and can be removed in the future, it is recommended that the flood shape be retained as exhibited.	
133.	8 Eumeralla Avenue, Templestowe Lower	Ruffey Creek	SBO2	1, 2	The submission states that there has not been flooding experienced on the property and the incursion of the flood shape is minimal. The fact that the resident has not experienced flooding does not necessarily mean that the property is not flood prone in a critical duration 1 in 100 year ARI event, as topographical contours indicate the steep drop off on the western boundary which is reflected in the existence of a drainage easement. Although the size of the incursion is minor relative to the size of the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					property, the purpose of the proposed overlays is to ensure that future development is protected from flooding and the property may be subdivided in the future. Under certain conditions, development in close proximity to property boundaries, on shared driveways or within easements may be permitted in some cases. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
134.	14-16 Elgin Crescent, Park Orchards	Mullum Mullum Creek	SBO3	2	The submission states that the exhibited flood path is not true to the terrain. A desktop review and site visit has found that overland flows enter the property from the north-east and travel through the property to the south-west. The two sources of runoff have been connected in the SBO as part of the filtering process but it is recommended to amend the flood shape to better reflect the mapped flood extent, which will result in a reduction of the size of the exhibited flood shape.	Yes. The SBO3 flood shape to better reflect the mapped flood extent. Refer to map at Attachment 10.
135.	38 Hertford Road, Doncaster East	Koonung Creek	SBO2	1, 2, 3, 5, 6, 7, 8	A discrepancy has been found between the modelled and actual drainage infrastructure at this location. The upgrade was undertaken prior to the flood modelling exercise which underpins the SBO and additional modelling is required to quantify the impact of the upgrade on the flood shape. The flood shape is recommended to be reviewed in this area following additional modelling which is expected to be undertaken prior to the Panel Hearing.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
136.	6 Anton Court, Doncaster	Ruffey Creek	SBO2	2, 11	The submission states that the flood shape is not consistent with the fall of the land. The property contains a small incursion of the flood shape. Based on a desktop review, this incursion is not considered to provide significant planning or flood risk mitigation benefits and is recommended to be amended accordingly.	Yes. Remove the SBO2 incursion from the property.
137.	5 Cerberus Street, Donvale	Koonung Creek	SBO2	14 Lodged as a submission with no content. Clarification sought by Council. None provided.	The submission contained no content, however the incursion is considered to be minor and is recommended to be deleted from the property.	Yes. Remove the SBO2 incursion from the property.
138.	222 Blackburn Road, Doncaster East	Mullum Mullum Creek	SBO3	1, 2	Although the resident may not have experienced flooding, it cannot be said with certainty that the property is not flood prone during a 100 year ARI. Also, the extent of the SBO is based on the flood prone land, not specifically where dwellings are flooded above floor level. Exemption is not recommended due the proximity of the property to the flood extent. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
139.	11 Scarlet Ash Drive, Templestowe Lower	Ruffey Creek	SBO3	1, 2, 8	Although the resident may not have experienced flooding, the property is located at the foothill of surrounding elevated areas to the north-west and is expected to be partially flood prone in the event of a 1 in 100 year ARI rainfall. Existing Council drains are typically designed for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. The model is based on a 1 in 100 year ARI and the overlay on the property is to ensure that appropriate floor levels are adopted for future development in the flood affected area. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
140.	47-53 Croydon Road, Warrandyte South	Andersons Creek	SBO2 & SBO3	2, 5, 9, 14 Existing controls already prohibit development of the land.	The submission describes runoff patterns during a storm and these are consistent with the application of the SBO2 to the property. The SBO3 represents shallower runoff as a result of overflow from the dam and/or swimming pool uphill. The flood shape is delineated with flooding greater than 50 mm in depth. The SBO3 shape is somewhat less smooth because the runoff is shallow and close to this threshold. The purpose of the overlays is not to prevent development but to ensure that it is undertaken in a way that considers the overland flow path. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>In response to the issue that existing controls already prohibit development of the land, this is not strictly correct. The existing controls on the land will, however, already trigger the need for a permit for buildings and works.</p> <p>Approximately 45% of the affected properties already have other planning scheme controls that trigger the requirement for a planning permit. The proposed amendment will ensure, however, that new development is appropriately controlled and has regard to identified flood levels.</p>	
141.	5 Whistlewood Close, Doncaster East	Mullum Mullum Creek	SBO2	2	<p>The SBO2 overlay on the property is accurate and consistent with the contour map used for modelling. This was confirmed upon a site visit. Although the contour maps provided by the resident differed from the contours used for the modelling, it must be noted that the LiDAR data used for mapping collected in 2009 is more recent than that provided by the resident who has lived at the property for 30 years. Exemption is not recommended, as any form of trimming would compromise the integrity of the SBO flood shape in its entirety as a significant width of the flow shape travels through the subject property. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No
142.	61 Oakland Drive, Warrandyte	Mullum Mullum Creek	SBO3	2, 12	<p>The submission states that the topographical data used in the modelling is outdated and the fact that</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>other low lying areas on the street aren't affected highlights the inaccuracy of the flood modelling. The terrain data used in the model was captured in 2009 by DELWP and is the best available data for this type of modelling. Site visits have been undertaken throughout the municipality by engineers to verify the modelled flood shape against the terrain where required. A site visit was undertaken from the street for this property. Given the size of the catchments involved, each area has been broken up into a grid with 3m x 3m cells. This approach is considered to provide adequate resolution to define topographical features within the catchment. The proposed overlays identify flood prone land. Structures and buildings have not been modelled individually as they can be subject to change in the event of property redevelopment. Consideration has been given to the impact of structures, such as buildings and walls, through the application of surface roughnesses in accordance with industry guidelines. The submission states that any runoff in the area would occur in a northerly direction and be rapid, which is consistent with the application of the SBO in this area as the flood shape does not only represent pooling water but is defined with a combination of depth, velocity and duration in line with industry practices. The review has confirmed the surrounding topography and drainage assets.</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					The flood shape should remain as exhibited at this location.	
143.	16 Nottingwood Street, Doncaster East	Ruffey Creek	SBO1	2, 5, 7	The property is located adjacent to a Melbourne Water Main Drain (George Street Drain). The applicable flood level is 91.08 metres AHD. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	No
144.	27 Marilyn Street, Doncaster	Koonung Creek	SBO2	5, 7, 8, 13	The submission acknowledges that flooding is an issue at this location and puts forward proposed solutions for managing the drainage issues. Council cannot resolve all flooding issues across the municipality immediately. The flood mapping which underpins the SBO is a useful tool in identifying areas to prioritise drainage upgrades, with a focus on alleviating flooding of habitable floor areas. The current drainage system design is typically for a 1 in 5 year ARI storm event, with flows in excess of the pipe system travelling overland. The SBO is based on a 100 year ARI event. The flood extent incursion on the property is significant. Removal of the SBO would compromise the integrity of the SBO flood shape in its entirety and result in discontinuity of the flood extent. The submission property lies within a	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					defined valley and overland runoff could reasonably be expected to occur in the manner indicated by the SBO. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
145.	5 Mossy Creek Slope, Warrandyte	Andersons Creek	LSIO	1, 7, 8, 12	It has been established that the drainage system above and within the property is under Council control and the flooding is a result of runoff from the upstream catchment in the 1% AEP event which drains down to Andersons Creek. The overlay designation has been reviewed and is recommended to be amended based on the nature and depth of the flooding in this area. It is recommended to retain the flood shape but change the designation at this location to SBO3, as agreed by Council and Melbourne Water representatives.	Yes. Flood shape retained by designation changed to SBO3. Refer to map at Attachment 10.
146.	69 Croydon Road, Warrandyte South	Andersons Creek	SBO2	1, 2, 14 Existing controls already prohibit development of the land	The SBO shape is sizable and the entire width of the flood extent travels through the property flowing east to west. Exemption is not recommended as limitations for development along an easement do not warrant an amendment and it would result in discontinuity of the flood extent. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location. In response to the issue that existing controls already prohibit development of the land, this is not strictly correct. The existing controls on the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>land will, however, already trigger the need for a permit for buildings and works.</p> <p>Approximately 45% of the affected properties already have other planning scheme controls that trigger the requirement for a planning permit. The proposed amendment will ensure, however, that new development is appropriately controlled and has regard to identified flood levels.</p>	
147.	15 Margot Avenue, Doncaster	Ruffey Creek	SBO3	1, 2, 7, 8, 12	<p>The submission states that a small portion of the SBO shape encroaches across the eastern property boundary which has a retaining wall and the flood shape is a misrepresentation of reality. The flood shape at this location does not represent water rising up from street level, rather the flood shape forms (meets the required threshold of depth, velocity and duration) within the submission property and flows downhill onto the street. Thus, the retaining wall would not serve as a barrier to the flow downhill. In addition, structures such as retaining walls are factored into the modelling by adopting high roughness of surface values. The model is based on a 1 in 100 year ARI and the overlay on the property is to ensure that appropriate floor levels are adopted for future development in the flood affected area. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
148.	5 Streeton Lane, Doncaster East	Mullum Mullum Creek	SBO3	2, 11	The submission states that, due to the steep slope of the property, no flooding has been experienced. The fact that the resident has not experienced flooding does not necessarily mean that the property is not prone to overland runoff in a critical duration 1 in 100 year ARI event, as topographical contours indicate that overland runoff would be concentrated from uphill onto the street. A site visit has confirmed the topography and drainage infrastructure. The purpose of the proposed overlays is to ensure that future development is protected from flooding and the property may be subdivided in the future. Under certain conditions, development in close proximity to property boundaries, on shared driveways or within easements may be permitted in some cases. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
149.	236 Blackburn Road, Doncaster East	Ruffey Creek	SBO3	2	Due to the proximity of the property to the surrounding terrain, it is reasonably expected to be flood prone as it is situated at the foothill of elevated properties and area. Flow in excess of Council's typical 1 in 5 year ARI drainage system capacity is likely to inundate this property. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
150.	24 Jocelyn Court, Doncaster East	Ruffey Creek	SBO3	1, 2, 7, 8	A site visit confirmed that the flood shape is consistent with terrain and LiDAR data. It cannot	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					be certain that the property is not flood prone during a 100 year ARI simply because the resident may not have experienced flooding. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
151.	12 Larne Avenue, Donvale	Mullum Mullum Creek	SBO2	1, 3, 7, 8	The drainage system along the easement is not sufficient for a 100 year ARI and is typically designed for a 1 in 5 year ARI, in which case the excess of existing drainage capacity is likely to inundate this property. Removal of the SBO would compromise the integrity of the flood shape in its entirety and would result in discontinuity of the flood extent. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
152.	7 Montclair Court, Templestowe	Ruffey Creek	LSIO	2, 3, 5, 7, 8	The existing street and drainage system is only capable of catering for the 1 in 5 year ARI storm. The roadway and overland flow paths can assist to convey the additional storm water runoff generated in the in the 1 in 100 ARI, however, shallow flows affect properties on the low side of Montclair Court. No. 6 Montclair Court is located at the low point of the court and the drainage connection to the Ruffey Creek is located next to the western boundary of the property. The flood mapping indicates water up to 300 mm would pond in front of the property and water would breach the kerb level across the whole frontage of	Yes. Change LSIO to SBO3 and also change for adjacent properties at 2, 3, 4, 5, 6, 8 Montclair Court. Refer to map at Attachment 10.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					the property as shallow flow. The existing drainage system will be referred for upgrade consideration, subject to habitable flood level impacts. It has been agreed with Melbourne Water that the flood shape designation within the property be amended to SBO3 from the exhibited designation of LSIO.	
153.	10A Hillcroft Drive, Templestowe	Ruffey Creek	SBO3	2, 14 Mapping incorrectly identifies 10A and 10B. (reverses)	The SBO overlay on subject properties is representative of overland run off rather than raised water levels from Hillcroft Drive as suggested by the resident. Due to the proximity of the property to the SBO shape and the percentage of overlay coverage, removal of SBO would compromise the integrity of the SBO flood shape in its entirety. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
154.	25 McCallum Road, Doncaster	Ruffey Creek	SBO1	2, 5	The property is located adjacent to a Melbourne Water Main Drain (Roseland Grove Drain). The applicable flood level is 69.52 metres AHD. The submission suggests that the flooding is from Ruffey Creek. However the flooding is an overland flow associated with the Main drain. Suggested mitigation works are beyond the scope of the amendment and are a part of a capital works program. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	
155.	23 Wagon Road, Templestowe	Mullum Mullum Creek	SBO1	14 Object to amendment. No reasons given.	The property is located adjacent to a Melbourne Water Main Drain (Templestowe East Drain). The applicable flood level is 51.66 metres AHD. No specific issues are raised in the submission. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	No
156.	2 Pagoda Court, Doncaster	Ruffey Creek	SBO3	4	The submission acknowledges that the property is prone to flooding and states that Council should upgrade the drains in the area. The observed flooding of this property is consistent with the application of the SBO at this location. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s, improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
157.	10-12 Curry Road, Park Orchards	Mullum Mullum Creek	SBO2	1, 2, 3, 12	<p>The submission references landscaping and private drainage assets and states that the flood shape does not take these into consideration. Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>catchment. Private infrastructure, such as retaining walls, structures and buildings, is not individually modelled as it is not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures, such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
158.	49 Lawanna Drive, Templestowe	Ruffey Creek	SBO2	2	<p>The submission objects to the flood shape as incursions over the footprint of the dwelling. Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the catchment. Private infrastructure, such as retaining walls, structures and buildings is not individually modelled as it is not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures, such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. A site visit has confirmed that the topography and drainage infrastructure are consistent with that modelled. The outcome of the review is that the exhibited flood shape be retained at this location.	
159.	10 Omar Street, Templestowe Lower	Ruffey Creek	SBO3	7, 8, 11	The submission argues that the risk of flood damage on the property is negligible. The SBO extent fulfils the minor incursion criteria of less than 30m ² and 6%. The overlay is recommended to be amended accordingly.	Yes. Remove the SBO3 incursion proposed from the property.
160.	11 Ardgower Court, Templestowe Lower	Ruffey Creek	SBO3	1, 2	The submission correctly states that the property is on a hill and water could not inundate from Ruffey Creek. The property contains the upstream extent of the flood shape which forms from runoff from uphill as a result of the steep driveway cut into the slope which channels runoff onto the street at high velocities. A site visit has confirmed that the local topography is consistent with the flood shape. It is recommended to retain the flood shape at this location.	No
161.	28 Sheahans Road, Bulleen	Bulleen North	SBO3	2	The submission states that the property is elevated and flooding is not a problem. The flood shape at this location does not represent water rising up from the street level but collective overland runoff from uphill being channelled onto the road at high velocity. A site visit has confirmed	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					that the topography and drainage assets are consistent with the modelled flood shape. The flood shape should remain as exhibited at this location.	
162.	30 Sheahans Road, Bulleen	Bulleen North	SBO3	2	The submission states that the property is elevated and flooding is not a problem. The flood shape at this location does not represent water rising up from the street level but collective overland runoff from uphill being channelled onto the road at high velocity. A site visit has confirmed the topography and drainage assets are consistent with the modelled flood shape. The flood shape should remain as exhibited at this location.	No
163.	22 Esther Street, Templestowe Lower	Bulleen North	SBO2	2	The submission does not object specifically to the shape of the overlay but contains numerous questions which have been responded to directly. A desktop review has found the flood shape to be consistent with the topography and drainage patterns in the area. The flood shape should remain as exhibited at this location.	No
164.	2/15 Ashford Street, Templestowe Lower	Bulleen North	SBO3	2, 6, 7, 8	The submission questions the accuracy of the modelling and states that the driveway would channel runoff onto the street. The flood shape at this location is consistent with the slope of the terrain. The part of the flood shape between unit 2 and 3 is representative of a small portion of the runoff flowing through and petering out. Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>approach is considered to provide adequate resolution to define topographical features within the catchment. Private infrastructure, such as retaining walls, structures and buildings, is not individually modelled as it is not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures, such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. The submission property experiences runoff from elevated areas to the south and west. This has been confirmed with a site visit from the street. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
165.	314-318 Reynolds Road, Donvale	Mullum Mullum Creek	SBO2	2	<p>The submission states that the property is near the top of a hill and should not flood. The flood shape is delineated with a combination of depth, flow and duration. The property contains the upstream extent of the flood shape which forms from shallow runoff further uphill and is concentrated in the gully which flows down to Mullum Mullum Creek. This type of flooding is still considered a risk and the overlay will assist in ensuring any future development of the site is</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					undertaken in a way that considers this risk. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
166.	29-31 Frogmore Crescent, Park Orchards	Mullum Mullum Creek	SBO3	2	The submission states that the property is on a slope and no flooding has been experienced. The flood shape at this location represents the upstream extent of overland runoff from the properties to the north east which are concentrated in the gully-like topographical features in the backyard of the submission property and flow to the west. It is possible the submitter has not experienced a 1 in 100 year ARI storm of critical duration despite residing there for 44 years. A site visit confirmed the overall topography of the area and that the flood shape is reasonable with respect to the land. It is recommended that the flood shape be retained at this location.	No
167.	619 Doncaster Road, Doncaster	Koonung Creek / Ruffey Lake	SBO2 & SBO3	13	The review has confirmed the surrounding topography and drainage assets. The submission states that the flood shape at this location should be remodelled to take account of the drainage upgrade constructed as part of the 1 Grosvenor St, Doncaster development in 2015. This argument is not considered a valid basis to amend the flood shape due to the fact that the drainage improvements are downstream of the submission property and remodelling would not significantly alter the extent of the flood shape upstream. In	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					addition, the flood modelling which underpins the SBO represents the drainage network at a point in time. The drainage upgrade in question was constructed after the flood modelling was undertaken, and therefore could not be included in the modelling for this catchment. The flood shape should remain as exhibited at this location.	
168.	57 Beecroft Crescent, Templestowe	Ruffey Creek	SBO2	1, 2, 8	The location of the property is on sloping land but it has a significant catchment to the north west. The natural topography controls the overland flow. The drainage infrastructure and the sloping land surface have been correctly represented in the model and the SBO2 resulting from the analyses is consistent with that. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
169.	13 Totara Court, Templestowe Lower	Ruffey Creek	SBO3	2	The submission contains no specific basis for objection. Based on a desktop review and site visit, the flood shape is consistent with contours and catchment size. The outcome of the review is that the extent of the SBO be retained at this location.	No
170.	5 Trudi Court, Donvale	Mullum Mullum Creek	SBO1	1, 2, 3, 7	The property is located in the vicinity of a Melbourne Water Drain (Larne Avenue Drain). The applicable flood level is 90.71 metres AHD for a 1 in 100 storm event. The property is subject to Council flooding, however the flooding of downstream 23 Larne Avenue is from Melbourne Waters main drain. Melbourne Water has	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					accepted the flooding as flooding associated with its main drain. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	
171.	32 Balmoral Avenue, Templestowe Lower	Bulleen North	SBO3	7, 9, 11	The submission states that the whole property should not be encumbered by the SBO if only a portion of the land experiences flooding. A technical review has found that the flood shape is consistent with the topography and drainage infrastructure. The flood shape should remain as exhibited at this location.	No
172.	42 Eucalypt Avenue, Templestowe Lower	Ruffey Lake	SBO3	2, 7	The submission states that the property is significantly higher than the street and does not flood. The flood shape at this location represents runoff coming from uphill, being concentrated in the gully-like feature of the driveway and onto the street, and does not extend over the dwelling footprint. Although the incursion does not cover a significant portion of the property, it does not meet the minor incursion criteria as it is over 30m ² in area. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
173.	1/29 Lynne Street, Donvale	Koonung Creek	SBO3	5	The description of flooding in the submission is consistent with the application of the SBO at this	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					location. A site visit has confirmed the surrounding topography, with the submission property located within a defined gully. The SBO is based on modelling that has been undertaken by Council and Melbourne Water. This information was not available at the time of building. Council has a policy to prioritise drainage upgrades where there is flooding of habitable floor areas. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
174.	2 Jacaranda Court, Templestowe Lower	Ruffey Lake	SBO3	2	The submission states that as the property is on a slope, flooding is not a problem. Although in an elevated area, the property still receives runoff from the upstream catchment which comprises the school property on top of the hill to the north of the property. There is an easement drain along the rear of the property and pit overflow also contributes to the flood shape at this location. A site visit has confirmed that the flood shape is representative of site conditions and the flood shape is recommended to be retained at this location.	No
175.	5 Ennersdale Court, Templestowe	Mullum Mullum Creek	SBO3	2, 7, 8	The submission states that the property is sloping and a small area is affected. A review and site visit has found that the flood shape is consistent with the topography and drainage assets at this location, with the catchment area to the west along Dena Court. Although the incursion represents a small portion	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					of the property, trimming would compromise the integrity of the flood shape at this location. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
176.	2-4 Drayton Crescent, Park Orchards	Mullum Mullum Creek	SBO2	5, 7, 8	<p>The submission refers to drainage upgrade works undertaken recently and states that Council has failed to divert the flow of runoff to Alan Morton Reserve.</p> <p>A desktop review has found that the updated drainage infrastructure was taken into consideration in the modelling. In addition, the terrain data used was captured in 2009 and is the highest quality and most up to date data available for the flood modelling task. The submission property is in a natural gully and collects runoff from the north, east and west. The topography was confirmed with a site visit. The drainage upgrade was designed to minor storm event standards in line with current design practices. Council cannot build a drainage system that can cope with all storm events. During major storm events, excess runoff will still follow the natural topography of the land. The intent of the proposed overlays is to ensure future development is undertaken in a manner that considers the overland flow path during major storm events. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
177.	244-246 Heidelberg-Warrandyte Road, Warrandyte	Mullum Mullum Creek	SBO3	2, 3, 12	The submission states that flooding used to occur in the manner indicated by the SBO prior to the construction of St Muir Drive and that no flooding has been experienced on the property since then. Although the roadway and associated drainage would significantly alter the overland flow path during minor storm events, during a 1 in 100 year event of critical duration it is expected that some flow will still occur into the submission property into the low lying area containing an earthen pond. The terrain LIDAR data used in the modelling was captured in 2009 and a site visit has found it is consistent with present site condition in this area. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
178.	11 Limassol Court, Donvale	Mullum Mullum Creek	SBO2	2, 4, 11	The submission states that the experience of flooding at this location is less extensive than that indicated by the SBO. It is not clear whether the submitter has experienced a 1 in 100 year ARI rainfall event of critical duration, upon which the SBO is based. Topographical features of the property result in runoff from the roadway cutting across the front and following the gully along the northern boundary. This topography, along with drainage infrastructure, has been confirmed with a site visit. The submission also refers to drainage infrastructure being blocked during some storm events. The modelling assumes the drains are	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					operating at capacity, so should blockages be assumed, the flood extent would be even more extensive than that exhibited. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
179.	27 Margot Avenue, Doncaster	Ruffey Creek	SBO3	2, 7, 11	The submission states that the SBO is only on the driveway and that it is sloping. Other properties with similar driveways are not affected. The flood shape here represents a concentration of flow from uphill meeting with the roadway which the flood shape indicates is full of runoff during major storm events. The comparison with other properties does not take into consideration the upstream catchment. In this case, the topography of the upstream catchment behind the house results in a small collection of runoff as indicated by the flood shape. Although the flood shape only covers a small portion of the land, it is considered too significant to allow trimming. Deletion would compromise the ability to consider effects of runoff on future development and is not recommended. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
180.	27 Lisbeth Avenue, Donvale	Mullum Mullum Creek	SBO2	11	The overland flow coming to the property is from its upstream catchment located in the south west and north west direction with a distance varying between 200 to 300 m from the property. The	Yes. Remove the SBO2 incursion

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					area is served by 750 mm pipe at the east and that has been correctly modelled. The intrusion of SBO2 is a strip of area (less than 1% of the land), the width of the strip is less than 1m, located at the backyard and within easement. The overlay is recommended to be removed.	from the property.
181.	4 Fromhold Drive, Doncaster	Ruffey Creek	SBO2	1, 2, 7, 12	The submission states that the property is elevated and flooding is not a problem. The flood shape at this location does not represent water rising up from the street level but collective overland runoff from uphill being channelled onto the road. The argument that the neighbouring house will protect the submission property from runoff is not a valid basis for change. A site visit has found that the flood shape is consistent with the topography and Council drainage infrastructure. The flood shape should be retained at this location.	No
182.	10 Cypress Avenue, Templestowe Lower	Ruffey Creek	SBO3	1, 3, 11	The submission argues that no flooding has been experienced at this location. The incursion of the flood shape does not provide any significant planning or risk mitigation benefits and is recommended to be deleted from the property.	Yes. Remove the SBO3 incursion from property.
183.	529-539 Ringwood-Warrandyte Road, Warrandyte South	Andersons Creek	SBO2	1, 12	The source of overland flow coming to the property is the upstream catchment area located in the east side of the property within 1 km. The gully running in the east west direction at this location originated from the hill in the east and the gully passes through the southern part of the land.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
184.	35 Lynnwood Parade, Templestowe Lower	Ruffey Creek	SBO1	1, 2	<p>The property is located in the vicinity of a Melbourne Water main drain (Montpellier Crescent Drain). The applicable flood level for the property is 57.81 metres AHD for a 1 in 100 storm event.</p> <p>The property is subject to overland flows associated with the main drain.</p> <p>The maintenance issue with regard to wood chips has been reported to Council's Operations and Maintenance team.</p> <p>The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents.</p> <p>The outcome of the review is that the exhibited flood shape be retained at this location.</p>	No
185.	25 Airdrie Court, Templestowe Lower	Ruffey Creek	SBO2	2, 5, 6, 7	<p>The submission states that the property is on a slope and any flood water would quickly drain away.</p> <p>The proposed SBO identifies land prone to overland flooding from runoff or overflow from Council drains rather than inundation. The proposed flood shape is consistent with the terrain in the area. New drainage infrastructure constructed as part of the development along</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					Airdrie Court was not included in the modelling as it was constructed or handed over to Council after the flood mapping was undertaken. This can be included in a future planning scheme amendment. The SBO should be retained.	
186.	338 Serpells Road, Doncaster East	Mullum Mullum Creek	SBO2	1, 14 Mapping shows incorrect number.	The submission states that there is an error in the address data used in the mapping. A desktop review of the general flood shape in this area has found it to be consistent with the terrain and drainage infrastructure. Although the submitter states there is no proof of flooding, it is possible that a 1 in 100 year ARI event has not been experienced at this location. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location. In response to the issue that mapping incorrectly identifies this property, this has been referred to Councils GIS department.	No
187.	43 Flannery Court, Warrandyte	Mullum Mullum Creek	SBO2	1, 8	The submission refers to a neighbour's swimming pool as a reason for flooding. The reason for flooding is from the overland flow generated from the upper catchments. A swimming pool, if located upstream, would actually serve as a storage facility and reduce the impact of flooding to the submission property. The review has found that the drainage of the properties is mainly governed by topography for 1 in 100 ARI events. The review has confirmed the surrounding topography and drainage assets. The	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					flood shape should remain as exhibited at this location as the extent of SBO2 is significant.	
188.	476-480 Ringwood-Warrandyte Road, Warrandyte	Andersons Creek	SBO2	11	The submission points out that the overlay does not encroach onto the property. The property does contain a very minor incursion of the flood shape which is not considered to provide any planning or risk mitigation benefit. The flood shape is recommended to be deleted from the property.	Yes. Remove the SBO2 incursion from property.
189.	14 Moonbria Way, Templestowe	Mullum Mullum Creek	SBO2	5	The content of the submission supports the need to apply the SBO at this location. Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
190.	1A Pinnacle Crescent, Bulleen	Koonung Creek	SBO3	4, 5	The content of the submission supports the need to apply the SBO at this location. Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
191.	1 Pinnacle Crescent, Bulleen	Koonung Creek	SBO3	4, 5	The content of the submission supports the need to apply the SBO at this location. Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
192.	291 George Street, Doncaster	Ruffey Creek	SBO2	2, 11	The submission states that the incursion is within an easement and no building could occur in that location.	Yes.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under certain conditions, development in close proximity to property boundaries or within easements may be permitted in some cases. In this case, the incursion is not considered to be significant and application of the SBO in this case would not yield any significant planning or risk mitigation benefit. Thus, the exhibited flood shape is recommended to be amended accordingly.	Remove the SBO2 incursion from property.
193.	20 Philip Avenue, Doncaster	Koonung Creek	SBO3	2, 5, 7, 8, 12	The submission refers to landscape features and states that the flood shape is unfairly affecting the property compared to other properties at a similar slope/elevation. Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the catchment. Private infrastructure, such as retaining walls, structures and buildings, are not individually modelled as they are not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures, such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. The flood shape incursion onto the submission property fulfils the minor incursion criteria and the	Yes. Remove the SBO3 incursion from property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					flood shape is recommended to be amended accordingly.	
194.	32 Barton Street, Doncaster East	Ruffey Creek	SBO2	2	The submission states that the dwelling is safe from flooding due to the elevated position. The relative elevation of the property to other houses on the street is irrelevant as the flood shape indicates that the runoff is coming from the east and flowing onto the roadway. In addition, the SBO identifies flood prone land, not specifically where dwellings have flooded above floor level. There is evidence in street view and aerial imagery data that recent redevelopment of the site has taken place, however the shape of the overall land has not significantly changed. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
195.	22 Tracey Street, Doncaster East	Ruffey Creek	SBO3	2	The submission refers to the local topography and questions why the properties on the low lying side of the street have not been covered by the SBO. The properties on the low lying side of the street are not flood prone as the runoff from the street is safely collected in the roadway and channelled down Monica Street. The topographical data reflects the fact the driveway is slightly cut into the slope, creating a gully-like feature in the model which concentrates the runoff from uphill. The flow paths referred to in the submission have been reviewed. There is a disconnect in the flood shape between No. 22 and 24 Tracey Street. Nos. 24	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					and 26 are flatter and the flood shape suggests more of a ponding behaviour with a connection to Jocelyn Court, whereas the flood shape on the submission property represents channelling of shallow runoff onto Tracey Street. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
196.	15 Eucalypt Avenue, Templestowe Lower	Ruffey Creek	SBO2	7, 8, 10	The submission does not specifically object to the flood shape but to the proposed amendment in general. A review has found the flood shape to be consistent with the site conditions, with the intersection of Eucalypt Avenue and Cassinia Road experiencing large volumes of runoff during storm events. Due to the need to consider overland flow paths when redevelopment occurs, it is appropriate to retain the flood shape at this location.	No
197.	31-33 Ennismore Crescent, Park Orchards	Mullum Mullum Creek	SBO3	2	The submission states that the flood shape is inconsistent with the dwelling constructed on site and that the mapping reflects outdated data. The flood shape at this location does not represent water rising up from street level, rather the flood shape forms (meets the required threshold of depth, velocity and duration) within the submission property and flows downhill onto the street. The topographical contours and flood shape have been found to be consistent with the fall on the land evident from the street. The	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>property contains a slight gully which collects runoff from uphill. Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the catchment. Private infrastructure, such as retaining walls, structures and buildings, are not individually modelled as they are not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures, such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
198.	254 Church Road, Templestowe	Ruffey Creek	SBO3	1, 8	<p>The submission states that no flooding has been experienced during 40 years of living at the address.</p> <p>The flood shape predominantly covers areas of the backyard with a small incursion at the front. It is possible the submitter is referring to the floor levels of the house not being flooded. It is also possible the submitter has not experienced a 1 in</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					100 year ARI event of critical duration at this location. A site visit has confirmed the overall topography and drainage infrastructure in the area and it has been found to be consistent with that modelled. The flood shape should remain as exhibited at this location.	
199.	12 Viscount Drive, Doncaster	Ruffey Creek	SBO3	2	The submission refers to the source of overland flow to the property. The overland flow is anticipated to flow onto the property from 14 Stanley Drive. The statement, however, about flash flood water coming from 14 and 16 Viscount Drive is incorrect and the SBO shape has been misinterpreted at that location. The detailed review of the contours and drainage infrastructure have been done and the modelling is correctly represented. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
200.	1/24 Maggs Street, Doncaster East	Ruffey Creek	SBO2	7, 8 12	The submission states that when the property was purchased there was no SBO and the imposition at this point in time is unfair. The flood modelling which underpins the SBO has recently been undertaken by Council and Melbourne Water using the latest data available. The absence of previous flooding information was available does not mean there was no risk of flooding when the property was built or purchased. The dwellings are located on the higher side of the property and the SBO only encroaches into the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					shared driveway. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
201.	32 Winston Drive, Doncaster	Koonung Creek	SBO3	1, 7, 8	<p>The submission states that a 1 in 100 year ARI storm was experienced and flooding was not experienced at this location.</p> <p>No specific details have been provided in order to verify whether the storm described was a true 1 in 100 year ARI storm of critical duration at this location. A review of the flood shape in addition to a site visit from the street has found that it is reasonable to expect runoff to occur in the manner indicated by the SBO during major storm events due to the topography and drainage assets at this location.</p> <p>The flood shape should remain as exhibited at this location.</p>	No
202.	5 Eleanor Court, Donvale	Koonung Creek	SBO2	5, 7, 8, 12	<p>The submission mentions a discrepancy in the extent of SBO2 as the topography has been changed by reconstruction on the site.</p> <p>The existing drainage infrastructure, including pipes and pits, was checked and found to be consistently modelled. A site visit found that the topography has been changed at the south and east part of the land since 2013 and thus after the LiDAR data was collected. This LiDAR data and the derived flood shape are reflective of the ground conditions at a point in time and will become outdated in the future as changes are made to the</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>existing ground surface around the municipality. Further amendments to the flooding overlays that would incorporate changes to ground levels will be undertaken in the future. The submission also states that there is inadequate Council drainage along McGowans Road responsible for flooding. The experiences of flooding are consistent with the application of the SBO at this location. Underground drainage systems are usually designed to convey minor rainfall events with excess flow occurring overland. Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
203.	7 Pictor Court, Donvale	Ruffey Creek	SBO3	1, 2, 7, 8	<p>The submission states that the property is in an elevated location and no flooding has been experienced. The property is located near the top of the catchment and the flood shape indicates shallow</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					runoff from Mitcham Road flowing into the back yard. The flood shape does not indicate flooding of habitable floor areas. A site visit was conducted and confirmed the overall topography. The outcome of the review is that the SBO be retained at this location.	
204.	48 Treevalley Drive, Doncaster East	Mullum Mullum Creek	SBO2	2, 12	The submitters property is affected by SBO2. The drainage assets at this estate at the time of modelling were privately owned and managed and have not been included in the flood modelling. The review has confirmed that the proposed overlays are reflective of the surrounding topography. The flood shape should remain as exhibited at this location.	No
205.	72 Olympus Drive, Templestowe Lower	Ruffey Creek	SBO3	2, 8, 10	The submission refers to the relative elevation of the front of the property to 70 Olympus Drive which is lower. Review of the modelled depths associated with the unfiltered flood shape data confirms the impacts of overland flows on 72 Olympus Drive. The flood shape at this location is associated with runoff from the south and west, (74 Olympus Drive). It is recommended that the flood shape be amended to reduce the extent of the flood shape on the property in line with the unfiltered flood shape results. It is recommended that the flood shape be amended to reduce the extent of the flood shape on the property in line with the unfiltered flood shape results.	Yes. The flood shape for 72 Olympus Drive is proposed to be modified – refer to Attachment 7. Refer to map at Attachment 10.
206.	4-6 Yarra Street, Warrandyte	Andersons Creek	SBO2	3, 4	The submission refers to a previous drainage upgrade at this location following reported	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					drainage issues. A discrepancy has been found between the modelled and actual drainage infrastructure at this location. The upgrade was undertaken prior to the flood modelling exercise which underpins the SBO and additional modelling is required to quantify the impact of the upgrade on the flood shape. The flood shape is recommended to be reviewed in this area following additional modelling, which is expected to be completed prior to the Panel hearing.	
207.	82 Deep Creek Drive, Doncaster East	Mullum Mullum Creek	SBO3	2, 5, 6	Overall, the flood shape is consistent with the site conditions, except the drainage for Canowindra development at the backyard. The drainage pipes installed as part of the Canowindra development were not Council assets at the time of modelling. This is recommended to be updated during a future planning scheme amendment. The outcome of the review is that the exhibited SBO remain at this location.	No
208.	1 Cottesloe Court, Doncaster East	Mullum Mullum Creek	SBO3	1, 2, 5, 7, 8	The submission states that the property is on a slope and no flooding has been experienced. The flood shape is reflective of the topography of the property and the existing Council drainage infrastructure. Council drains catering for residential flows (i.e. not main drains) typically do not cater for 1 in 100 year ARI events. The site visit suggests that the contour and SBO shapes are consistent with site conditions. The gully-like feature across the property as seen from the Nedlands Court and Cottesloe Court is responsible	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>for the connectivity of the SBO3 between the two road ways. The submission also states that Council should prioritise upgrading drains if flooding is an issue. Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
209.	41 Taparoo Road, Templestowe	Mullum Mullum Creek	SBO3	2, 4, 5	<p>The description of runoff through the rear of the submission property is consistent with the application of the SBO at this location. The topographical features of the land result in runoff from the south being concentrated and channelled in a north westerly direction via the fall of the land. The submission states that the neighbouring property at No. 39 receives inundation however it is not clear how this could occur. The submission also states that Council should install more stormwater infrastructure on King Street and undertake more frequent maintenance.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					Although important, the maintenance of drainage infrastructure is a separate issue to the proposed overlays. The flood mapping which underpins the SBO assumes the drains are operating at capacity and if blockages were assumed, the flood extent would be even more extensive than that exhibited. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
210.	41 Hazel Drive, Templestowe Lower	Bulleen North	SBO2	2	The submission refers to a retaining wall and benching on the north boundary of the property as a basis for improbability of the property being flood prone. A site visit has confirmed the ground conditions. The flood shape at this location represents the upstream extent of water flowing out of the property and therefore a retaining wall or change in elevation of ground level would not impede the runoff. However, a review has found that, based on the modelled flood depths and the terrain of the site, the flood shape should be deleted from the property.	Yes. Remove the SBO2 incursion from the property.
211.	9A Balmoral Avenue, Templestowe Lower	Bulleen North	SBO3	7	The submission property is in the expected flow path of runoff from the east. The property is located in a low point along Balmoral Avenue and the flood shape is consistent with topographical contours. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
212.	371 Serpells Road, Doncaster East	Mullum Mullum Creek	SBO2 & SBO3	2, 11	The submission property is located in a gully and is located just upstream of the Melbourne Water main drain, which reflects the significant upstream catchment. A site visit has confirmed the topography and drainage infrastructure. The flood shape should be retained at this location.	No
213.	7 Cemetery Road, Warrandyte	Andersons Creek	SBO3	5, 7 13	The submission states that a drainage scheme is required in the area and, through the introduction of the SBO, Council is shifting the responsibility of drainage onto ratepayers. The drainage patterns in this area are governed by the topography. A site visit has confirmed that the topography is consistent with the flood shape. The overlays will assist in identifying areas to prioritise drainage upgrades throughout the municipality, in addition to ensuring future development in undertaken in a manner that considers flood risk. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
214.	3 Pinnacle Crescent, Bulleen	Koonung Creek	SBO3	4, 5, 8, 10	The content of the submission supports the need to apply the SBO at this location. Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The points raised in the submission about drain maintenance are important and the impacts are recognised. The description in the submission of the history of the problem suggests adequate work has been done by Council to investigate the matter and add it to the list of priorities for work. However, it represents an issue that is not relevant to the flood modelling which underpins the SBO. The flood shape has been modelled assuming that the drains are in working order and no blockages are present. Overland flow results in the model when the capacity of the drainage system is exceeded. Assuming blockages in the network would increase the size of the SBO beyond what is currently proposed. A site visit has been undertaken and it has determined that the flood shape is consistent with site conditions. The flood shape is recommended to be retained at this location.</p>	
215.	30 Anthony Avenue, Doncaster, and 30A Anthony Avenue, Doncaster	Ruffey Creek	SBO3	2, 7, 8, 9, 11, 12	<p>The submission property is located at a low point in Anthony Avenue and adjacent to the main flow path. The incursion of the flood shape onto the property is considered minor and would not provide significant planning or risk mitigation benefit and is recommended to be amended accordingly.</p>	<p>Yes. Remove the SBO3 incursion from the property.</p>

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
216.	34 Dellfield Drive, Templestowe Lower	Ruffey Creek	SBO3	2, 12	<p>The submission and addendum state that the school building and associated private drains at the rear of the property would protect the property from flooding.</p> <p>The flood modelling identifies flood prone land, and features such as buildings are not modelled individually but taken into consideration through the adoption of appropriate roughness factors in accordance with industry guidelines. Private drainage assets have not been modelled for a number of reasons. Council does not maintain these and cannot guarantee their capacity or effectiveness. In addition, Council has no control over the protection of these assets. The submission also states that, should the school property be redeveloped, Council would ensure stormwater was managed in a way that would protect the submission property and that the SBO should not apply. The SBO cannot be amended based on a possible future scenario. In addition, developments are usually only required to manage stormwater runoff for minor storm events and not to a 1 in 100 year ARI standard. A site visit has confirmed the topography and drainage assets in the area, however it is noted that the modelled flood depths at this address are shallow and retention of this flood shape will not appreciably assist the management of future flood risk. It is recommended to remove the SBO3 from the property.</p>	Yes Remove SBO3 from the property. Refer to map at Attachment 10.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
217.	1 Grosvenor Street, Doncaster	Ruffey Creek	SBO2	12	The submission refers to the recently installed 1 in 100 year stormwater drain on Grosvenor Street and questions the impact the proposed Amendment will have on the development. The drain installed as part of the development was constructed in 2015 and is not reflected in the modelling which underpins the SBO which was completed in the preceding years. It is beyond Council's responsibility to update the modelling to include the drain for this amendment and this will be included in a future review of the modelling which underpins the SBO. The proposed amendment will not affect the completion of the current development on the site, however the overlay is proposed to remain on the land as exhibited until a future review of the modelling is undertaken.	No
218.	2 Ananda Court, Donvale	Koonung Creek	SBO2	1, 2, 3, 4, 6, 7, 8	The submission property is on the main flood path of runoff from the north east. A desktop review has found the topography and modelled drainage infrastructure to be consistent with the flood shape. Although the gully is on a slope, flash flooding or overland runoff is still considered a risk and the proposed overlays will assist in ensuring future development is undertaken in an appropriate manner. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
219.	36 Henry Street, Doncaster	Ruffey Creek	SBO2	2, 3, 7, 8	This property has had two submissions due to the change in ownership prior to the end of the submission review period. This submission notes the drainage upgrade Council completed in 2006 and that they had not been any flooding of the property since 2006. The second submission only points out the possible drop in land value and increase of insurance premiums that could occur if the overlay is put in place. The previous flooding in 1991 and 2002 prompted Council to upgrade the Council drain within the easement in 2006. The drainage upgrade includes pits at the low point in the road to improve the inlet capacity and an increase to a 525mm diameter pipe. The flood shape should remain as exhibited at this location.	No
220.	22 Council Street, Doncaster	Ruffey Creek	SBO2	1, 2, 3	The submission refers to the storm event of 4-5 Feb 2011 and claims that this was rated as a 1 in 500 year ARI event and the submission property did not experience any flooding. The best available rainfall data from the BoM has been used to develop the models. There are no BoM rain gauges within the municipality with the accuracy needed to identify the critical storm duration that lead to this event. Additionally, rain does not fall uniformly at the same intensity in all catchments. Storm water runoff is dependent on the topography and runoff characteristic of the land. The 2011 storm event is known to have exhibited a large degree of spatial variability. The modelled storm event applies 1% AEP rainfall with	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>the corresponding critical duration for each catchment. This has been verified against our historic data from customer service requests received following high intensity rainfall events in the municipality and evidence of the impacts experienced in previous floods. The flood mapping has been conducted in accordance with industry best practice and the flood shape of the SBO is based on modelling a 1% Average Exceedance Probability (1% AEP) or 1% chance of storm of this magnitude occurring in a year. This is the same method used by other Councils and Water Authorities in Victoria.</p> <p>Given the size of the catchments involved, each area has been broken up into a grid with 3m x 3m cells. This approach is considered to provide adequate resolution to define topographical features within the catchment. The proposed overlays identify flood prone land. Structures and buildings have not been modelled individually as they can be subject to change in the event of property redevelopment. Consideration has been given to the impact of structures such as buildings and walls through the application of surface roughnesses in accordance with industry guidelines. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
221.	67-69 Ennismore Crescent, Park Orchards	Mullum Mullum Creek	SBO2	1, 2	<p>The submission refers to earthworks undertaken that have raised the front yard of the property, with the submission stating this would prevent flooding from following the path indicated by the SBO.</p> <p>A desktop review and site visit has confirmed that the earthworks are reflected in the LiDAR data and has been modelled adequately. The site visit confirmed that runoff from the north down Ennismore Crescent would still cut through the front of the submission property and make its way to Curry Road, due to the roadway of Ennismore Crescent being slightly higher than the front yard of the property. The extent of the SBO2 is significant and the depths of overland flow are also greater than 500mm at the pond areas. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No
222.	16 Murndal Drive, Donvale	Mullum Mullum Creek	SBO2	2, 12	<p>The submission refers to changes of topography caused by excavation of neighbour's property and therefore overland flow should be passing through that area.</p> <p>A site visit was undertaken and it was found that the retaining wall built in that location by his neighbour was high enough and consistently represented in the contour map. The SBO2 shape would not be entering to the neighbour's property as claimed in the submission. The stormwater drains of Council, as also mentioned in the</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					submission, are existing in the backyard of the property and they are to cater for smaller events (1 in 5 ARI) and would not be adequate for bigger events (1 in 100 ARI). There has been a drainage upgrade undertaken in 2014 while the modelling was being done. This upgrade has not been included in the modelling and can be incorporated into a future revision. The submission property is upstream of the upgrade and the omission will not significantly affect the flood shape at this location. The review has confirmed the surrounding topography. The flood shape should remain as exhibited at this location.	
223.	3 Cliveden Court, Templestowe	Mullum Mullum Creek	SBO3	7, 8, 11	A review has found that the flood shape is consistent with the topography of the area and the drainage infrastructure, however, the incursion is minimal and is not considered to provide significant planning or risk mitigation benefits and the flood shape is recommended to be amended accordingly.	Yes. Remove the SBO3 incursion from the property.
224.	3 Trudi Court, Donvale	Mullum Mullum Creek	SBO3	1, 7, 8, 11	The submission states that due to the sloping nature of the ground, the property is not prone to flooding. In addition, the floor level of the house is significantly higher than the area with the proposed SBO3 and that the dwelling would never flood. Although the SBO covers a small portion of the property, the land may be subdivided in the future and the draft overlay would assist in ensuring future development is undertaken in a way that	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					considers the risk of overland runoff. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
225.	9 Myers Court, Doncaster	Koonung Creek	SBO2	2,3	<p>The submission states the previous drainage upgrade works have addressed the issue of flooding at this location. A review has found that the upgraded infrastructure has been modelled, however, the implementation of this design was to reduce the extent of inundation, not to eliminate overland flow entirely. The area is a defined gully with a significant upstream catchment. In addition, the upgrade is overshadowed by larger inadequacies in the surrounding network. There are records of flooding at this location since the drainage upgrade mentioned in the submission was constructed.</p> <p>The submission also questions why there are lower lying properties on Frank St not included in the proposed overlay. The flood shape at this location represents overland runoff from the north east, not rising water from the south. The flood shape is less extensive around the 1-3 Frank St because more of the runoff is accommodated by the underground pipes of 1500 mm and 750 mm in diameter at that location. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
226.	1 Niobe Court, Templestowe Lower	Ruffey Creek	SBO3	1	<p>The submission states that no flooding has been experienced while the submitter has lived at the address and takes issue with the SBO being based on a flood with a 1% chance of occurring in any year.</p> <p>The SBO is based on a 1 in 100 year ARI event which is industry practice and has been adopted by other Councils including Banyule and Port Phillip. It may be that the submitter is referring to not experiencing any flooding of the dwelling itself. The SBO defines flood prone land, not specifically where dwellings have flooded above floor level. The flood shape incursion is along the frontage of Andromeda Way which is expected to experience significant volumes of runoff during storm events. A site visit has confirmed the flood shape is consistent with site conditions and it is recommended to be retained at this location.</p>	No
227.	3 Millwood Court, Templestowe	Ruffey Creek	SBO2	1, 2, 8	<p>The location of the property and the catchment to the north west contributes to the runoff. The natural topography controls the overland flow. The drainage infrastructure as well as the sloping land surface has been correctly represented in the model and the SBO2 resulting from the modelling is consistent with this. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No
228.	55 Caringal Avenue, Doncaster	Koonung Creek	SBO2	1, 2, 7, 8	<p>The submission states that flooding is not seen as a risk to the property.</p>	Yes.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. In addition, the submission may be indicating the dwelling has never been flooded above floor level. The SBO identifies flood prone land, not where buildings are flooded above floor level. The purpose of the proposed overlays is to ensure that future development is protected from flooding. The SBO covers a small area in the corner of this property and is not considered to provide significant planning or risk mitigation benefit and it is recommended that the flood shape be amended accordingly.	Remove the SBO2 incursion from the property.
229.	17 Janet Street, Templestowe Lower	Bulleen North	SBO2	1, 7, 8, 11	The submission states that the ground levels have been changed in the backyard in the 1970s. The modelling was undertaken using LiDAR data dated 2009 and is the best available data for this type of modelling. A site visit was undertaken for this property to verify the modelled flood shape against the terrain. Given the size of the catchments involved, each area has been broken up into a grid with 3m x 3m cells. This approach is considered to provide adequate resolution to define topographical features within the catchment. The proposed overlays identify flood prone land. Structures and buildings have not been modelled individually as they can be subject to change in the event of property redevelopment. Consideration has been given to the impact of structures such as buildings and walls through the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					application of surface roughnesses in accordance with industry guidelines. The submission also refers to private on site detention and drainage installed as part of the development on the neighbouring property. These private systems are designed for minor storms and do not significantly change the flood extent in a 1 in 100 year ARI event of critical duration and thus have not been modelled. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
230.	21 Marianne Way, Doncaster	Koonung Creek	SBO3	2, 4, 5, 7, 8, 12	The submission refers to drainage installed as part of the subdivision of the site. This has not been modelled as it would be designed to minor storm event standards and Council cannot guarantee its effectiveness in major storm events. The submission states that the property is on a slope, however the flood shape at this location is reflective of overland runoff and not ponding of water. This type of flooding is still considered a risk. A review has found the flood shape to be consistent with the terrain. Although there has been a drainage upgrade in neighbouring Anthony Reserve, the submission property does not directly benefit due to the position in the catchment. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
231.	6 Trevinden Close, Templestowe	Ruffey Creek	SBO3	1, 2, 3, 12	The submission states that the property is on a slope and no flooding has been experienced. The drainage system implemented in the immediate area is designed typically for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. The SBO overlay on the property is based on a 100 year ARI. Although the resident may not have experienced flooding, this does not mean the property is not flood prone during a 1 in 100 ARI. Due to the proximity of the subject property to the flood extent it is reasonably expected to be flood prone and the site visit confirmed the probability of inundation due to the nature of the surrounding terrain and a gully along the north boundary. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
232.	59 Beecroft Crescent, Templestowe	Ruffey Creek	SBO2	2	The submission states that the property is on a hill and no flooding has been experienced. A site visit has confirmed the terrain and drainage infrastructure is consistent. The SBO indicates that the roadway of Beecroft Avenue contains significant surface water in a 1 in 100 year ARI storm which causes overland runoff through the submission property to concentrate in the manner indicated by the SBO. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
233.	8 Lynnwood Parade, Templestowe Lower	Ruffey Creek	SBO2 & SBO3	2	The property is reasonably expected to experience overland runoff in the fashion indicated by the SBO. The site visit confirmed the terrain and drainage infrastructure and supports the flood shape, given the nature and fall of the property. The overlay is representative of overland runoff in a 1 in 100 year ARI. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
234.	5 Reddan Court, Doncaster	Ruffey Creek	SBO2	2, 4, 5, 6, 12	The submission references the Council drainage infrastructure in the area. The current drainage system design is typically for a 1 in 5 year ARI storm event, with flows in excess of the pipe system travelling overland. The SBO is based on a 100 year ARI event. The submission also makes reference to properties at a lower elevation not being subject to the overlay. The nature and flow of the SBO is dependent on either features of the terrain such as gullies or the pipe network in the area. The LiDAR data used for mapping shows a defined gully in which the property is located and where the overland run off is likely to flow in a 100 year ARI. The results of the flood mapping have been used to identify potential drainage upgrades. Council is working through a process to prioritise these capital works. The submission also mentions the Tullamore development and questions how this would impact flooding. Stormwater is expected to	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					exit that developed site at the current point of discharge. The developer is required to install significant drainage works, including a detention basin, to reduce outflows to pre-development conditions. The development is not expected to have a major impact on drainage patterns in the surrounding areas. The flood extent incursion on the property is significant. Removal of the SBO would compromise the integrity of the SBO flood shape it in its entirety and result in discontinuity of the flood extent. The submission property lies within a defined valley and overland runoff could reasonably be expected to occur in the manner indicated by the SBO. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
235.	35 Illawong Drive, Donvale	Mullum Mullum Creek	LSIO & SBO2	2, 12	The submission argues that due to the current construction of Mullum Estate including earthworks and stormwater infrastructure, the exhibited flood shape should not apply to the property. This work has occurred since the capture of the LiDAR survey data used in the modelling. This LiDAR data and the derived flood shape are reflective of the ground conditions at a point in time. The exhibited flood shape is reflective of the conditions at the time of modelling. The addendum also argues that the extension of LSIO up the tributary gullies should be designated with an SBO rather than an LSIO. The intent of the	Yes. It is recommended to amend the designation of the flood shape on the main tributary gully to LSIO resulting in the entire gully being under Melbourne Water control.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>amendment is that each property be subject to overlays solely under either Council or Melbourne Water control. Based on current data it is recommended to amend the designation of the flood shape on the main tributary gully to LSIO resulting in the entire gully being under Melbourne Water control. In recognition of the progress of the Stage 1 subdivisional works and lack of information available to incorporate into the model on new assets and levels, it is further proposed to delete the flood shape within the extent of Stage 1 of the subdivision, including the extension of the flood shape into 7 Yileen Court. In respect of 116-126 Old Warrandyte Road (Stage 2), two dams have been noted in the landscape which will be removed when Stage 2 works proceed. Further review of the flood shape has also determined that the remaining overland flows at 116-126 Old Warrandyte Road are relatively shallow and given the pending civil construction works, it is recommended that the LSIO flood shape be deleted from the Stage 2 land.</p>	<p>Further, it is proposed to delete the flood shape from Stages 1 and 2 of the subdivision and 7 Yileen Court.</p>
236.	4 Gum Ridge Close, Templestowe			1, 2, 5	<p>The submission states that the property is on the high side of the street and does not experience flooding. This is consistent with the flood shape at this location which does not encroach on the property itself but on to the shared driveway through the defined gully running in a westerly direction through No. 2 and No 7 Gum Ridge Close. The</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					overlay encumbrance is as a result of common property and is reflective of the property details adopted as the basis of the flood mapping. The flood shape is consistent with the topography and drainage assets at this locations and is recommended to be retained.	
237.	15 Murndal Drive, Donvale	Mullum Mullum Creek	SBO2	1	The submission references the current drainage infrastructure and suggests this is adequate to prevent flooding. The Council drainage infrastructure is designed typically for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. The SBO on the property is based on a 100 year ARI. Although the resident may not have experienced flooding, it cannot be certain the property is not flood prone during a 1 in 100 ARI. Due to the proximity of the subject property to the flood extent it is reasonably expected to be flood prone as the north boundary lies within a valley subject to inundation. Removal of the SBO would result in discontinuity of the flood shape. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
238.	2/1 Harry Street, Doncaster East	Koonung Creek	SBO2	1, 2	The SBO extent fulfils the minor incursion criteria of less than 30m ² and 6%. The overlay is to be amended accordingly.	Yes. Remove the SBO2 incursion from the property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
239.	7/48 Leslie Street, Donvale	Mullum Mullum Creek	SBO2	2	<p>The submission states that because the house was built in the 1980s, it should have adequate drainage.</p> <p>This is possibly a reference to the supporting material which outlines the history of drainage design standards. The underground drainage pipes along the southern boundary of No. 48 were constructed around 1981. Regardless of when they were built, residential underground drainage pipes do not generally have the capacity to convey a 1 in 100 year ARI storm event of critical duration. The relevant point from the reference to the design standards is that since the late 1970s/early 1980s, safe passage for overland flows had to be considered for when the underground drains were full during storm events. It is possible that the drainage at this location was designed prior to the new standards being implemented, or that another constraint resulted in the major storm overland flow path running through residential properties. Nonetheless, if redevelopment of the site occurs in the future, it would be appropriate to consider overland runoff patterns at this location. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No
240.	6 Linton Avenue, Templestowe Lower	Ruffey Creek	SBO3	2	<p>The submission property experiences runoff from the south east. The flood shape is consistent with the topography however it satisfies the minor incursion criteria and would not yield significant</p>	Yes. Remove SBO3 incursion from property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					planning or risk mitigation benefits and is therefore recommended to be deleted from the property.	
241.	18 Philip Avenue, Doncaster	Koonung Creek	SBO3	2, 4, 12	<p>The submission contains detailed information regarding the topography of the immediate area including the footpath and retaining wall. The terrain data used in the model was captured in 2009 by DELWP and is the best available data for this type of modelling. Site visits have been undertaken throughout the municipality by engineers to verify the modelled flood shape against the terrain where required. A site visit was undertaken from the street for this property. Given the size of the catchments involved, each area has been broken up into a grid with 3m x 3m cells. This approach is considered to provide adequate resolution to define topographical features within the catchment. The proposed overlays identify flood prone land. Structures and buildings have not been modelled individually as they can be subject to change in the event of property redevelopment. Consideration has been given to the impact of structures such as buildings and walls through the application of surface roughnesses in accordance with industry guidelines. The submission property is in a low point along Philip Avenue. Due to the curvature of the road, water is diverted from Philip Avenue down Ernst Street. The property has an incursion of the flood shape at the front as it falls in the</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					natural path of flow. The incursion in the southern part of the property represents the upstream extent of flow which occurs in a southerly direction. A review has found that the flood shape is consistent with the topography of the area and the modelled drainage assets and should be retained as exhibited.	
242.	70-82 Gold Memorial Road Warrandyte & 84 Gold Memorial Road, Warrandyte	Andersons Creek	SBO2	1, 5	With respect to 70-82 Gold Memorial Road, although the dwelling is located on the highest point of the property, the extent of the SBO is based on the flood prone land not specifically where dwellings are flooded above floor level. The property contains a steep natural gully and the removal of the SBO would result in discontinuity of the flood extent, therefore its deletion is not recommended. With respect to 84 Gold Memorial Road, however, the SBO extent fulfils the minor incursion criteria and is recommended to be amended accordingly.	No to removal for 70-82 Gold Memorial Road. Yes for removal of SBO2 incursion from 84 Gold Memorial Road.
243.	53 Roseland Grove, Doncaster	Ruffey Creek	SBO2	2, 3, 7, 8	The submission has queried whether or not the recent drainage upgrade is reflected in the flood modelling. The current 1050 mm drainage pipes constructed around 2001 have been included in the modelling, however the area is flood prone and the upgrade was implemented to reduce extent of inundation and flooding of habitable floor levels but does not to eliminate overland flooding entirely. Due to the proximity of the subject property to the flood extent, it is reasonably expected to be flood prone.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					A site visit confirms that the property is located within a slight valley serving a natural floodway for the catchment area south of the property. Removal of the SBO would result in discontinuity of the flood extent. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
244.	6 Bembooka Court, Doncaster	Ruffey Creek	SBO3	12	The submission requests exemption from a property development perspective. The flood shape is consistent with pit overflow in Bembooka Court travelling overland. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
245.	101 The Grange, Templestowe	Ruffey Creek	SBO2	2, 5, 7, 10	The submission objects to the amendment from a property value and development point of view and states that if the drainage infrastructure is unable to cope with the amount of runoff, Council or Melbourne Water should upgrade the drains. Council cannot build a drain that can cope for all storm events. Typically, underground drainage systems are designed to cope with minor (1 in 5 year ARI) storm events with flows in excess of the underground network travelling overland. The SBO was based on modelling for a 1 in 100 year ARI event in line with industry practices. This identifies flood prone land during major storms and assists in ensuring development occurs in a way that considers the natural flow path and sites dwellings	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					in a safe location. A site visit has confirmed the flood shape is consistent with the site conditions and should be retained.	
246.	2 White Lodge Court, Donvale	Andersons Creek	SBO3	2, 5, 7, 8, 11	<p>The submission questions the accuracy of the modelling and states that there is no proof that flooding extends over the boundary of the property.</p> <p>The flood modelling which underpins the SBO is based on a 1 in 100 year ARI storm event in accordance with industry guidelines for identification of flood prone land. The flood shape in this area has been found to be consistent with the contours of the land, through a site visit undertaken from the street. There is a small gully along the alignment of the SBO and this channels runoff onto the roadway. The submission also states that development is unlikely to occur in the area designated by the overlay. This is not considered a basis to amend the flood shape, as the intent of the overlay is to identify flood prone land and development may occur in the future in areas not currently permitted. Although the incursion makes up a small percentage of the property area, it is considered significant based on area (over 30m²). Removal of the SBO would result in a discontinuity of the flood extent. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
247.	3 Kandanga Grove, Bulleen	Koonung Creek	SBO2	2, 3, 4, 7, 8	The submission queries the impact of drainage upgrades on the flood shape. A review has found the 1050 mm drainage pipe constructed along the eastern boundary of the property around 2012 was included in the modelling, however the area is flood prone and the upgrade was implemented to reduce extent of inundation and flooding of habitable floor levels but does not to eliminate overland flooding entirely during major storm events. Due to the proximity of the subject property to the flood extent it is reasonably expected to be flood prone. A site visit confirms that the property is located adjacent to a valley that serves as a natural floodway for the catchment area north of the property. Removal of the SBO would result in discontinuity of the flood extent. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
248.	23 Browning Drive, Templestowe	Mullum Mullum Creek	SBO2	1, 2, 5, 7, 8, 12	The submission questions the accuracy of the flood shape and states that they were not made aware of the overlay at the time of purchase or when applying for a planning permit to undertake further works on the property. A site visit has confirmed the flood shape is consistent with the topography of the site. The effects of landscaping and alterations of the land within the property are largely irrelevant to the overall SBO shape in this area because runoff is	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					occurring from Old Orchard Close. Although the submitter claims not to have experienced any flooding due to experienced heavy rainfall it cannot be confirmed that a 1 in 100 year ARI storm event of critical duration was not experienced. The proposed overlays have been based on modelling recently undertaken by Melbourne Water and Council. No advice could be given to the submitter regarding flooding when going through the planning process because no information was available at the time. The flood extent is significant and due to the proximity of the property to the main flow path it is reasonably expected to be flood prone, as it is with in a valley and is subject to overland flow from upstream catchment areas east of the property. In addition, removal of the SBO would result in discontinuity of the flood extent. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
249.	12 Lawsons Court, Templestowe	Mullum Mullum Creek	SBO3	8, 11	The submission states that due to the location of the incursion of the flood shape, exemption should be granted from the SBO as no building would occur in the area designated. This is not considered a valid basis to amend the flood shape as future development may occur in areas not currently permitted. The SBO identifies flood prone land and the intent is to ensure future development is undertaken in a way that considers the overland flow paths during major storm events.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					In addition, amending the SBO would compromise the integrity of the flood shape at this location. A review had found that the flood shape extends beyond the easement along the northern boundary, is consistent with the topography and drainage infrastructure and should be retained.	
250.	12 Saxonwood Drive, Doncaster East	Ruffey Creek	SBO2	1, 2	The submission states that no flooding has been experienced on the property even during major storms. It is not clear whether the submitter has experienced a 1 in 100 year ARI event of critical duration at this location. The properties to the east are in a low point along Blackburn Road and excess runoff flows in a westerly direction following the contours of the land. A site visit has confirmed the local topography and Council drainage assets. It is recommended to retain the flood shape at this location.	No
251.	12 Ross Street, Doncaster East	Koonung Creek	SBO3	2, 3	The submission questions why other, lower lying Ross Street properties are not affected by the proposed overlay. The property is located at the intersection of Ross Street and Hislop Street. A site visit has confirmed that part of the front yard of the property is below road level which is consistent with the proposed SBO. While there are multiple drainage pits in the street near 12 Ross Street, the associated underground drain has a capacity of between a 1 in 5 and a 1 in 10 year ARI standard. In a 1 in 100 year ARI event, the capacity of this system will be	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					exceeded, leading to overland flows. The capacity of private drainage assets on private property as referenced by the submitter are limited by the capacity of the drainage system to which they discharge and as such, these assets will not make a significant contribution to property protection in a 1 in 100 year ARI event. The flood shape is considered to be consistent with the local topography and the capacity of the existing drainage system. It is recommended that the proposed SBO be retained at this location accordingly.	
252.	16 Dellfield Drive, Templestowe Lower	Ruffey Creek	SBO3	2, 11	The submission states that the upstream catchment is small and model input data inaccurate. The property experiences a minor incursion of the flood shape. The SBO extent fulfils the minor incursion criteria of less than 30m2 and 6% therefore it is recommended that it be removed.	Yes. Remove the SBO3 incursion from the property.
253.	6 Montclair Court, Templestowe	Ruffey Creek	LSIO	2, 3	The existing street and easement drainage system is only capable of catering for the 1 in 5 year ARI storm. The road way and overland flow paths can assist in conveying the additional storm water runoff generated in the 1 in 100 ARI event, affecting properties on the low side of Montclair Court. No 6 Montclair Court is located at the low point of the court and the drainage connection to the Ruffey Creek is located next to the western boundary of this property. The flood mapping indicates water up to 300 mm would pond in front	Yes. Change the LSIO to an SBO3. Refer to map at Attachment 10.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					of this property and water would flow over the kerb level across the whole frontage of the property as shallow flow. The existing drainage system will be referred for upgrade consideration, subject to habitable floor level impacts. It has been agreed with Melbourne Water that the flood shape designation within the property be amended to SBO3 from the exhibited designation of LSIO.	
254.	8 Cypress Avenue, Templestowe Lower	Ruffey Creek	SBO3	1, 2, 5, 7, 8	The submission states that the property is on a hill and no flooding has been experienced. A site visit has confirmed that the terrain and drainage infrastructure is consistent with that modelled. The property is near the top of the catchment and runoff is shallow, however high velocity also impacts the definition of the flood shape. Topographical features direct the flow of runoff and this may result in places with a lower elevation not being flooded. The submission also states that drains should be upgraded rather than imposing the SBO. The overlays are based on new modelling recently undertaken by Melbourne Water and Council and provide new insight into land prone to overland runoff and flooding. They will assist in prioritisation of drainage upgrades, with preference given to alleviating flooding of habitable floor areas. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
255.	21 Alexander Road, Warrandyte	Mullum Mullum Creek	SBO2	2	<p>The submission states that flooding is unlikely because the catchment is not large and there is sufficient capacity in the roadway and channel to cater for large storm events.</p> <p>The high points in the surrounding terrain form a significant catchment area. Runoff occurs onto the roadway mainly through the neighbouring property, but also cuts the corner of the submission property. Alexander Road does serve as a natural floodway, however the point of incursion onto the property is within an area expected to be flooded during a 1 in 100 year ARI event of critical duration. The elevation difference between the property and the road way is irrelevant as the incursion is not from the road way, rather it is from the significant overland runoff flowing through the corner of the property from the south boundary onto the road. The waterway mentioned by the submitter contains underground Council drainage typically designed for a 1 in 5 year ARI, with flows in excess of the pipe system travelling overland. The SBO is based on a 100 year ARI event. Due to the surrounding terrain, the property is reasonably expected to experience runoff in the manner indicated by the SBO. The incursion represents a small portion of the overall property size but subdivision may occur in the future and it would be appropriate to retain the overlay in order to ensure development occurs in a way that considers the flood risk. The review</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
256.	9 and 9A Valepark Drive, Donvale	Mullum Mullum Creek	SBO2	12, 14 Existing properties under 500sqm therefore already require a permit for development	<p>The submission states that the SBO is unnecessary due to the requirements of the recent development undertaken on the site. Although the subdivided properties are each less than 500m² in size, the west boundary of both is located within a defined valley in the terrain and is expected to be partially flood affected in a 100 year ARI event. The overlays identify flood prone land and do not consider whether a recent development has taken place. The intent is to ensure that appropriate floor levels are adopted for future developments. Removing the SBO from the property would compromise the integrity of the flood shape in its entirety. The private retention system referred to in the submission is in place to facilitate for the run off produced by the property itself and does not necessarily reduce flooding from the upstream catchment. On site detention systems and private drainage systems have not been modelled as they do not significantly impact the 1 in 100 year ARI flood extent. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p> <p>In response to the issue that existing controls already prohibit development of the land, this is</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>not strictly correct. The existing controls on the land will, however, already trigger the need for a permit for buildings and works.</p> <p>Approximately 45% of the affected properties already have other planning scheme controls that trigger the requirement for a planning permit. The proposed amendment will ensure, however, that new development is appropriately controlled and has regard to identified flood levels.</p>	
257.	559-561 Doncaster Road, Doncaster, and 563 Doncaster Road, Doncaster	Koonung Creek	SBO3	1, 2, 3, 5, 6, 7, 8	<p>The submission states that the property has never been flooded in the last 100 years. Council has correspondence from a flooding complaint in the vicinity that, due to the relative position of the submission property 559-561 Doncaster Rd to the site of the complaint, suggests flooding does occur through 559-561 Doncaster Rd. The records do not implicate 563 Doncaster Rd however it cannot be assumed a property is not flood prone based on a lack of recollections of flooding at that location. The drains along Doncaster Rd are not sufficient to completely remove surface water during a 1 in 100 year ARI event of critical duration and runoff can reasonably be expected to occur in the manner indicated by the SBO. A site visit has confirmed the topography of the land and Council drainage infrastructure and the flood shape is consistent with runoff from Doncaster Rd entering the property during major storm events. The intent of the overlay is to protect future development from</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					flooding. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
258.	33 The Grange, Templestowe	Ruffey Creek	SBO2	2, 12	The overlay represents overland runoff flowing over the property in a south westerly direction rather than flooding from the road way. The submitter correctly states that there is a significant decline in the terrain west of the property, in addition to the decline of Chippendale Court from The Grange intersection and the LiDAR data suggests that overland runoff continues to channel through a slight gully along the north side of The Grange. Private infrastructure, such as retaining walls, structures and buildings is not individually modelled as it is not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures, such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
259.	97 The Grange, Templestowe	Ruffey Creek	SBO2	1, 7, 8, 10	The submission states that no flooding has been experienced since buying the property in 2004.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					Although the submitter may not have experienced flooding, it is possible that the submitter has not experienced a 1 in 100 year ARI storm event of critical duration at this location. The property is in a location reasonably expected to be flood prone as it is located within a defined valley in the terrain and has a large upstream catchment. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
260.	68 Board Street, Doncaster	Ruffey Creek	SBO3	1, 3, 6	<p>The submission refers to previous drainage upgrades and questions why the overlay is being applied.</p> <p>The current 1050 mm drainage pipes constructed around 2001 have been included in the modelling, however the area is in the main flow path due the position in a low point along Board Street. The descriptions of the neighbouring property flooding are consistent with the flood shape which encroaches on the property boundary. The upgrade was implemented to reduce extent of inundation and flooding of habitable floor levels but does not to eliminate overland flooding entirely. Removal of the SBO is not recommended as it would result in discontinuity of the flood extent. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
261.	107-115 Andersons Creek Road, Doncaster East	Mullum Mullum Creek	SBO2	2, 12	<p>The submission states that the modelling used to determine the extent of the SBO fails to recognise the development approved on the site. The OSD systems and private drains have not been included in the modelling for the following reasons: Such OSD systems are only designed to minor storm event standards, with an overflow bypass for high intensity events. The drains constructed as part of the development are private assets which Council does not maintain and therefore cannot guarantee their effectiveness in high intensity events. The submission also refers to engineering levels provided by Council and Melbourne Water during the development approval process. These levels were provided prior to the introduction of the proposed SBO2 overlay. Council and Melbourne Water have recently completed the flood modelling study that underpins the proposed SBO & LSIO overlays. Whilst Council can use the new flood modelling data to inform advice given to developers, there is no obligation for the developer to adopt the levels based on the proposed SBO until the amendment is formally gazetted into the Manningham Planning Scheme. The submission also states that the existing buildings on the southern portion of the site that are affected by the SBO2 raises liveability issues. The purpose of the proposed overlays is to identify areas prone to overland flooding as a result of local or main drains exceeding their capacity in a major (1 in 100 year</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					ARI) event. There is a need to minimise any flood risk to future development of this area by requiring appropriate conditions and floor levels. The submission states that there was a gap in information Council provided during the development process regarding existing stormwater systems. Council is not aware of any gap in information regarding existing Council stormwater systems. A review of existing drainage infrastructure has been undertaken and the drainage infrastructure that has been modelled reflects the in-ground assets. The outcome of the review is that the extent of the SBO be retained at this location.	
262.	1 Forest Place, Templestowe	Mullum Mullum Creek	SBO3	9, 11	The submission is correct in identifying that the flood shape incursion is minor. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under conditions, development within an easement or in an area previously designated as a shared driveway may be permitted in some cases. Existing properties may be redeveloped in the future and the proposed overlay will assist in the assessment of the impacts of any future development. In this case, the incursion is not considered to be significant and application of the SBO in this case would not yield any significant planning or risk mitigation benefit. Accordingly the exhibited flood shape is recommended to be amended.	Yes. Remove the SBO3 incursion from the property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
263.	27 Marcus Road, Templestowe Lower	Bulleen North	SBO2	4, 5, 6, 7, 8	<p>The submission acknowledges that the property is prone to flooding and states that Council should upgrade the drains in the area.</p> <p>The observed flooding of this property is consistent with the application of the SBO at this location. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
264.	96 Golden Way, Bulleen	Bulleen North	SBO3	3	The submitter identifies previous flooding at the property prior to Council works, including road work and drainage upgrades. The original drains were upgraded in 1998, with a 225 mm drain and triple grated pit outside the adjoining property as described in the submission. These upgrades were included in the modelling. Even with the upgraded drains being taken into account, overland runoff is still seen to occur along Golden Way, with an overland flow path via the submission property to Morris William Reserve. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. The flood extent was modelled on a 1 in 100 year ARI or 1% AEP rainfall event in accordance with industry practice. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location	No
265.	23 Murndal Drive, Donvale	Mullum Mullum Creek	SBO2	1, 2, 7, 8	Refer to Attachment 7 for the Further Technical Review of this submission.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
266.	21 Monaco Street, Doncaster & 14 Alison Avenue, Bulleen	Koonung Creek	SBO3	2, 7, 8, 11	<p>21 Monaco Street - the submission states that the area of the property covered by the SBO is elevated and unlikely to experience flooding. A site visit from the street, in combination with a desktop review, has found that the submission property is likely to experience overland runoff from the north east which would flow onto Monaco Crescent, rather than rising up from the street onto the property. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p> <p>14 Alison Avenue - the depth of flooding is minimal on the property at the north west and north east corners and is not considered to be flooding from the Melbourne Water system. The overlay designation has been reviewed and is recommended to be amended based on the anticipated flood depth and direction of flow identified in the modelling.</p>	No for 21 Monaco Street. Yes for 14 Alison Avenue - remove the SBO1 from this property.
267.	14-16 Stanley Drive, Doncaster	Ruffey Creek	SBO3	2	Refer to Attachment 7 for the Further Technical Review of this submission.	No
268.	20 Stanley Drive, Doncaster	Ruffey Creek	SBO3	2	<p>The submission states that the incursion to the front of the property is unlikely to occur due to the height of the footpath and road kerb in relation to Stanley Drive. In addition, the submission states that the rear incursion is unlikely due to the backyard landscaping and fences and small catchment size.</p> <p>Given the extent of the catchments involved, each</p>	Yes. Remove the SBO3 incursion from the property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the catchment. Private infrastructure, such as retaining walls, structures and buildings, is not individually modelled as it is not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures, such as buildings, and features, such as landscaping and fences on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. A site visit has confirmed the topography and as-built drainage infrastructure is consistent with that modelled. However, the incursions are considered minor and would not yield any significant planning or risk mitigation benefit. Accordingly, the extent of the flood shape is recommended to be amended.</p>	
269.	22 Koolkuna Avenue, Doncaster	Koonung Creek	SBO2	1, 2	<p>The submitter describes having lived at the property for 38 years and not experienced flooding.</p> <p>It is possible that the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. In addition, the submission may be indicating the dwelling has</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>never been flooded above floor level. The SBO identifies flood prone land, not where buildings are flooded above floor level. Based on the topography and the size of the catchment, it is reasonable to expect this property would experience flooding in the manner indicated by the SBO. A site visit confirmed that the drainage infrastructure in the area was modelled correctly and flood shape is consistent with the terrain. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
270.	25 Berrima Road, Donvale	Mullum Mullum Creek	SBO3	2, 5, 8	<p>The submitter's experiences of drainage patterns from One Tree Hill Reserve are consistent with the application of the SBO. The submission suggests that water flows through the neighbouring property before flowing at an angle through the west corner of the submission property, and that the SBO does not reflect these observations. Although the SBO shape is not defined through the neighbouring property, it is possible the modelled flood depths are not significant enough to define the flood shape that far upstream. A site visit confirmed general topography and drainage infrastructure in One Tree Hill Reserve, which contains a grated easement drain pit. Typically, Council drainage infrastructure of this age was not designed to protect against a 100 year ARI event of critical duration. The flood extent was modelled on such an event. The review has</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
271.	1 Glenview Road, Doncaster East	Koonung Creek	SBO2	3, 4, 5, 6, 7	The submission acknowledges that the property has been prone to flooding in the past and states that Council should upgrade the drains in the area. The observed flooding of this property is consistent with the application of the SBO at this location. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s, improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The submission also refers to development in the surrounding areas. As part of new subdivisions, developers are required to consider drainage implications and implement private underground drainage systems including OSD systems which are designed to minor storm event standards. These systems are not considered to have a significant impact in a major storm event. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
272.	7 Streeton Lane, Doncaster East	Mullum Mullum Creek	SBO3	2, 3, 4, 5, 7, 8	<p>The submission states that Council should upgrade the pits in Streeton Lane and undertake more frequent maintenance.</p> <p>Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					designed to set habitable floor levels above the major storm flood level. In terms of maintenance, generally Council drainage infrastructure is inspected on a yearly basis and pit cleaning undertaken. In addition to this, inspections are carried out when specifically requested by residents. The submission property is located in a position prone to runoff from the south connecting to the main flow path to the north during major storm events. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
273.	70 Roseland Grove, Doncaster	Ruffey Creek	SBO2	1, 2, 3	The submitter states that, due to the slope of the property, any flood water would drain away. The submitter also states that in their 25 years living at the property, it has not been subject to flooding. The submitters may not however have been present at the site during a 1 in 100 year ARI event. The modelled flows run from west to east through the property and pose a flood risk in a major storm event. It is considered appropriate that an overlay be retained over this property to protect future proposed habitable floors from the effects of overland runoff. Based on a review of the modelled flood depths and connectivity of the flood shape at this location, the exhibited SBO is recommended to be altered from SBO2 to SBO3 but the extent of the overlay is recommended to be retained.	Yes. SBO incursion proposed to be altered from SBO2 to SBO3 in respect of this property and flood shape to be realigned to be within road reservation. Also make changes to 62 and 64 Roseland Grove. Refer to map at Attachment 10.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
274.	15 Brindy Crescent, Doncaster East	Koonung Creek	SBO3	2	The submission refers to a drainage pit located in the driveway of the property. This is a private asset which was constructed as part of the subdivision of the block and connects to the council drain downstream. Private drainage infrastructure often has minimal impact on flash flooding during major storm events. In addition, Council does not maintain these assets and cannot guarantee their effectiveness. For these reasons, private drainage infrastructure has not been modelled in the flood mapping study that underpins the proposed SBO. A desktop review has found the flood shape incursion onto the submission property is minimal. The purpose of the proposed overlays is to ensure that future development adequately addresses the risk of flooding in a major storm event. Existing properties may be redeveloped in the future and the draft overlay will assist in the assessment of the impacts of any future development. In this case, the incursion is not considered to be significant and application of the SBO would not yield any significant planning or risk mitigation benefit. Accordingly, the exhibited flood shape is recommended to be amended.	Yes. Remove the SBO3 incursion from the property.
275.	39 Thiele Street, Doncaster	Ruffey Creek	SBO3	1, 2, 5, 7, 10	The submitter has previously been advised through discussions with Council that the flood shape encroaching on the property is due to overland flow from Thiele Street rather than overland flow from Corella Street which is approximately 9 m	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>higher than Thiele Street at the property address. The submitter postulates that perhaps the flooding is from Corella St and has been filtered incorrectly. In addition, the submitter states that properties down the hill on Thiele Street do not have as significant an encroachment as the submitter's property.</p> <p>A desktop review suggests the flood shape shown on the mapping is due to a combination of overland flow from Corella Street (flowing out of the property) meeting and backing up against runoff going down Thiele Street, with the roadway running full. A site visit has confirmed that the topography and drainage assets in the area were modelled correctly.</p> <p>The submitter makes points relating to inadequate drainage infrastructure in the area and Council's duty to avert reasonably foreseeable risks. The proposed C109 amendment is an important process in that risk management and the process of reviewing cases such as this provide valuable feedback for drainage upgrade prioritisation. Thiele Street is a natural gully and drainage has been upgraded at the bottom of the street in the past, which has significantly reduced the risk of flooding for downstream properties at the bottom of Thiele Street which are downstream of the upgrade. The review has confirmed the surrounding topography and drainage assets. The</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					flood shape should remain as exhibited at this location.	
276.	34 Henry Street, Doncaster	Ruffey Creek	SBO2	2, 3, 7, 8, 14 Tullamore is incorrectly excluded from the overlay.	<p>The submission refers to drainage upgrades undertaken by Council. A review has found the original drains were upgraded in 1996 and these upgrades have been included in the modelling. Although this improvement has taken place, it has not completely removed the risk of flooding during a major storm event, as there are also inadequacies in the surrounding drainage infrastructure and runoff occurs from higher up in the catchment. A site visit has confirmed the terrain of the area, with the property expected to experience significant overland runoff once the capacity of the upstream drains has been exceeded during a major storm event. The review has also confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p> <p>The Tullamore Estate was included in the flood mapping which informed the proposed planning scheme overlays. As part of the development, earthworks are being undertaken and drainage infrastructure is being constructed which will ultimately vest in Council. The development process ensures that flood and overland flow paths must be provided to ensure that no new properties are affected by flooding as a result of the land development. Flood modelling has also been undertaken in respect of the proposed</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					infrastructure by the developer, to confirm that major overland flows through the site are appropriately controlled, without inundation of any proposed residential blocks. It follows that the flood modelling undertaken as part of Amendment C109 will be superseded in respect of the Tullamore Estate, prior to the development of housing. This issue has been addressed by truncating the flood extent at the upstream and downstream site property boundaries and the flood extent within the Tullamore site has been deleted from the proposed Overlay. This approach is purely an administrative exercise. The proposed overlays both upstream and downstream of this site are based on the previous flood mapping work which took account of flows through the Tullamore site. The approach taken is considered to be reasonable and appropriate.	
277.	2 White Lodge Court, Donvale	Andersons Creek	SBO3	2, 5, 11	The submission states that the property is affected in a minimal way by the flood shape and that flooding has not been experienced at this location. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under conditions, development in close proximity to property boundaries or within easements may be permitted in some cases. Although the incursion does represent a small percentage of the total property area, it has been deemed significant based on area (over 30m ²) and appropriate to be retained in order to allow for an	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					assessment of impacts of any future development on the overland flow path. The submission also states that Council should upgrade the drains in the area to remove the risk of flooding. Council is obliged to provide a 1 in 5 year ARI level of service and prioritises drainage upgrades where flooding of habitable floor levels occur. The flood modelling that underpins the SBO was based on a 1 in 100 year ARI in accordance with industry practice. The review has confirmed the surrounding topography and drainage assets. The flood shape is not recommended to be amended in this case as it would compromise the integrity of the flood shape in this area.	
278.	19 Illawong Drive, Donvale	Mullum Mullum Creek	SBO2	3, 12	<p>The submission states that, due to the localised filling of the area affected by the flood extent in addition to the Council drainage infrastructure, the area affected by the SBO should not be classed as being flood prone.</p> <p>A site visit and desktop review has found that the Council drains and ground levels represented in the LiDAR data used in the model are consistent with the site. Although localised filling has taken place and the Council overflow drain has been constructed, the main flow path remains along this alignment, with the areas with natural surface levels experiencing greater flood depths than the filled area. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					once the capacity of the underground drainage network is exceeded. The flood extent was modelled on a 1 in 100 year ARI or 1% AEP rainfall event in accordance with industry practice. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
279.	4 Ryall Court, Doncaster	Ruffey Creek	SBO3	2, 3, 4, 5, 8	The submission describes previous flooding from the rear of the property which is consistent with the application of the SBO at this location. The drainage pit referred to in the submission is a private asset which Council does not maintain and therefore cannot guarantee effectiveness in high intensity events. Private drainage assets have not been modelled as part of the flood study that underpins the SBO. A site visit has confirmed the topography at this location and the outcome of the review is that the SBO be retained.	No
280.	176 Church Road, Doncaster	Ruffey Creek	SBO2	1, 2, 5, 12	The submission states that, given the constructed retaining wall, it would not be possible for flood water to rise up from the roadway. A desktop review has found that the flood extent represents overland runoff flowing out of the property and onto the street rather than inundation from the street. Furthermore, given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>catchment. Private infrastructure, such as retaining walls, structures and buildings are not individually modelled as they are not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures, such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. The submission also mentions the adequacy of the Council drains in the area. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. The flood extent was modelled on a 1 in 100 year ARI or 1% AEP rainfall event in accordance with industry practice. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
281.	77 Turana Street, Doncaster	Ruffey Creek	SBO3	1, 2, 4, 5	<p>The submission states that the modelled flow paths are unlikely to occur. Specifically in relation the submission property, no flooding has been experienced by the submitter in the manner indicated by the SBO. It is possible the submitter has not experienced a 1 in 100 year ARI storm</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>event of critical duration at this location. In addition, given the size of the catchment, the terrain in the model has been represented as a grid of cells 3 m x 3 m in size. This approach is considered to provide appropriate resolution to define the topographical features within each catchment. A site visit has also been undertaken from the street and found that the flood shape is consistent with the topography of the surrounding area and the Council drainage assets. The submission also references the development engineering controls and permit trigger points proposed as part of the amendment and argues that many requirements are unreasonable. The intent of the proposed overlays is not to prevent development but ensure it is undertaken in a manner which considers flood risk. Should the permit exemption requirements for properties with the SBO3 overlay not be met with respect to floor levels and obstruction of the overland flow path, the developer must demonstrate appropriate methods for considering the overland flow path through the site as part of a planning permit. The submission also implies that Council should manage overland flows rather than imposing the SBO. Typically, underground drainage systems (including private infrastructure required to be constructed as part of a development) are designed to minor storm event standards with excess flows during major storm events travelling</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>overland. Since the 1970's improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970's/80's, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The outcome of the review is that the flood shape is consistent with site conditions and should be retained at this location.</p>	
282.	14 Old Orchard Way, Doncaster	Ruffey Creek	SBO2	2, 11	<p>The submission states that the flood shape is inconsistent with the retaining walls at the front of the property.</p> <p>Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the catchment. Private infrastructure, such as retaining walls, structures and buildings, is not individually modelled as it is not protected and can be subject to change in the event of property redevelopment. Consideration has been given to</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					the impacts of structures, such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. A site visit has confirmed that the topography and drainage infrastructure are consistent with that modelled. The outcome of the review is that the exhibited flood shape be retained at this location.	
283.	27 Menarra Street, Doncaster	Koonung Creek	SBO3	1, 4, 5, 7, 8, 11, 14 Question how a multi-unit approval was granted for 25 Rhonda Street when there is a flooding issue.	The submission states that the incursion of the flood extent on the property is minor. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under conditions, development within easements or close to property boundaries may be permitted in some cases. Existing properties may be redeveloped in the future and the proposed overlay will assist in the assessment of the impacts of any future development. In this case, the incursion is not considered to be significant and application of the SBO in this case would not yield any significant planning or risk mitigation benefit. Thus, the exhibited flood shape is recommended to be amended accordingly. In relation to the multi-unit development at 25 Rhonda Street, Council's Engineering and Technical Services Unit raised no objection to the proposal, but required the construction of an on-site storm	Yes. Remove the SBO3 from the subject property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					water detention system to alleviate pressures on Council's drainage system.	
284.	5 Amberwood Court, Templestowe	Ruffey Creek	SBO3	2, 12	The source of the flooding is overland flows from upstream properties. These flows are shallow at upstream locations and as such have not been shown as part of the proposed overlay. Features such as buildings and other structures have not been modelled individually as roughness factors make allowance for typical features. In addition, such features are subject to amendment and or removal and the purpose of the flood modelling is to control future development. It is considered that the land features within the catchment are generally consistent with the adopted roughness factors. However, the portion of the flood shape on the south-western property boundary meets the criteria for removal as a minor incursion as it is less than 30sm in area and less than 6% of the total property area, represents outflow, it's removal will not adversely affect the continuity of the flood shape and intrudes less than 5 metres into the property. On this basis, it is recommended that this portion of the flood shape be removed.	SBO3 remain however, the SBO3 section higher up on the south western boundary of the site be removed. Refer to map at Attachment 10.
285.	2/57 Baird Street South, Doncaster	Koonung Creek	SBO3	5, 7, 8	The submission states that, if Council drainage infrastructure is inadequate, it should be upgraded. Underground drainage systems are typically designed to cope with the most frequent storms - those with a 20% chance of occurring in a year, or a 1 in 5 year ARI rainfall event. The SBO identifies flood prone land in major storm events and is	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>derived from modelling a 1 in 100 year storm event (1% chance of occurring in a year). During major storm events, overland flow occurs once the capacity of the underground drainage network is exceeded. An updated design standard was introduced in the late 1970s that requires consideration of these overland flow paths during major storm events. The drains at this location were built prior to this design standard being introduced. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to the upgrade of its underground stormwater drainage system. These works are prioritised based on the frequency and extent of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor areas above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
286.	53 Lawanna Drive, Templestowe	Ruffey Creek	SBO2	1, 2, 4, 5, 7, 12, 14 Safety issues	The model indicates flows from private property to the street at this location. The submission states that there has never been any flooding concerns	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				with having a 400mm gap between a fence and the ground.	with the property while the submitter has been at the address. It is possible the submitter has not experienced a 1 in 100 year ARI rainfall event of critical duration which underpins the derivation of the SBO. In addition, the submitter references minor changes to the landscape at the neighbouring property which have taken place since 2009, when the LiDAR data used in the modelling was captured. This data and the derived flood shape are reflective of the ground conditions at a point in time. The submission also references blocked drains in the area. While drain maintenance is an important issue, it is not relevant to the modelled flood extent which was undertaken based on the assumption that the drainage network is operating at full capacity with no blockages. If blocked drains were assumed in the modelling the flood shape would be more extensive than that indicated by the exhibited SBO. The review has confirmed the surrounding topography and drainage assets. The model uses roughness factors rather than modelling individual buildings and assets as is common flood mapping practice. The flood shape should remain as exhibited at this location.	
287.	1 Eama Court, Bulleen	Koonung Creek	SBO3	5, 12	The submission references a private On Site Detention System that was constructed as part of the subdivision of the property and states that the SBO highlights the inadequacies of the surrounding	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>drainage infrastructure. OSD systems such as this are designed to minor storm event standards and have little impact in a major storm event upon which the SBO is derived. Council underground drainage infrastructure is also typically designed to convey a 1 in 5 year event, with overland flow occurring once the capacity is exceeded during major storm events. An updated design standard was introduced in the late 1970s that requires consideration of these overland flow paths during major storm events. The drains and lot layout at this location were determined prior to this design standard being introduced. Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to the upgrade of its underground stormwater drainage system. These works are prioritised based on the frequency and extent of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor areas above the major storm flood level. Based on a desktop review of modelled flood depths and connectivity, amendment of the SBO extent is not recommended at this location.</p>	
288.	28 Menarra Street, Doncaster	Koonung Creek	SBO3	1, 2, 5, 7, 8	The modelling which underpins the SBO has been undertaken using an industry accepted	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>methodology and stringent quality control. The flood shape is representative of pit overflow runoff onto Menarra Street. The submission states that, if Council drainage infrastructure is inadequate, it should be upgraded. Underground drainage systems are typically designed to cope with the most frequent storms - those with a 20% chance of occurring in a year, or a 1 in 5 year ARI rainfall event. The SBO identifies flood prone land in major storm events and is derived from modelling a 1 in 100 year storm event (1% chance of occurring in a year). During major storm events overland flow occurs once the capacity of the underground drainage network is exceeded. An updated design standard was introduced in the late 1970s that requires consideration of these overland flow paths during major storm events. The drains at this location were built in the 1960s, prior to this design standard being introduced. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to the upgrade of its underground stormwater drainage system. These works are prioritised based on the frequency and extent of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor areas above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
289.	9 Woodhouse Road, Doncaster East	Koonung Creek	SBO3	1, 2	The submitter states that the elevated nature of the property would make flooding impossible. The flood shape at this location does not represent water rising from the level of Woodhouse Road but rather overland runoff, or flash flooding. The property is in the main flow path from runoff to the north east travelling in a westerly direction. Based on a review, the SBO extent is recommended to be retained at this location.	No
290.	2 Trudi Court, Donvale	Mullum Mullum Creek	SBO3	2, 7, 8	The submitter's description of runoff patterns during rainfall events are consistent with the application of the SBO at this location. Although the flood shape does not represent standing water, overland runoff or flash flooding is still considered a significant risk. The purpose of the proposed overlays is to ensure that future development is protected from flooding. A site visit has confirmed that the topography and drainage infrastructure is consistent with that modelled. The flood shape is recommended to be retained at this location.	No
291.	14 Saxonwood Drive, Doncaster East	Ruffey Creek	SBO2	2, 4, 5, 7, 8	The submission acknowledges that the property has experienced minor flash flooding in the past and states that Council should upgrade the drains	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>in the area.</p> <p>The observed flooding of this property is consistent with the application of the SBO at this location. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s, improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
292.	43 Corella Court, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The submission also states that Council should prioritise upgrading the drains in the area. Council allocates</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
293.	1/7 Meryl Street, Doncaster East	Koonung Creek	SBO3	2, 12	The private drainage assets referred to in the submission have not been included in the modelling for the following reasons: Such systems are only designed to minor storm event standards, with an overflow bypass on Onsite Detention Systems for high intensity events. The drains constructed as part of the development are private assets which Council does not maintain and therefore cannot guarantee their effectiveness in high intensity events. Such systems do not significantly affect the flood shape for a 1 in 100 year ARI rainfall event. The submission also refers to engineering levels provided by Council during the development approval process. These levels were provided and development undertaken prior to the introduction of the proposed SBO3 overlay. Council and Melbourne Water have recently completed the flood modelling study that	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					underpins the proposed SBO & LSIO overlays. Whilst Council can use the new flood modelling data to inform advice given to developers, there is no obligation for the developer to adopt the levels based on the proposed SBO until the amendment is formally gazetted into the Manningham Planning Scheme.	
294.	2 -4 Grange Park Avenue, Doncaster	Koonung Creek	SBO3	1, 2, 3	The submission states that there is no historical evidence of flooding at the location. It is possible that the submitter is referring to floor levels not being flooded at this location. The SBO identifies land prone to overland runoff during a 1 in 100 year ARI storm event, not where floor levels have been flooded. It cannot be assumed that an area is not flood prone simply because there are no recollections of flooding at that location. The drainage upgrades mentioned in the submission have been investigated. There was a drainage upgrade on Grange Park Ave in 1999, and these have been included in the modelling. The submission property is located upstream of this upgrade and therefore it would not reduce the extent of runoff experienced at the submission address. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location with respect to 2 and 4 Grange Park Avenue.	No
295.	15 Bamfield Close, Templestowe	Ruffey Creek	SBO2	2, 4, 5	The submission supports the purpose of the SBO and acknowledges the exhibited flood shape along the west side of the property; however takes issue	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>with the extent of the SBO to the east and south of the dwelling.</p> <p>A site visit has confirmed the overall topography of the property is in line with the exhibited flood shape. Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide accurate resolution to define topographical features within the catchment. In addition, the submitter requests drainage upgrades be considered on Rasmussen Drive and for more regular drain maintenance. Council's drainage upgrade works are prioritised based on the frequency and extent of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality instantaneously. In the interim, there is a need to ensure that future development is designed to set habitable floor areas above the major storm flood level. Based on the review, the incursion of the flood shape onto this property is recommended to be retained accordingly.</p>	
296.	37 Council Street, Doncaster	Ruffey Creek	SBO2	1, 2, 12	<p>The submission states that the landscaping at the property by the original owner has removed the risk of flooding.</p> <p>Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					catchment. Private infrastructure, such as retaining walls, structures and buildings, is not individually modelled as it is not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures, such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. The submission also states that no flooding has been experienced in 25 years of living at the property. Although the submitter may not have experienced runoff to the extent defined by the SBO2, it is possible that a 1 in 100 year event of critical duration has not been observed by the submitter. The flood mapping is based on a 1 in 100 year event of critical duration. A site visit confirmed the flood shape is consistent with site conditions, and the outcome of this review is that the extent of the SBO be retained at this location.	
297.	26 Council Street, Doncaster	Ruffey Creek	SBO2	1, 2, 12	The submission states that landscaping and private drains have removed the risk of flooding. Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>catchment. Private infrastructure, such as retaining walls, structures and buildings, is not individually modelled as it is not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures, such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. The submission also refers to drains within the property. Private drainage systems such as this do not significantly impact the flood extent in a major storm event. In addition, they are not maintained by Council and their effectiveness cannot be guaranteed. For these reasons, private drainage infrastructure has not been modelled as part of this exercise. A site visit has confirmed the general topography of the area. The outcome of the assessment is that the extent of the SBO be retained at this location.</p>	
298.	5 Lomond Court, Warrandyte	Mullum Mullum Creek	SBO3	1, 2, 7, 8, 12	<p>The shared driveway of the submission property is affected by the SBO. The submitter states that there has not been any flooding on the property in the last 9 years. It is possible they are referring to their own property rather than the shared driveway. The driveway experiences runoff due to the small gully to the west of the submission</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					property channelling the flow. The review has confirmed the surrounding topography and drainage assets. It is not recommended to alter the flood shape in this instance as it would compromise the ability to consider the overland flow path as part of possible future redevelopment of the site. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
299.	2 Mahoneys Court, Warrandyte	Mullum Mullum Creek	SBO3	1, 2, 7, 8, 12	The submission takes issue with the flood shape being derived from a simulation and describes drainage patterns that are less extensive than that indicated by the SBO. It is possible that the submitter has not experienced a 1 in 100 year ARI rainfall event of critical duration at this location. The submission correctly identifies that the concrete walls in the garden supply shop on the neighbouring property have not been modelled. This is in line with industry practice and the purpose of the proposed overlays to identify flood prone land. Private infrastructure, such as retaining walls, structures or buildings, is not individually modelled as it is not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impact of such structures on the mapped flood extents through the application of roughness factors to land areas. The review has confirmed the surrounding topography and	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					drainage assets. The flood shape should remain as exhibited at this location.	
300.	43 Ross Street, Doncaster East	Koonung Creek	SBO3	2, 7, 8, 11	The submission states that the incursion of the flood shape is minor and that the overlay should not apply. The incursion has been deemed significant based on area (over 30m ²) and appropriate to be retained in order to allow for an assessment of impacts of any future development on the overland flow path. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
301.	189-191 Park Road, Donvale	Mullum Mullum Creek	SBO3	11	The submission states that the incursion of the flood shape is minor and that the overlay should not apply. Although the incursion does represent a small percentage of the total property area, it has been deemed significant based on area (over 30m ²) and appropriate to be retained in order to allow for an assessment of impacts of any future development on the overland flow path. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
302.	12 Thiele Street, Doncaster East	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s, improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
303.	27 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The exhibited flood shape does not appear to encroach onto the submission property. The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The submission also states that Council should prioritise upgrading</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
304.	41 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10, 11	The submission states that the existing Council drains in the Thiele St area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network. The fact that flooding in this area has been observed is consistent with the justification to apply the SBO3. Underground drainage systems are usually designed to convey a 1 in 5 year ARI (Average Recurrence Interval) or 20% AEP (Annual Exceedance Probability) rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970's improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970's/80's, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality instantaneously. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The submission also states that the terrain data used in the flood modelling does not reflect the site conditions. The flood modelling utilised the latest available (2009) digital elevation (LiDAR) data from the Victoria State government agency. LiDAR data is considered to be the most suitable and fit-for-purpose elevation data available for this purpose. In addition, site visits were undertaken as part of the review and the flood shape was found to adequately represent site conditions in this case. The submission</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					specifically mentions properties at No's 7 & 9 Ambrose St in relation to the submission property. The submitter is correct in stating the Thiele St property is higher than those on Ambrose St. The submission property experiences an incursion of the flood shape due to the roadway of Thiele St running full during the modelled major storm event. In addition, the submission property is upstream of the upgraded drains at the intersection of Thiele and Ambrose streets while the referenced properties on Ambrose St are downstream of the improvements and thus are protected from overland runoff during a major storm event. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
305.	43 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10, 13	The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network. The fact that flooding in this area has been observed is consistent with the justification to apply the SBO3. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s, improved controls have been in place that consider	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level.</p> <p>The submission also states that the terrain data used in the flood modelling does not reflect the site conditions. The flood modelling utilised the latest available (2009) digital elevation (LiDAR) data from the Victoria State government agency. LiDAR data is considered to be the most suitable</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>and fit-for-purpose elevation data available for this purpose. In addition, site visits were undertaken as part of the review and the flood shape was found to adequately represent site conditions in this case. The submission specifically mentions properties at Nos 7 & 9 Ambrose Street in relation to the submission property. The submitter is correct in stating the Thiele Street property is higher than those on Ambrose Street. The submission property experiences an incursion of the flood shape due to the roadway of Thiele Street running full during the modelled major storm event. In addition, the submission property is upstream of the upgraded drains at the intersection of Thiele and Ambrose streets while the referenced properties on Ambrose Street are downstream of the improvements and thus are protected from overland runoff during a major storm event. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
306.	23 Corella Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The exhibited flood shape does not apply to the subject property. The submission states, however, that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s, improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets.</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					The flood shape should remain as exhibited at this location.	
307.	25 Corella Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The exhibited flood shape does apply to the subject property. The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
308.	32 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The exhibited flood shape does not apply to the subject property. The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The submission also states that Council should prioritise upgrading the drains in the area.</p> <p>Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
309.	48 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The exhibited flood shape does not apply to the subject property. The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
310.	45 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The submission states that the existing Council drains in the Thiele St area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
311.	25 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	The exhibited flood shape does not apply to the subject property. The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

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					<p>drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
312.	17 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

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					<p>pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
313.	50 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	The exhibited flood shape does not apply to the subject property. The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
314.	15 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
315.	23 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to</p>	Yes SBO3 incursion to be removed

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The outcome of the review of this submission is that the flood shape represents a minor incursion onto the property and the flood shape is recommended to be amended accordingly.</p>	
316.	44 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The exhibited flood shape does not apply to the subject property. The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The flood shape should remain as exhibited at this location.</p>	
317.	35 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>catchment, additional loads have been placed on the drainage network. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
318.	40 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The exhibited flood shape does not apply to the subject property. The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
319.	6 St Muir Drive, Warrandyte	Mullum Mullum Creek	SBO3	1, 2, 12	The submission references the location of the property at the top of a hill, however there is an area upstream of the property to the north which contributes to shallow overland runoff through the valley in the property during major storm events. The submission also mentions that flooding has not been experienced since 1999. It is possible that this area has not been affected by a 1 in 100 year ARI rainfall event in that period. A site visit has found the drainage infrastructure is consistent with the modelled drains and that the proposed flood shape is consistent with the topography. It is recommended that the proposed SBO3 is retained.	No
320.	6 Eric Avenue, Templestowe Lower	Bulleen North	SBO3	1, 2,	The submission states that the property is elevated and no flooding has been experienced. The incursion is considered minor and not considered to provide significant planning or risk mitigation	Yes. Remove the SBO3 from property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					benefits. The flood shape is recommended to be deleted from the property.	
321.	4 Tulip Court, Doncaster East	Mullum Mullum Creek	SBO3	1, 2, 5, 7, 8, 13	<p>The submission states that the existing Council drains in the area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. A review has found the flood shape to be consistent with the topography and drainage assets in the area and should be retained.	
322.	11 Ambrose Street, Doncaster	Ruffey Creek	SBO2	2, 5, 6, 7, 8, 10	<p>The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
323.	7 Ambrose Street, Doncaster	Ruffey Creek	SBO2 & SBO3	2, 5, 6, 7, 8, 10	<p>The submission states that the existing Council drains in the Thiele St area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian</p>	<p>Yes</p> <p>SBO2 incursion to be removed</p> <p>SBO3 incursion to be retained</p>

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. It is recommended however, that based on the minor incursion criteria that the SBO2 overlay be removed from the property and the SBO3 overlay be retained.</p>	
324.	41A Corella Court, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The submission states that the existing Council drains in the Thiele St area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network. Underground drainage</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

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					<p>systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					drainage assets. The flood shape should remain as exhibited at this location.	
325.	37 Corella Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

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					These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
326.	39 Corella Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
327.	27 Corella Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	<p>The exhibited flood shape does not apply to the subject property. The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

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					<p>paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
328.	31 Corella Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	The submission states that the existing Council drains in the Thiele Street area are under capacity and, due to development further upstream in the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

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					<p>catchment, additional loads have been placed on the drainage network.</p> <p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
329.	129-131 Gosford Crescent, Park Orchards	Mullum Mullum Creek	SBO2	2, 12, 14 SBO2 should be changed to SBO3.	Refer to Attachment 7 for the Further Technical Review of this submission.	Yes Change the SBO2 to SBO3 for the north – south flow path. Refer to map at Attachment 10.
330.	92 Canopus Drive, Doncaster East	Mullum Mullum Creek	SBO3	1, 2, 7, 8, 12	Refer to Attachment 7 for the Further Technical Review of this submission.	Yes Remove the SBO3 from the property. Refer to map at Attachment 10.
331.	9 Browning Drive, Templestowe	Mullum Mullum Creek	SBO2	1, 2, 4, 5, 6, 7, 8, 13	The submission states that in the past, a blocked drain has caused flooding that differs from that suggested by the SBO shape. It is not clear whether this event relates to a 1 in 100 year ARI event of critical duration, which the flood extent has been modelled on in accordance with industry practices. In addition, the modelling assumes the drainage infrastructure is free from blockages. Should blockages be applied in the modelling, the flood shape would be even more extensive than the currently proposed shape. The submission also refers to the current	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

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					<p>construction of the dwelling.</p> <p>The intent of the proposed overlays is not to prevent future development, but to ensure that it is undertaken in a manner that considers the risk of flooding. The permit exemption requirement referred to in the submission does not mean the current dwelling is illegal. If the site was to be redeveloped, a slab construction could be considered provided the developer could demonstrate appropriate management of runoff and freeboard levels.</p> <p>The submission also refers to previous development of Forest Court to the south east which forms the catchment for the submission property.</p> <p>Typically, underground drainage systems (both Council's and private systems installed as part of developments) are designed to minor storm event standards. Although some main drains provide a 1 in 100 year ARI service level, Council cannot build an entire drainage network that will cope with all storm events.</p> <p>The submission also refers to No. 1 Browning Drive and states that the flood shape should encroach on to that property.</p> <p>The modelled flood shape suggests runoff is largely restricted to the roadway at that location and the mentioned property slopes up from the street.</p> <p>The review has confirmed the surrounding</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					topography and drainage assets. The flood shape should remain as exhibited at this location.	
332.	245 Thompsons Road, Templestowe Lower	Bulleen North	SBO3	1, 2, 3	<p>The submission references the geometry of the roadway and states any runoff would flow down Thompsons Road rather than entering the property.</p> <p>A review and site visit has found that, although the property is below the level of the road, there is nothing to suggest that runoff from Thompsons Road would overflow the footpath and enter the property and deletion of the flood shape on this property and neighbouring properties at No.243 Thompsons Road, and no's 16-18 Sylvia Street to the rear is recommended.</p>	Yes. Remove the SBO3 from this property and neighbouring properties No. 243 Thompsons Road, and Nos. 16-18 Sylvia Street to the rear. Refer to map at Attachment 10.
333.	323-325 Tindals Road, Warrandyte	Mullum Mullum Creek	SBO3	2, 10, 12, 14 Land within LDRZ should be exempt from overlays. Having a 25% fence permeability is irrelevant in the LDRZ. Once drains have been upgraded,	<p>A contour map from the Land Department of state government has been provided in the submission with the contention that there is no land depression to form the ponding and flood inside the property.</p> <p>The map provided shows 1.0 metre contour intervals. Council's more accurate 0.5 metre contour data provides a higher level of resolution which better represents the actual land surface and shows the more nuanced surface characteristics which govern water flow on the property. The land contours of the property itself and associated upstream areas influence the shape of SBO in a combined manner. A site visit has</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				<p>overlay should be removed.</p> <p>400mm above ground level requirement - question applicability to a concrete slab construction.</p> <p>Issue with applying 400mm requirement where there has been 'cut and fill'.</p>	<p>confirmed that the Council's terrain data is up to date in terms of showing a steep slope (of cutting) at the eastern and south eastern parts of the property. The comparison with other properties is not relevant because the other properties are influenced by different upstream catchments. The uphill flow of water will not take place as mentioned in the submission but the runoff of overland flow will remain in those areas for a certain depth, duration and velocity. The Council drainage infrastructure in the area including the Kyrenia Court and Tindals Road are all represented in the model consistently. The flood shape has been found to be consistent with site conditions in this case and should remain.</p> <p>Removal of the overlay from the LDRZ is not supported as the flood modelling does not consider the zoning of properties.</p>	
334.	1/16 Coolabah Street, Doncaster	Koonung Creek	SBO2	1, 2, 3, 7,	The submission states that no flooding has been experienced in 26 years of living at the property. A review has found an anomaly in the SBO at this location. Based on a review of the modelled depths, the SBO is recommended to be deleted from the property.	Yes Remove the SBO2 from this property
335.	50 Dehnert Street, Doncaster East	Ruffey Creek	SBO3	1, 2	The submission states that flooding has not been experienced and questions why the flood shape shows water flowing uphill and why lower properties are not affected.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					It is possible that the submitter has not experienced a 1 in 100 year ARI storm event of critical duration at this location. A review and site visit from the street has found that the flood shape represents water flowing out of the property (i.e. the flood shape forms within the property) and that the topographical features of the property result in shallow runoff being collected to some degree. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
336.	6 Rush Place, Warrandyte	Mullum Mullum Creek	SBO3	2	The submission states that the flood shapes are inconsistent with the topography. A review has found the flood shape to be consistent with the topography with the SBO3 representing shallow overland flow down to the roadway. The construction at 6 Rush Place would change the surface of the land however this will be considered as part of a future planning scheme amendment. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
337.	7 Ashford Street, Templestowe Lower	Ruffey Creek	SBO3	2, 12	The submission refers to landscaping features affecting the flow of runoff on the property. The submission property fulfils the minor incursion criteria and the flood shape is recommended to be deleted from the property.	Yes Remove the SBO3 incursion from property
338.	48-50 Lynnwood Parade, Templestowe Lower	Ruffey Creek	SBO3	1, 2, 3, 12	The submission states that the SBO is not consistent with the experiences of flooding at this location and the property is elevated from the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>road.</p> <p>Although the property is above the road, the roadway is full of runoff during major storm events and additional runoff from the catchment to the south of the property flows down and joins with the main flood extent and is channelled onto the road by the driveway. It is possible the submitter has not experienced a 1 in 100 year ARI storm of critical duration at this location. A site visit has confirmed the drainage infrastructure and terrain is consistent with the modelled flood extent and it is recommended to retain the flood shape at this location.</p>	
339.	23-71 Alexander Road, Warrandyte	Mullum Mullum Creek	SBO1	1, 2	<p>The Land Subject to Inundation Overlays (LSIO)'s on the property are contained within the valley of the drainage lines.</p> <p>The specific rainfall on the property is only a small part of the rainfall event (ie; the 1 in 100 year event) that is taken in to account for the catchment for the purpose of the modelling.</p> <p>The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents.</p> <p>The outcome of the review is that the exhibited flood shape be retained at this location and modified to reinstate the small section of LSIO near the eastern boundary.</p>	Yes Convert small section of SBO1 as exhibited to LSIO to match existing overlay

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
340.	26 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 7, 8, 10	Property is located adjacent to a Melbourne Water Main Drain (Greenridge Avenue Drain). The overlay extent has been reviewed and reconfirmed as being appropriate based on the direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. The intersection of Hillcroft Drive and Fernbrook Way is downstream of the submitters property and has no bearing on the mapped flood extent at the submitters property. Although the submitter claims that the property has not been subject to overland flows previously, the property may not have been subject to a 1 in 100 year ARI event over this period. A review of the flow depths has however revealed that the property flooding results from shallow flows. It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3. This recommendation has been agreed with Melbourne Water.	Yes. It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3. Refer to map at Attachment 10.
341.	3 Exeter Close, Templestowe Lower	Ruffey Creek	SBO3	1, 2, 5	The submission states that the property is on the high side of the street and has never experienced flooding. The property contains the upstream extent of the flood shape (i.e. the flood shape forms within the property) from runoff uphill collecting and reaching the required combination of depth, velocity and duration to be defined in the model. Flow is occurring onto the street rather than rising up	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					from the street. A site visit has confirmed the shape is consistent with topography data and drainage infrastructure in the area. The flood shape is recommended to be retained at this location.	
342.	21 Dellfield Drive, Templestowe Lower	Ruffey Creek	SBO3	21 Dellfield Drive	The submission states that, due to the location near the top of a hill, there has been no flooding experienced and the SBO should not apply. The property contains the upstream extent of a lobe of shallow runoff flowing in a south easterly direction and joining the main flow path down Dellfield Drive. The steep slope in this area contributes to the flood shape with high expected velocities of runoff. There is Council drainage infrastructure in an easement along the rear of the property which would be designed to provide a 1 in 5 year ARI level of service. During major storm events, overflow from these pits could be expected to occur in the manner indicated by the SBO. Topographical contours interpolated through the building footprint suggest the land of the submission property forms a depression which collects and channels runoff. Although the property may be several metres above the level of the footpath, the extent of the SBO is based on flood prone land, not specifically where dwellings are flooded above the floor level. The intent of the proposed overlays is not to prohibit future development, but to ensure that appropriate flood levels are adopted for future development in the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					area subject to the overlay. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
343.	6 Paltarra Court, Doncaster East	Mullum Mullum Creek	SBO2	1, 3, 4, 5, 7, 8	<p>The submission argues that Council already has a planning permit procedure for most constructions. Existing planning permits do not take into consideration the overland flow path of runoff during a 1 in 100 ARI event which is considered a significant risk to future developments. Although the resident may not have experienced flooding, it cannot be certain that the property is not flood prone during a 1 in 100 year ARI storm of critical duration. As stated in the submission, the footprint of the dwelling is not affected by flooding and this is reflected in the shape of the SBO which encroaches only on the northern boundary. The extent of the SBO is based on the flood prone land, not specifically where dwellings are flooded above the floor level.</p> <p>The submission also states that if the drains are not adequate and they should be upgraded. Council's drainage system design is typically for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. It is not feasible for Council to build a drainage network that can cope with all storm events. The SBO is based on a 100 year ARI event as per industry standards. The flood shape at this location is consistent with the topography</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					and drainage infrastructure and should be retained.	
344.	18 Amberwood Court, Templestowe	Ruffey Creek	SBO1	1, 2, 13	<p>The property is located adjacent to a Melbourne Water main drain (Greenridge Avenue Drain) and the applicable flood level for the property is 52.29 metres AHD for a 1 in 100 year storm event. Regarding the issue the submitter “never witnessed a flood”, it cannot be assumed that flooding has not previously or will not occur at any given property, on the basis that there are no records of flooding, or flooding to the extent identified by the SBO. The SBO is based upon the extent of overland flows that would result from a 1 in 100 Storm Event. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents.</p> <p>The outcome of the review is that the exhibited flood shape be retained at this location.</p>	No
345.	24 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 6, 13	<p>The property is located adjacent to a Melbourne Water main drain (Greenridge Avenue Drain) and the applicable flood level for the property is 56.27 metres Australian Height Datum(AHD) for a 1 in 100 year storm event. Regarding the issue the submitter has “never seen a flood”, it cannot be assumed that flooding has not previously or will not occur at any given property, on the basis that</p>	Yes. It is recommended that the flood shape be retained but the overlay designation be

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>there are no records of flooding, or flooding to the extent identified by the Special Building Overlay (SBO). The SBO is based upon the extent of overland flows that would result from a 1 in 100 Storm Event. The overlay extent has been reviewed and reconfirmed as being appropriate based on the direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. However, review of the flood depths has identified an opportunity to change the overlay designation from SBO1 to SBO3. The outcome of the review is that the exhibited flood shape be retained but amended to SBO3.</p>	<p>changed from SBO1 to SBO3. Refer to map at Attachment 10.</p>
346.	1 Wallace Avenue, Donvale	Mullum Mullum Creek	SBO2	2, 4, 5, 6	<p>The submission states that flooding has not been experienced since the house was built and that flooding is unlikely due to the distance to the nearest gully.</p> <p>The SBO indicates that the property is expected to be partially flood prone during a 1 in 100 year ARI rainfall event of critical duration. In addition, the resident may have experienced a 1 in 100 year ARI event and has observed flooding of the rear of the property. The extent of the SBO is based on flood prone land, not specifically where dwellings are flooded above the floor level. The intent of the proposed overlays is not to prohibit future development, but to ensure that appropriate flood levels are adopted for future development in the</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>area subject to the overlay.</p> <p>The submission also refers to private drainage and states that developments should have adequate onsite drainage systems. As per current practice, Council requires new developments to manage the stormwater runoff from the property to minor storm event standards, including on-site detention systems. The upkeep and upgrades of Council drainage system also requires the identification of locations in need of development or upgrades in an efficient and cost effective manner. The results of the flood mapping will be used to identify potential drainage upgrades.</p> <p>The submission also makes reference to drain maintenance issues. While a valid concern, it is an issue separate to the exhibited flood extent. The flood modelling has been undertaken using the assumption that the drains are free from blockages and operating at capacity. Should blockages be assumed in the model, the flood extent would be more extensive than the exhibited shape. The open drain along Springvale Road, as well as other minor Council drains within the municipality, are typically designed for a 1 in 5 year ARI event, with flows in excess of these systems travelling overland. The SBO is based on a 100 year ARI event, in which case the open drain would not be sufficient in draining away runoff from the road reserve. Due to the proximity of the subject property to the flood extent it is reasonably</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					expected to experience flooding in the manner indicated by the SBO. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
347.	5 Paltarra Court, Doncaster East	Mullum Mullum Creek	SBO2	1, 3, 4, 5, 7, 8	<p>The submission argues that Council already has a planning permit procedure for most constructions. Existing planning permits do not take into consideration the overland flow path of runoff during a 1 in 100 ARI event which is considered a significant risk to future developments. Although the resident may not have experienced flooding, it cannot be certain that the property is not flood prone during a 1 in 100 year ARI storm of critical duration. As stated in the submission, the footprint of the dwelling is not affected by flooding and this is reflected in the shape of the SBO which encroaches only on the northern boundary. The extent of the SBO is based on the flood prone land, not specifically where dwellings are flooded above the floor level.</p> <p>The submission also states that if the drains are not adequate they should be upgraded. Council's drainage system design is typically for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. It is not feasible for Council to build a drainage network that can cope with all storm events. The SBO is based on a 100 year ARI event as per industry standards.</p> <p>The flood shape at this location is consistent with</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					the topography and drainage infrastructure and should be retained.	
348.	13 Balwyn Road, Bulleen	Koonung Creek	SBO3	10, 14 Extent of SBOs in neighbouring municipalities is significantly less. Will limit housing choice and urban consolidation in Manningham.	The submission does not object specifically to the shape of the overlay on the property but raises concerns about the development implications of the proposed overlays. A desktop review has found the flood shape is consistent with the topography of the area and Council drainage assets and should be retained. The submission also states that the extent of SBOs in neighbouring municipalities is significantly and that it will limit housing choice and urban consolidation in Manningham. The application of the proposed controls is not considered to negatively affect Manningham's urban consolidation objectives. Manningham has a responsibility to allow increased densities in appropriate locations and Council actively requires developers to provide sustainable development and include on site drainage retention systems. The controls will not prohibit development but will require it to take into account the potential risk for overland flow damage. The flood shape as exhibited should be retained.	No
349.	2/15 Thomas Street, Doncaster East	Koonung Creek	SBO2	1, 2, 6, 7, 8, 14 Disagree with term 'overland flooding'.	The submission states that no flooding has been experienced in 42 years. Due to the location being prone to overland runoff, it is possible the submitter is referring to not having floor levels flooded. The SBO identifies flood prone land, not where dwellings have flooded above floor level.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				'Stormwater runoff' would be better.	The flood shape at this location represents flow to the south towards lowest point being the Eastern Freeway. The slope of the property is irrelevant as high velocity runoff is still considered a risk. All properties that fall under the overlay will be subject to standards that ensure that appropriate floor levels are adopted for future development within the subject property. Development areas have been and are being managed with other policies/measures other than the SBO overlay for example On Site Detention systems and continual improvement of capital works. The submission also states that Council should upgrade the drainage system rather than imposing the SBO. Council allocates approximately \$2 million annually to upgrading it's underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality instantaneously. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
350.	2/19 Churchill Street, Doncaster East	Ruffey Creek	SBO3	7, 8, 10, 12, 14 Use of term flooding is	The submission states that the current dwelling is sited in such a way to deal with shallow depths of runoff. The SBO is based on flood prone land, not	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				misleading.	<p>specifically where dwellings are flooded above floor level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p> <p>The submission also states that the use of term flooding is misleading.</p> <p>The use of the term flooding is derived from the State planning controls and referred to in the LSIO and SBO within the Victoria Planning Provisions. This is not something that Council can change as it is a State administered control. It is also important to note that the local schedules which sit under the State provisions do not refer to 'flooding' in any of the documentation.</p>	
351.	50 Lawanna Drive, Templestowe	Ruffey Creek	SBO2	<p>2, 3, 5, 7, 8, 10, 12, 13, 14</p> <p>Application of retrospective regulations is inappropriate. 400mm gap below fences is a safety issue.</p>	<p>The submission states that Manningham City Council should have been aware of the flood risk at the time of subdivision. Underground drainage systems are usually designed to convey a 1 in 5 year ARI (Average Recurrence Interval) or 20% AEP (Annual Exceedance Probability) rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970's improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely</p>	<p>Yes.</p> <p>A minor amendment is recommended to the flood shape in the north east corner of the property, to disconnect the flood shape to the north from the main extent. Refer to map at Attachment 10.</p>

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the change in standards from the 1970's/80's, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas in a 1 in 100 year ARI event. The flood modelling that underpins the SBO will allow Council to prioritise drainage upgrades in critical areas. The submission also refers to a spoon drain along the property boundary. This is understood to be a private. Private drains have not been modelled as part of the flood mapping study underpinning the proposed SBO as they are not maintained by Council and do not significantly impact the flood extent. In addition, the submission references a brick wall along the property boundary. Individual structures such as this were not modelled individually but their effects on overland flow taken into consideration through the adoption of appropriate roughness factors in accordance with industry practices. The submission also refers to the topographical data used in the flood model. The LiDAR data used in the flood study was captured in 2009 and would reflect improvements at that point in time including tennis courts and swimming pools. Contours have been interpolated through building footprints in accordance with industry practices.</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					Based on a review of the modelled flood depths and connectivity of the flood shape, a minor amendment is recommended to the flood shape in the north east corner of the property.	
352.	55 Roseland Grove, Doncaster	Ruffey Creek	SBO2	5, 7, 8	<p>The submission states that the Council's drainage system is inadequate and that Council should upgrade the system rather than impose an SBO. Council allocates approximately \$2 million annually to the upgrade of its underground stormwater drainage system. These works are prioritised based on the frequency and extent of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor areas above the major storm flood level.</p> <p>The submission also mentions "Water Supply System Charge, Sewerage System Charge..." however these are payable to the relevant Water Authority and not Council, who are responsible for stormwater drainage but not sewerage (sanitary drains) or water supply. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No
353.	36-44 Rainbow Valley Road, Park Orchards	Mullum Mullum Creek	SBO2	2, 7, 11	The flood shape is consistent with the topographical features of the property. The submission questions the value of applying an SBO	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					largely over an easement. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under certain conditions, development in close proximity to property boundaries or within easements may be permitted in some cases. The review has confirmed the surrounding topography and drainage assets. In this case, the incursion is considered to be significant and amendment is not recommended as it would hinder the ability to consider flow paths during future development of the site. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
354.	441 Serpells Terrace, Donvale	Mullum Mullum Creek	SBO1	2	The property is adjacent to a Melbourne Water main drain (Hunt Street Drain) and the applicable flood level is 59.52 metres AHD in a 1 in 100 storm event. Melbourne Water agrees the building is not subject to flooding only inundation at the front of the site. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
355.	18 Rhonda Street, Doncaster	Koonung Creek	SBO3	5, 7, 8, 14 Does not apply to Eastern Golf course. Inconsistent.	<p>The submission states that the Council should upgrade the drainage system rather than imposing the SBO.</p> <p>Council allocates approximately \$2 million annually to the upgrade of its underground stormwater drainage system. These works are prioritised based on the frequency and extent of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor areas above the major storm flood level.</p> <p>The submission also mentions the Eastern Golf Course development site and questions the impact of development on surrounding properties. In terms of storm water discharge from the site. The development site is required to manage the storm water runoff from the site itself and the upstream catchment which extends to Manningham Road and Williamsons Road. At the time of the flood modelling, the drainage system and overland flow paths of the development site had not been finalised and it was deemed appropriate to exclude the site from the exhibited flood shape until completion. It is proposed that surcharge of storm water will exit the site at the same points as the undeveloped site in extreme events. Taking into consideration the capacity of the outlet pipe, any outflow from the site in excess</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					of the pipe capacity will be stored on site and released at a slower rate of flow and will not exceed the predevelopment discharge flow rate as designated by Melbourne Water. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
356.	17-25 Brindy Crescent, Doncaster East	Koonung Creek	SBO3	1, 2, 7, 8, 10	The submission states that the flood shape is implausible due to the topography. A review has found that this isolated finger of ponding affecting 17-25 Brindy Crescent is an anomaly and it is recommended to be deleted from the flood extent.	Yes. Remove the isolated area of SBO3 ponding from properties 17, 19, 1/21, 21, 23 and 25 Brindy Crescent and the connecting section of LSIO from Koonung Reserve (74 Wetherby Road) to the south. Refer to map at Attachment 10.
357.	13 Pamela Street, Warrandyte	Mullum Mullum Creek	SBO2	1, 2, 8	The submission states that the property slopes downhill significantly from the house and that flooding is not an issue. The flood shape incursion covers the low lying corner of the property as runoff from Pamela Court flows in a north easterly direction. The footprint of the dwelling is not affected by the flood shape.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					The submission also questions how houses at a higher elevation can be affected by the overlay but houses at a lower elevation can remain unaffected. The exhibited SBO shape represents the flow of excess runoff over the land, not rising flood water. Based on a site visit the exhibited SBO has been found to be consistent with the terrain and site conditions. The flood shape should remain as exhibited at this location.	
358.	9 Lynnwood Parade, Templestowe Lower	Ruffey Creek	SBO3	2	The submission correctly states that, due to the slope of the property, water would run off and not remain flooded. Although the flood shape does not represent standing water, overland runoff or flash flooding is still considered a significant risk. The purpose of the proposed overlays is to ensure that future development is protected from flooding. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
359.	108 McGowans Road, Donvale	Mullum Mullum Creek	SBO2	2, 12	The submission states that, due to the slope of the property and landscaping features such as paved areas, there is no significant impediment to runoff during storm events and that water could not build up to the extent shown by the SBO. Over the last 10 years, the submitter has not observed stormwater overland flow to the extent that the SBO2 defines. Although the submitter may not have experienced runoff to the extent defined by the SBO2, it is	Yes. Change SBO2 overlay to SBO3 on this property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					possible that a 1 in 100 year event of critical duration has not been observed by the submitter. The flood mapping is based on a 1 in 100 year event of critical duration. A site visit confirmed that the flood shape is consistent with site conditions; however based on modelled depths in the area, it is recommended that the local extent of the SBO2 affecting 106-108 McGowans Rd be changed to SBO3.	
360.	51-53 South Valley Road, Park Orchards	Andersons Creek	Not affected.	2, 3	A review of this property has demonstrated that an overlay is not proposed as part of Amendment C109.	No
361.	14 Oak Crescent, Templestowe Lower	Ruffey Creek	SBO2 & SBO3	1, 2, 3	The submission states that the property is near the top of a hill, is sloping, and has not experienced flooding in 50 years. The exhibited SBO2 shape is representative of the high velocity of runoff during a 1 in 100 year ARI rainfall event of critical duration due to the terraced nature of the terrain at this location which was confirmed during a site visit. This type of runoff is still considered a risk and the overlays will assist in protecting future development of the site. The SBO3 incursion along the street frontage is considered minor and is recommended to be trimmed along the property boundary. The exhibited SBO2 shape is recommended to be retained with the exception of the narrow SBO2 strip along the eastern boundary.	Yes. SBO3 incursion proposed to be removed. SBO2 shape is proposed to be trimmed along the eastern boundary. Refer to map at Attachment 10.
362.	48 Lawanna Drive, Templestowe	Ruffey Creek	SBO2	2, 3, 5, 7, 8, 10, 12, 13, 14	The submission states that Manningham City Council should have been aware of the flood risk at the time of subdivision.	No with respect to the exhibited overlay.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				<p>Retrospective regulations. Allowing a 400mm gap below fences will create safety issues.</p>	<p>Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The flood modelling that underpins the SBO will allow Council to prioritise drainage upgrades in critical areas.</p> <p>The submission also refers to a spoon drain along the property boundary. The spoon drain along the property boundary of No. 50 is not understood to be a Council asset. Private drains have not been modelled as part of the flood mapping study underpinning the proposed SBO as they are not maintained by Council and do not significantly impact the flood extent.</p>	<p>In Schedule 3 to the Special Building Overlay, change the last dot point under Clause 1.0 Permit requirement as follows; “New fencing with at least 25% openings or with a plinth at least 400mm above the natural surface level”.</p>

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>In addition, the submission references a brick wall along the property boundary. Individual structures such as this were not modelled individually but their effects on overland flow have been taken into consideration through the adoption of appropriate roughness factors in accordance with industry practices.</p> <p>The submission also refers to the topographical data used in the flood model. The LiDAR data used in the flood study was captured in 2009 and would reflect improvements at that point in time, including tennis courts and swimming pools. Contours have been interpolated through building footprints in accordance with industry practice. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p> <p>The controls are not considered to be retrospective as they identify land that is currently at risk of flooding in a severe storm event.</p> <p>In respect to the fencing safety issue, it is recommended that the wording in the SBO 3 be amended to include a minor text change to the Schedule to SBO3 to address some potential ambiguity with the controls.</p> <p>Specifically, in Schedule 3 to the Special Building Overlay, it is recommended to change the last dot point under Clause 1.0 Permit requirement as follows:</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<i>"New fencing with at least 25% openings or with a plinth at least 400mm above the natural surface level".</i>	
363.	13 Thomas Street, Doncaster East	Koonung Creek	SBO2	1, 3, 6, 7, 8	<p>The submission states that the property has experienced several 1 in 100 year storms but that no flooding has been experienced. Without knowing the dates of the events the submitter is referring to it is not possible to ascertain whether or not these storms were representative of 1 in 100 year ARI events. Manningham experienced significant flood events in 1991, 1992, 2003 and more recently 2011 and 2016, resulting in inundation and damage to properties across the municipality. The submission also refers to drainage infrastructure that has been upgraded by both Council and Melbourne Water since 1977. A review has found the as-constructed drains have been included in the modelling. Underground drainage systems are typically designed to convey minor storm flows and the fact that upgrades took place does not necessarily remove the risk of flooding during major storm events. Based on the position of the submission property relative to the gully in the area it can reasonably be expected to experience overland runoff in the manner indicated by the SBO. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
364.	86 Larnoo Drive, Doncaster East	Mullum Mullum Creek	SBO3	8, 11	The submission is correct in identifying that the flood shape incursion is minor. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under conditions, development within easement or in an area previously designated as a shared driveway may be permitted in some cases. Existing properties may be redeveloped in the future and the draft overlay will assist in the assessment of the impacts of any future development. In this case, the incursion is not considered to be significant and application of the SBO in this case would not yield any significant planning or risk mitigation benefit. Thus, the exhibited flood shape is recommended to be amended accordingly.	Yes. Remove SBO3 from the property.
365.	20 Finlayson Street, Doncaster	Koonung Creek	SBO3	1, 11, 12	The submission is correct in identifying that the flood shape incursion is relatively minor in terms of the area of the incursion and the percentage of the property area affected. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under conditions, development close to property boundaries may be permitted in some cases. Existing properties may be redeveloped in the future and the proposed overlay will assist in the assessment of the impacts of the flood shape on any future development. In this case, the incursion extends more than 5 metres in to the property and is recommended to be retained.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
366.	29 Lynnwood Parade, Templestowe Lower	Ruffey Creek	SBO1	2, 8, 11	Very minor flooding. Not considered flooding from Melbourne Water's drainage system. It is recommend the exhibited flood shape be changed so the property is not included in the overlay.	Yes. Remove the SBO1 from the property.
367.	4 Paddys Lane, Park Orchards	Mullum Mullum Creek	SBO3	2	The submission points out that the SBO has been defined by Council as areas prone to overland flooding as a result of the capacity of local or main drains being exceeded in a 1 in 100 year storm event. An argument is then made that, due to there being no Council drainage upstream of the property, the flood shape is in error. Although the submitter is correct in stating that there are no Council drains in Stintons Water Supply Reserve upstream of the submission property, the reference to the capacity of drains being exceeded also encompasses areas without piped drainage networks but for which Council is responsible for providing drainage. A site visit confirmed the topography of the area. Although the flood shape incursion onto the property is minor compared to the size of the parcel, the property may be subdivided in the future and the overlay will assist in assessing the impacts of overland flows on the development. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
368.	5 Dilkara Court, Doncaster East	Mullum Mullum Creek	LSIO	1, 2, 5	The property is adjacent to Mullum Mullum Creek. The applicable flood level is 52.54 metres AHD for a 1 in 100 year storm event.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>The submission claims that there is no evidence for the past 100 years of any flooding. It cannot be assumed that flooding has not previously or will not occur at any given property, on the basis that there are no records of flooding, or flooding to the extent identified by the LSIO. The LSIO is based upon the extent of overland flows that would result from a 1 in 100 Storm event. The depths of flooding at the rear of the property are approximately 4cms to 9cms deep, only minor and if the floor levels are 3000mm of the dwelling (as advised by the submitter) above natural surface, the floor level of the house are above the flood level. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents.</p> <p>The outcome of the review is that the exhibited flood shape be retained at this location.</p>	
369.	22 Russell Street, Bulleen	Bulleen North	SBO1	1, 3, 12	<p>The update modelling has identified that the property is in an overland flow path. It has been selected as a Melbourne Water parcel so there is only one authority responsible for providing flood advice. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	
370.	13 Catherine Avenue, Doncaster East	Mullum Mullum Creek	SBO3	2	The submission states that, due to the sloping nature of the property, flooding is not a problem. The shape of the SBO at this location suggests overflow from the Council drainage infrastructure along the northern easement flowing down the slight gully and onto the street. This type of flooding is still considered a risk and the overlays will assist in protecting future development. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
371.	7/9 Long Valley Way, Doncaster East	Mullum Mullum Creek	SBO1	14	The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	No
372.	5 Hampden Court, Templestowe	Ruffey Creek	SBO2	2, 4, 12	The submission states that remodelling is necessary as the flood shape shows flood in the dwelling which has never occurred. In addition, the submission states that the flood shape does not accurately represent the landscape and structures and does not reflect experiences of runoff due to a blocked drain along the eastern	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>boundary.</p> <p>A desktop review and site visit has found the flood shape is consistent with topographical contours with overflow from Caprice Court flowing in a southerly direction. The submitter's experiences of flooding due to a blocked Council drain are not reflected in the model as the assumption is made that drains are operating at capacity. Assuming blockages would result in the flood shape being more extensive than shown. The modelling is undertaken to identify flood prone land, not whether dwellings are flooded above floor level. Terrain data is interpolated through building footprints and appropriate surface roughnesses applied in the model to represent the effect of buildings on surface runoff. The extent of SBO2 is significant and should redevelopment of the property occur it is important to ensure the overland flow paths during major storm events are considered in an appropriate way. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
373.	27 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 2, 11	<p>The property is located adjacent to a Melbourne Water main drain (Greenridge Avenue Drain) and the applicable flood level for the property is 55.71 metres Australian Height Datum(AHD) for a 1 in 100 year storm event.</p> <p>Regarding the issue the submitter has "never had any flooding issues", it cannot be assumed that</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>flooding has not previously or will not occur at any given property, on the basis that there are no records of flooding, or flooding to the extent identified by the Special Building Overlay (SBO). The SBO is based upon the extent of overland flows that would result from a 1 in 100 Storm Event. The inundation at the top portion of the property is part of the overland flow path, not rising up from the main drain.</p> <p>The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
374.	84 Deep Creek Drive, Doncaster East	Mullum Mullum Creek	SBO3	2, 6	<p>Overall, the flood shape is consistent with the site conditions except the pipes of new development at the backyard. The drainage pipes installed as part of the Canowindra development were not Council assets at the time of modelling and will therefore be considered as part of a future planning scheme amendment. The outcome of the review is that the exhibited SBO remain at this location.</p>	No
375.	5 Darren Rise, Doncaster East	Mullum Mullum Creek	SBO2	2	<p>The submission states that flooding is most unlikely at the submission address due to the elevated nature of the property.</p> <p>The flood shape at this location represents runoff from surrounding elevated areas flowing through the submission property and onto Darren Rise. The submission property has a slight gully which collects shallow runoff. Although the property is elevated, it has a reasonably large upstream catchment and this contributes to the flood shape.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					A site visit has confirmed the topography and drainage assets. It is recommended the flood shape be retained at this location.	
376.	7 Ardgower Court, Templestowe Lower	Ruffey Creek	SBO3	2	<p>The submission refers to the elevated nature of the property and states that it would be impossible for floodwaters to rise that high without inundating the surrounding areas.</p> <p>The flood shape incursions at this location form within the property (the upstream extent) and flow out of the property and towards Ruffey Creek. It does not represent rising water from the Creek. The elevated nature of the property was confirmed during a site visit. Although the incursions are around the edges of the property, if the property is redeveloped in the future it would be appropriate for the overland flow path to be considered, and the incursions are considered to be significant based on area (more than 30 m²). The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No
377.	27 Ferndell Crescent, Templestowe	Ruffey Creek	SBO2	1, 3, 7, 8	<p>The submission states that no flooding has been recorded in the area or on the property.</p> <p>The property is located in an area which is prone to flooding during major storm events due to the topography and large upstream catchment. Council has records of complaints of flooding in the area. It is possible the submitter has not experienced a 1 in 100 year ARI storm of critical duration, or is referring to the house never</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					flooding above floor level. The SBO identifies flood prone land, not specifically where dwellings have flooded above floor level. In addition, the submission questions why drains have not been upgraded if flooding is an issue. Council cannot build a drainage system that can cope with all storm events. Typically, underground drainage systems are designed to minor storm event standards in accordance with industry practices. A site visit has found that the flood shape is consistent with the site conditions and should be retained as exhibited.	
378.	8 Montclair Court, Templestowe	Ruffey Creek	LSIO	1, 2, 5, 8	The existing street and easement drainage system is only capable of catering for the 1 in 5 ARI storm. The roadway and overland flood paths can assist in conveying the additional stormwater runoff generated in the 1 in 100 ARI event, affecting properties on the low side of Montclair Court. It has been agreed with Melbourne Water that the flood shape designation within the property be amended to SBO3 from the exhibited designation of LSIO. The overlay should remain, but it is recommended that the LSIO overlay be changed to SBO3.	Yes. The overlay should remain but should be changed to SBO3. Refer to map at Attachment 10.
379.	183-191 Tindals Road, Donvale	Mullum Mullum Creek	SBO3	2, 4, 7, 8	The mains points of the submission relate to adequacy of drain maintenance and a decline in drain maintenance in the area. Due to the modelling being undertaken on the assumption that the drainage network is operating at capacity, this is an issue separate to the extent	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>of the flood shape. Should the modelling be undertaken with pits partially blocked, the flood shape would be even more extensive than that indicated by the SBO.</p> <p>The results of the flood mapping have been used to identify potential drainage upgrades. Council is working through a process to priorities these capital works.</p> <p>In general, pit clearing and maintenance is undertaken on a 12 monthly basis throughout the municipality. Targeted or additional maintenance is carried out where required upon request.</p> <p>The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
380.	3 Moresby Avenue, Bulleen	Koonung Creek	SBO3	2	<p>The submission states that the property has been inaccurately represented in the flood modelling due to the location of the property and the fact that lower lying areas are not flooded. The flood shape is representative of shallow runoff concentrated from uphill. Immediately downhill from the submission property, the flood shape is largely restricted to the roadway which prevents lower properties from experiencing an incursion from the flood shape. A desktop review and site visit has found the flood shape to be consistent with site conditions and the flood shape should be retained at this location.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
381.	6 Raymond Elliot Court, Park Orchards	Mullum Mullum Creek	LSIO	1, 2	The flood mapping is based on a 1 in 100 year ARI flood event. Although the submitter reports that they have not witnessed overland flows through the property in the last 16 years, it is unlikely that an event of this magnitude has affected the property in that time. The underground drainage system in the vicinity of the property is suitable for minor flows and in a major storm event, overland flows would be expected. The mapped topography and drainage system are consistent with the mapped flood extents. The two minor LSIO extents which intrude into 6 Raymond Elliot Court along the south-eastern boundary are recommended for removal as they meet the minor incursion criteria. Review of the flow depths for the remaining flood extent at the northern end of the property indicates that this flood extent can be converted to SBO2. These changes have been agreed with Melbourne Water.	Yes. The two minor LSIO extents which intrude into 6 Raymond Elliot Court along the south-eastern boundary to be removed. Convert the flood extent at the northern end of the property from LSIO to SBO2. Refer to map at Attachment 10.
382.	3 Orchid Court, Park Orchards	Andersons Creek	SBO2	2, 11	The submission is correct in identifying that the flood shape incursion is minor. The purpose of the proposed overlay is to ensure that future development is protected from flooding. Under certain conditions, development within the easement or in an area previously designated as a shared driveway may be permitted in some cases. Existing properties may be redeveloped in the future and the draft overlay will assist in the assessment of the impacts of any future development. In this case, the incursion is not	Yes. Remove the SBO2 from the property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					considered to be significant and application of the SBO in this case would not yield any significant planning or risk mitigation benefit. Thus, the exhibited flood shape is recommended to be amended accordingly.	
383.	327 Tindals Road, Warrandyte	Mullum Mullum Creek	SBO3	1, 2	<p>The submission claims that the flood modelling has given no consideration to existing contours and at no point has runoff occurred in the way indicated by the SBO.</p> <p>It cannot be certain the property is not flood prone simply because there are no recollections of flooding at that location. It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. A desktop review followed by a site visit confirmed that the flood shape is consistent with the current terrain, with the property located below the level of the road and quite steep. Although the property is near the top of the catchment, modelled flood depths are shallow (between 50 mm and 100 mm). The slope of Tindals Road and the fact that the property is located below road level suggest runoff during major storm events could reasonably be expected to occur in the manner indicated by the SBO. During the site visit there was evidence of recent runoff down the driveway. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
384.	5 Sturdee Road, Donvale	Mullum Mullum Creek	SBO2	5, 6, 8	The submission objects to the amendment predominantly from a property development perspective. A desktop review has found the flood shape incursion along the rear of the property is consistent with the topography and Council drainage infrastructure. Although the incursion represents a small portion of the submission property, it covers a large proportion of the flood width at this location and trimming would result in a disconnect from the flood shape. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
385.	6 Kyrenia Court, Warrandyte	Mullum Mullum Creek	SBO2	1, 2, 4, 8, 9	The intent of the overlays is to ensure future development is undertaken in a way that considers flooding risks. The submission states that no development will occur at the bottom of the valley on the property. It cannot be certain that future developments will not be undertaken on the affected rear area and this is not a valid basis for amendment of the flood shape. Although the submitter states that minor flooding is likely to occur in adjacent properties due to the current drainage system, it must be noted that Council's drainage system is typically for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. The SBO is based on a 100 year ARI event, therefore it cannot be certain that the property is not flood prone during a 100 year ARI. The flood extent is significant at this location and,	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					based on a site visit and desktop review, runoff during major storm events can reasonably be expected to occur in the manner indicated by the SBO. Removal of the SBO would compromise the integrity of the flood shape at this location. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
386.	25 Ferndell Crescent, Templestowe	Ruffey Creek	SBO2	1, 7, 8	The submission states that no flooding has been experienced and it is unreasonable to apply the SBO. Although the submitter may not have experienced flooding it cannot be certain that the property is not flood prone during a 100 year ARI, due to the position of the property relative to the terrain (within a defined gully) and the size of the upstream catchment. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location. Removal of the SBO would compromise the integrity of the SBO flood shape in its entirety.	No
387.	13 Alfreda Avenue, Bulleen	Koonung Creek	SBO2	3, 7, 8	The submitter has noted past events of minor flooding which is an indication that the property is prone to flooding along the rear boundary. Although drainage upgrades have been modelled, improvements are implemented to reduce the extent of inundation and it is not feasible to eliminate overland flow entirely. The SBO is consistent with the topography, size of upstream catchment and drainage infrastructure and is recommended to be retained.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
388.	16 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 2, 7, 8	The property is located adjacent to a Melbourne Water main drain (Greenridge Avenue Drain) and the applicable flood level for the property is 61.23 metres Australian Height Datum(AHD) for a 1 in 100 year storm event. Regarding the issue the submitter has “never observed floodwaters”, it cannot be assumed that flooding has not previously or will not occur at any given property, on the basis that there are no records of flooding, or flooding to the extent identified by the Special Building Overlay (SBO). The SBO is based upon the extent of overland flows that would result from a 1 in 100 Storm Event which has a 1% chance of occurring in any given year. The flood mapping is also not suggesting “water will climb a hill yet not pool on lower elevations” this is an overland flowpath between Council flooding (SBO3) and the Melbourne Water main drain. The overlay extent has been reviewed and reconfirmed as being appropriate based on the direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. Review of the associated flow depths has however resulted in a recommendation to amend the overlay designation for this property from SBO1 to SBO3.	Yes. It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3. Refer to map at Attachment 10.
389.	40 Ross Street, Doncaster East	Koonung Creek	SBO2	7	The submission raises concerns about the overlay devaluing the property. A review has found the flood shape is consistent with the topography and drainage assets at this location and it would	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					compromise the integrity of the flood shape in this area to remove the SBO from the property. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
390.	4 Hallifax Court, Doncaster East	Mullum Mullum Creek	SBO3	1, 2, 4	The submitter states that pit overflow would not result in runoff through the submission property. There is a Council drainage pit outside the submission property and the property slopes to the east. A desktop review and site visit has confirmed that overflow from this pit during major storm events could reasonably be expected to cut through the corner of the submission property and flow through the neighbouring property at a lower elevation towards Larkin Court. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
391.	6 Veda Court, Templestowe	Ruffey Creek	SBO3	2, 7	The submission claims that the contours of the land have not been taken into consideration. A review has found the flood shape to be consistent with the topographical features of the land. The LiDAR terrain data used in the modelling was captured in 2009 and represents the most recent and complete data available for flood modelling in this area. The flood shape should be retained at this location to ensure any future redevelopment is undertaken in a manner which considers the overland flow path.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
392.	2 Eumeralla Avenue, Templestowe Lower	Ruffey Creek	LSIO	7	<p>The flood depths on the southern portion of the property range from approximately 5cms to 34cms and on the northern portion from approximately 5cms to 14cms. These are depths in a 1 in 100 year storm event and Melbourne Water does not agree with the statement “I do not believe this lot of my property is suitable for residential anymore”.</p> <p>The update of the LSIO is not intended to prohibit future development, but to ensure that any new development is referred to Melbourne Water so that drainage, floodplain management and environmental issues can be addressed early in the planning process.</p> <p>The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents.</p> <p>The outcome of the review is that the exhibited flood shape be retained at this location.</p>	No
393.	38 Fyfe Drive, Templestowe Lower	Ruffey Creek	SBO2	2, 3	<p>The submission states that the property is sloping, has not experienced flooding and the drainage on the street was upgraded.</p> <p>The flood shape at this location represents runoff from the south east, in particular overflow from the easement drain along the rear of the property.</p> <p>The property is upstream from Fyfe Drive and so the drainage upgrade does not make a difference to the flood shape on the property. The upgrade</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					was undertaken to service the overflow from the north side of the road. If cannot be certain the experienced rainfall event was a true 1 in 100 year ARI of critical duration as no details were provided. In any case, the flood shape is consistent with the topography and Council drainage assets and is recommended to be retained at this location. The upgraded drainage pipes of Fyfe Drive are to be included in a future review of the modelling.	
394.	14 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 2	The property is located adjacent to a Melbourne Water main drain (Greenridge Avenue Drain). Regarding the issue the submitter has “never observed floodwaters”, it cannot be assumed that flooding has not previously or will not occur at any given property, on the basis that there are no records of flooding, or flooding to the extent identified by the Special Building Overlay (SBO). The SBO is based upon the extent of overland flows that would result from a 1 in 100 Storm Event which has a 1% chance of occurring in any given year. The flood mapping is also not suggesting “water will climb a hill yet not pool on lower elevations” this is an overland flowpath between Council flooding (SBO3) and the Melbourne Water main drain. The overlay extent has been reviewed and reconfirmed as being appropriate based on the direction of flow, the location of the flood extent	Yes. It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3. Refer to map at Attachment 10.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. Review of the associated flow depths has however resulted in a recommendation to amend the overlay designation for this property from SBO1 to SBO3.	
395.	33 Lynnwood Parade, Templestowe Lower	Ruffey Creek	SBO1	2, 8	<p>The property is located in the vicinity to a Melbourne Water main drain (Montpellier Crescent Drain) and the applicable flood level for the property is 59.26 metres AHD for a 1 in 100 year storm event. The submission states that it is “impossible for it to flood”.</p> <p>It cannot be assumed that flooding has not previously or will not occur at any given property, on the basis that there are no records of flooding, or flooding to the extent identified by the SBO.</p> <p>The SBO is based upon the extent of overland flows that would result from a 1 in 100 Storm Event. The benefits of having flood overlays in Council’s planning schemes is that any future development is referred to Melbourne Water as the relevant Flood Plain Management Authority, so that drainage, floodplain management and environmental issues are addressed early in the planning process.</p> <p>The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	
396.	1 Peter-Budge Avenue, Templestowe	Ruffey Creek	SBO2	2, 3, 5, 7, 8	<p>The submission refers to recent upgrades of Council drainage infrastructure at this location. A review has found this work encompassed miscellaneous works to the pits and no upgrade of the main drain along this alignment was undertaken. This drain is the limiting factor in system capacity at this location and the model indicates this pipe is running full during the modelled 1 in 100 year storm event.</p> <p>The submission also states that any further upgrades should be undertaken in the adjacent Reserve to minimise disturbance. Underground drainage systems are typically designed for a 1 in 5 year ARI with excess flow occurring overland. Council has a policy to prioritise drainage upgrades to alleviate flooding of habitable floor areas in a 1 in 100 year ARI flood event. There are records of flooding in the backyard at this location which support the application of the SBO in this area. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No
397.	17 Glenda Street, Doncaster	Koonung Creek	SBO3	1, 2, 7	<p>The submission states that no flooding has been experienced at this location. Although the resident may not have experienced</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					flooding, it cannot be certain that the property is not flood prone during a 1 in 100 year ARI event of critical duration. A site visit has confirmed that site conditions are consistent with the flood shape and it is recommended to retain the flood shape at this location.	
398.	10 Larne Avenue, Donvale	Mullum Mullum Creek	SBO2	2, 8, 11, 12	The submission claims that the terrain data used in the modelling is outdated. The LiDAR terrain data used in the modelling was captured in 2009 and represents the most recent and complete data available for flood modelling in this area. A site visit has confirmed that the modelled contours are consistent with the terrain with a defined gully running along the south west corner of the property. It is important to note that the extent of the SBO is based on flood prone land, not specifically where the dwellings are flooded above floor level. Due to the size of the upstream catchment, it is considered that the width of the SBO is an appropriate representation of a 1 in 100 year ARI storm event. Altering the SBO would compromise the integrity of the SBO and removal would result in discontinuity of the flood extent. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
399.	14 Dellfield Drive, Templestowe Lower	Ruffey Creek	SBO3	2, 3, 11	The submission states that the open channel along the rear of the property in the school grounds is large enough to convey the 1 in 100 year ARI runoff and has provided calculations.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					Although conservative in that they ignored the presence of underground drainage pipes, calculations provided in the submission have underestimated the catchment size by about half and seem to have overestimated the size of the open channel, based on the photos provided. It is highly unlikely that the channel would convey close to 3000 L/s of water. While the incursion is less than 30m ² and represents less than 6% of the property area, it intrudes more than 5 metres on to the property and its removal would have a significant impact on the connectivity of the flood shape. It is recommended that the flood extent for this property be retained accordingly.	
400.	94 Thompsons Road, Bulleen	Koonung Creek	SBO3	2	The submission correctly states that the property is in an elevated area. The flood shape is consistent with the topographical contours and Council drainage infrastructure. The rear of the property is reasonably expected to be flood prone as the south boundary is within a defined gully. The overlay is significant in that the removal of the SBO would result in discontinuity of the flood extent. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
401.	9 Kyrenia Court, Warrandyte	Mullum Mullum Creek	SBO3	2, 5, 7, 8, 11	The submission states that the proposed overlay is an unnecessary duplication of the existing encumbrance of the easement that exists on the property. The purpose of the proposed overlays is to ensure	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>that future development is protected from flooding. Under certain conditions, development in close proximity to property boundaries, on shared driveways or within easements may be permitted in some cases. The existence of an easement is not a valid basis for amendment of the flood extent. Although the incursion of the flood shape makes up a small percentage of the property, the block may be subdivided in the future. In addition, the incursion makes up a significant width of the flood shape at this location and trimming would compromise the integrity of the flood shape in this area.</p> <p>The submission also states that Council should upgrade drains on Tindals Road.</p> <p>The flood modelling will allow prioritisation of drainage upgrades, with preference given to alleviating flooding of habitable floor areas. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
402.	207-227 Serpells Road, Templestowe	Mullum Mullum Creek	SBO2	2, 10	<p>The submission states that the proposed overlay is unnecessary due to the fact that it corresponds to a dam on the property and all runoff within the property is generated by the site itself with no further upstream catchment. In addition, the submission states that any future development of the site would be required to manage stormwater flows.</p> <p>Although this is the case, the intent of the</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					proposed SBO is to identify flood prone land in order to ensure future development is undertaken in a way that considers the overland flow path. Removing the SBO would compromise the integrity of the flood shape in this area and hinder Council's ability to ensure redevelopment of the site occurs in an appropriate manner. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
403.	29 Montpellier Crescent, Templestowe Lower	Ruffey Creek	SBO2	1, 2	The submission states that due to the position of the property on the high side of the street it would be physically impossible to flood. Although the property is indeed elevated from street level, the flood shape at this location represents collective runoff from the upstream catchment to the rear of the property (south east) which reaches the required combination of depth, velocity and duration to be defined in the flood shape. This runoff flows onto Montpellier Crescent. A site visit has confirmed the flood shape is consistent with the site conditions and it is recommended to retain the flood shape at this location.	No
404.	4 Wonuka Court, Doncaster East	Ruffey Creek	SBO3	1, 2, 5, 8	The submission queries the modelling undertaken which underpins the SBO. The modelling has been completed in recent years by Melbourne Water and Council using the Tuflow software package based on the Rainfall on Grid (ROG) methodology. The terrain is modelled using	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>LiDAR data which represents the most detailed and recent data available for this type of modelling. Existing Council and Melbourne Water drains were also incorporated into the modelling. Rainfall is applied to the terrain in the model which calculates the resultant overland flow in excess of the drainage system. Underground drainage systems are typically designed for a 1 in 5 year ARI event, with flows in excess of the pipe system travelling overland. The SBO is based on a 1 in 100 year ARI event of critical duration. Although the resident may not have experienced flooding, it cannot be certain that the property is not flood prone during a 100 year ARI. Due to the proximity of the subject property to the flood extent it is reasonably expected to be flood prone as it is located within a defined valley. Removal of the overlay would compromise the integrity of the SBO flood shape in its entirety. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
405.	18 Speers Court, Warrandyte	Mullum Mullum Creek	SBO3	2, 3, 12	<p>The submission states that the SBO is inconsistent with drainage patterns on the property and refers to infrastructure constructed on the neighbouring property which have managed flows. Although it may be the case that the submitter has not experienced runoff since the garage on the neighbouring property has been constructed, it cannot be said that this has removed the risk of</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					runoff during a 1 in 100 year ARI storm of critical duration. In addition this private infrastructure has not been modelled as it is not considered to significantly impact the flood shape during major events and may be subject to change without Council having control over it. The flood shape is consistent with the topography of the land and existing Council drainage infrastructure and is recommended to be retained at this location.	
406.	160 Bulleen Road, Bulleen	Koonung Creek	LSIO	2, 10	This LSIO is not connected to any flow path and doesn't add any value in terms of flood risk mitigation. Melbourne Water recommends that the isolated LSIO flood shape at the eastern side of the property be removed from the exhibited overlay.	Yes. It is recommended to remove the exhibited isolated LSIO from the eastern side of the property.
407.	288 Church Road, Templestowe	Ruffey Creek	SBO2	1, 2, 8, 10	The submission states that no flooding has been experienced despite witnessing several significant storm events. Although the resident may not have experienced flooding, it cannot be certain that the property is not flood prone during a 100 year ARI. Council's drainage system design is typically for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. The SBO is based on a 100 year ARI event. Due to the proximity of the subject property to the flood extent it is reasonably expected to be flood prone as the rear boundary falls within a slight gully. The review has confirmed	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
408.	6/2 Everard Drive, Warrandyte	Andersons Creek	SBO2	3, 4, 7, 11, 13	The submission states that the only time the area receives runoff from Yarra Street is when Council fails to maintain the drains outside the property. The description of previous runoff patterns is consistent with the application of the SBO at this location. The property is subdivided, with 7 units. The flood shape affects common property and follows Everard Drive which has a low point at this location and is below the level of Yarra Street. Due to the modelling being undertaken on the assumption that the drainage network is operating efficiently, this is a separate issue to the extent of the flood shape. Should the modelling be undertaken with pits partially blocked, the flood shape would be even more extensive than that indicated by the SBO. The flood shape is consistent with the topography and drainage patterns in the area and should be retained.	No
409.	95-97 South Valley Road, Park Orchards	Andersons Creek	SBO2 & SBO3	1, 11	The submission states that no flooding has been experienced since 1988. It is possible the submitter is referring to floor levels not being flooded, as the defined gully on the property is expected to experience significant runoff during major storm events. The overlay designation is SBO2 rather than the LSIO referred to in the submission and represents overland runoff to the west due to flash flooding rather than	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>rising or standing water. There is a small portion of the flood shape designated as SBO3, but in the context of the SBO2 overlay, the SBO3 overlay is not supported for removal.</p> <p>The submission also argues that the presence of the easement over the gully makes the SBO superfluous, however this is not considered a valid basis for change as, under conditions, redevelopment may occur in areas currently encumbered with an easement. The flood shape should remain as exhibited at this location.</p>	
410.	66 Beecroft Crescent, Templestowe	Ruffey Creek	SBO2	2, 3, 11, 12	<p>The submitter questions the title boundary and states that the topographical data does not reflect the retaining wall on the property.</p> <p>A review has found the flood shape to be representative of the site conditions, however due to the minimal nature of the incursion it is not considered to provide significant planning or risk mitigation benefits and is recommended to be deleted from the property.</p>	Yes. Remove the SBO2 incursion from the property.
411.	62 Old Warrandyte Road, Donvale	Mullum Mullum Creek	SBO2	2, 7, 8	<p>A review has found the flood shape is consistent with the topography and drainage assets at this location and it would compromise the integrity of the flood shape in this area to remove the SBO from the property, therefore no change is recommended. The sewerage upgrades mentioned in the submission are not related to the stormwater drainage network and have no effect on the SBO. The flood shape should remain as exhibited at this location.</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
412.	49 Ashford Street, Templestowe Lower	Ruffey Creek	SBO3	1, 2	The SBO extent fulfils the minor incursion criteria of less than 30m ² and 6 %, and amending the flood extent would not cause a disconnect in the flood shape at this location. The flood shape is to be amended accordingly.	Yes. Remove the SBO3 incursion from property.
413.	17 Sheahans Road, Templestowe Lower	Bulleen North	SBO3	1, 2, 12	The submission correctly states that flooding of the property could not occur from the drains on Sheahans Road. In this case, the flood shape is representative of overland flow from the east, with a retaining wall and underground level of the dwelling contributing to the significant velocity of runoff. There is underground Council drainage infrastructure to the north east, with shallow overflow reaching the required combination of depth, velocity and duration to define the flood extent at this location. The submission also states that properties that do not have Council drainage infrastructure within their boundaries shouldn't have an SBO. The SBO identifies flood prone land, and it is important to retain the integrity of the flood shape as representative of the overland flow path regardless of the location of Council drains. A site visit has confirmed the topography of the property and surrounding area and thus, the flood shape is recommended to be retained at this location.	No
414.	37 Ross Street, Doncaster East	Koonung Creek	SBO2	6, 10	The submission states that the property was purchased with the understanding the Council drainage system was adequate. Underground drains are typically designed to cater	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					for minor storm events, with flows in excess of the pipe system travelling overland. The SBO is based on a 100 year ARI event in accordance with industry practices. Development areas have been and are being managed with other policies/measures other than the SBO overlay for example, On Site Detention systems and continual improvement of capital works. The flood shape is significant in this location. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
415.	5 Kyreli Close, Donvale	Mullum Mullum Creek	SBO2	1, 2, 12	<p>The submission states that no damage to the property has been experienced during heavy rainfall events in the past.</p> <p>The fact that the resident has not experienced damage during heavy rainfall events does not necessarily mean that the property is not flood prone in a 100 year ARI. Council's drainage system design is typically for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. The SBO is based on a 100 year ARI event.</p> <p>The submission also correctly states that the dwelling is situated on the high side of the property. The southwest boundary of the property lies within a defined valley which was confirmed during a site visit. The overlay within the property is significant and removal of the SBO would result in discontinuity of the food extent. The review has confirmed the surrounding topography and</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					drainage assets. The flood shape should remain as exhibited at this location.	
416.	5 Kiandra Court, Doncaster East	Ruffey Creek	SBO3	1, 2, 7, 8	The submission correctly states that the property is in an elevated area. The flood shape is consistent with the topographical contours and Council drainage infrastructure. As the incursion extends more than 5 metres in to the property, it is recommended to be retained.	No
417.	19 Glenda Street, Doncaster	Koonung Creek	SBO3	1, 2, 7, 8, 12	<p>The submission argues that the flood shape at the property represents an anomaly in the modelling and that there is brick fence that would act as a barrier to runoff.</p> <p>Shallow runoff occurs through the property in a north westerly direction due to the property being below the level of the roadway and situated in a low point of Glenda Street between Menarra Street and Ayr Street. A site visit confirmed that the flood extent is consistent with site conditions. The brick wall mentioned in the submission has been confirmed, however private structures, such as fences, retaining walls etc., have not been modelled individually as they are subject to change in the event of property redevelopment.</p> <p>Consideration has been given to the impacts of such structures on the mapped flood extents through the application of surface roughness factors in the model in accordance with industry practices. The review has confirmed the surrounding topography and drainage assets. The</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					flood shape should remain as exhibited at this location.	
418.	21 Glenda Street, Doncaster	Koonung Creek	SBO3	1, 2, 7, 8	The submission argues that the flood shape at the property represents an anomaly in the modelling. Shallow runoff occurs through the property in a north westerly direction due to the property being below the level of the roadway and situated in a low point of Glenda Street between Menarra Street and Ayr Street. A site visit confirmed that the flood extent is consistent with site conditions. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
419.	6 Dale Street, Bulleen	Koonung Creek	SBO2	2, 3, 7, 8	The submission recollection of historical flood events of water pooling is consistent with the flood overlay along Dale Street. It must be noted that the SBO is based on a 100 year ARI event of critical duration which the resident may not have experienced. Although the drains in the area were upgraded in the last 20 years, it is possible that the upgrade works have protected the house from inundation in a 1 in 100 year ARI storm event but overland flows will still pass through the property in a major storm event. The flood shape encroaches over the current dwelling footprint however the SBO defines flood prone land, not specifically where dwellings have flooded above floor level. The flood shape is consistent with the topography of the area and the fact the property is	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					within a valley in the terrain. The flood shape is recommended to be retained at this location.	
420.	4 Conway Avenue, Donvale	Mullum Mullum Creek	SBO3	1, 2, 5, 7, 8, 11	The property contains a minor incursion of the flood shape that is not considered to provide significant planning or risk mitigation benefits. The overlay is recommended to be deleted from the property.	Yes Remove the proposed SBO3 incursion
421.	50 Millicent Avenue, Bulleen	Koonung Creek	SBO2	2	The SBO incursion fulfils the minor incursion criteria of less than 30m ² and 6% of property area. The overlay is recommended to be removed from this property accordingly. For consistency, the minor incursion criteria have also been applied to the neighbouring properties with No. 52 and No. 54 Millicent Ave also recommended to be trimmed.	Yes. Proposed SBO2 overlay incursion to be removed from property and adjacent properties at 52 and 54 Millicent Avenue also.
422.	1 Trudi Court, Donvale	Mullum Mullum Creek	SBO3	4, 7, 11	The submission states that the property would not be subject to flooding if the easement drains were maintained and the properties upstream retained excess runoff. Typically, underground drainage systems are designed to minor storm event standards with excess runoff travelling overland in major storm events. Even if on-site detention systems were constructed upstream, these are also designed to minor storm event standards and would not remove the risk of overland runoff during major storm events. The SBO is based on a 100 year ARI event in accordance with industry guidelines in order to identify flood prone land. In terms of	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>maintenance, the drainage pipe network is modelled blockage free and operating at full capacity. If blockage were assumed, the flood extent would be greater than what is defined by the overlay.</p> <p>The submission also states that development is unlikely to occur in the area designated by the overlay. This is not considered a basis to amend the flood shape, as the intent of the overlay is to identify flood prone land and development may occur in the future in areas not currently permitted. Removal of the SBO would result in a discontinuity of the flood extent and therefore should be retained. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
423.	2 The Pines Outlook, Doncaster East	Mullum Mullum Creek	SBO3	14 Lodged as a submission with no content. Clarification sought by Council. None provided.	The flood shape is considered reasonable in this instance and no objection has been made regarding the shape of the overlay. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
424.	29 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 2, 10	The property is located adjacent to a Melbourne Water main drain (Greenridge Avenue Drain) and the applicable flood level for the property is 56.23	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>metres Australian Height Datum(AHD) for a 1 in 100 year storm event.</p> <p>Regarding the issue the submitter has “never experienced any flooding in the area”, it cannot be assumed that flooding has not previously or will not occur at any given property, on the basis that there are no records of flooding, or flooding to the extent identified by the Special Building Overlay (SBO). The SBO is based upon the extent of overland flows that would result from a 1 in 100 Storm Event.</p> <p>The flooding is from an overland flow path down the hill towards the main drain, the house may be approximately 10 metres above the main drain. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents.</p> <p>The outcome of the review is that the exhibited flood shape be retained at this location.</p>	
425.	2 Sowter Court, Donvale	Mullum Mullum Creek	SBO2	1, 2,	<p>The submission states that the property is elevated and no flooding has been experienced.</p> <p>The submitter may be referring to not experiencing flooding above floor level. The extent of the SBO is based on flood prone land, not where dwellings have flooded above floor level. The exhibited flood shape is indicative of the low lying land along the street frontage of the property. A site visit</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					confirmed that the house was located at the high point of the property however the front of the property is low lying. Although the resident may not have experienced flooding, it cannot be certain that the property is not flood prone during a 100 year ARI. Due to the proximity of the subject property to the flood extent, it is reasonably expected to be flood prone as it partially falls within a valley in the terrain. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
426.	880-882 Doncaster Road, Doncaster East	Koonung Creek	SBO3	14 Submission but only wants to be kept informed.	The flood shape is considered reasonable in this instance and no objection has been made regarding the shape of the overlay. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
427.	50-52 and 54-56 Ennismore Crescent PARK ORCHARDS /The Pines, Mossdale Court TEMPLESTOWE and King Street, 11 Gairlock Court, 9A and 10 Brentvale Court and 3 and 4A Myron Place, DONCASTER and Larnoo Drive, DONCASTER EAST	Mullum Mullum Creek Andersons Creek Ruffey Creek	SBO1, SBO2, SBO3	2, 14 A consistent approach across all Council's should be adopted.	The submission raises issues relating to the SBO designation affecting the Ennismore properties. A review has found that the designation of the SBO corresponding to the steep gully between the two submission properties should be amended to be SBO3 based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. In addition, due to the intent of having each property be subject to overlays solely under either Council or Melbourne Water control,	Yes. Change SBO1 to SBO3 for 50-52 Ennismore Crescent and remove SBO1 from eastern boundary but not from road frontage boundary for 54-56

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>it is recommended to trim the flood shape along the eastern boundary of No. 54-56 Ennismore Cres. The incursion of the SBO1 along the road frontage of No. 54-56 Ennismore Cres does not meet the criteria applied for properties adjacent to flooded roadways during derivation of the SBO extent. The outcome of the review recommends that SBO3 designation is adopted for 50-52 Ennismore Cres and the SBO1 incursion along the roadway be retained for 54-56 Ennismore Crescent. Refer to Attachment 7. As the adequate maintenance of private drainage systems cannot be guaranteed and as these systems can be modified without Council approval, the flood shapes have been determined in the absence of any consideration of these assets. It is proposed to amend the flood shape at the Pines to remove the flood extent from the rooves of existing building areas and retain the remaining extents, in order to manage flood risk associated with any future development. Following review of the overland flow depths on the southern side of Mossdale Court and discussion with Melbourne Water, it is proposed to amend the designation of the flood shapes from SBO1 to SBO3 for properties on the southern side of Mossdale Court east of Birchdale Crescent.</p>	<p>Ennismore Crescent . Change SBO1 to SBO3 in the gully between the two properties (Dirlton Reserve). It is recommended to amend the SBO at The Pines (181 Reynolds Road) to remove the flood extent from existing roof areas. It is proposed to amend the flood shape designation from SBO1 to SBO3 for 1 and 2/13, 1 and 2 /14, 15, 15A, 16, 17 and 18 Mossdale Court and 28, 1 and 2/30, 32 and 32A Greenridge Avenue. It is recommended to</p>

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
						remove the SBO3 from properties 11 Gairlock Court, 2/10, 9 & 9A Brentvale Court. Refer to maps at Attachment 10.
428.	3 - 4 Glen Court, Templestowe	Ruffey Creek	SBO2	5, 7, 8, 10, 14 Eastern Golf Course has been omitted from modelling. Unfair	The submission states that Council should upgrade the drains in the upstream catchment. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. A site visit has confirmed the topography of the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>area and that the property is in an area expected to be flood prone during major storm events. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p> <p>The submission also questions the omission of the Eastern Golf Course from the flood mapping stating that this is unfair.</p> <p>The Tullamore site is currently under development for residential housing. It was included in the flood modelling which informed the proposed planning scheme overlays. As part of the development, earthworks are being undertaken and drainage infrastructure is being constructed which will ultimately vest in Council. The development process ensures that flood and overland flow paths are provided to ensure that no new properties are affected by flooding as a result of the land development. Flood modelling has also been undertaken in respect of the proposed infrastructure by the developer, to confirm that major overland flows through the site are appropriately controlled, without inundation of any proposed residential blocks. It follows that the flood modelling undertaken as part of Amendment C109 will be superseded in respect of the Tullamore Estate, prior to the development of housing. This issue has been addressed by truncating the flood extent at the upstream and downstream site property boundaries and the</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					flood extent within the Tullamore site has been deleted from the proposed Overlay. The proposed overlays both upstream and downstream of this site are based on the previous flood mapping work which took account of flows through the Tullamore site. The approach taken is considered to be reasonable and appropriate.	
429.	3 Cassinia Road, Templestowe Lower	Ruffey Creek	SBO2	1, 3, 7, 8	The submission refers to previous upgrades in this location. A discrepancy has been found between the modelled and actual drainage infrastructure at this location. The upgrade was undertaken prior to the flood modelling exercise which underpins the SBO and additional modelling is required to quantify the impact of the upgrade on the flood shape. The flood shape is recommended to be reviewed in this area following additional modelling which is expected to be completed prior to the Panel Hearing.	No
430.	6 Oakland Drive, Warrandyte	Mullum Mullum Creek	SBO3	1, 2, 5, 7, 8, 14 Council wastes money on unnecessary actions such as 'rubbish bin police'.	The submission states that no flooding has been experienced in the manner indicated by the SBO. It is possible the submitter is referring to floor levels not flooding. The SBO identifies flood prone land, not specifically where dwellings have flooded above floor level. It is also possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. The topography of the area, suggests the property is prone to overland runoff from the north east. A site visit has confirmed the terrain and Council drainage	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					infrastructure and it is recommended to retain the flood shape at this location. The reference to Council wasting money on such things as 'rubbish bin police' is not a relevant issue to the Amendment.	
431.	1 Timbertop Ridge, Warrandyte	Andersons Creek	SBO2	1, 2, 9, 13	The submission states that, due to the elevated nature of the property, flooding is implausible. The property experiences runoff in a northerly direction. The flood shape forms within the property boundary and flows to the dam to the north of the property. Although the flood shape at this location does not represent pooling or inundation, this type of flooding is still considered a risk. A small portion of the property is affected, however should the property be redeveloped it would be appropriate to ensure the major storm overland flow paths are considered. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
432.	31 Beckett Road, Donvale	Mullum Mullum Creek	SBO2	2, 5,	The submission states that the property is sloping and the flood shape is questionable. A site visit confirmed that the flood shape is consistent with the topography and drainage assets in the area. The flood extent is significant and removal would result in discontinuity of the overlay with in neighbouring properties. Due to the proximity of the subject property to the flood extent is it reasonably expected to be flood prone as characterised by the LiDAR data used and	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					existing site conditions. Therefore the flood shape is to be retained at this location.	
433.	37A Ross Street, Doncaster East	Koonung Creek	SBO2	1, 2, 7, 12	The submission states that the property is higher than the adjacent properties on Ross Street and no flooding has been experienced. The property contains a minor incursion along the eastern boundary. The SBO extent fulfils the minor incursion criteria of less than 30m2 and 6%. The overlay is recommended to be amended accordingly.	Yes. Remove the SBO2 incursion from the property.
434.	1 Olga Mews, Bulleen	Bulleen North	SBO3	1, 7, 12	The submission argues that drainage works and retaining walls in Olga Mews have removed the risk of flooding. It cannot be certain the central drain running through Olga Mews is sufficient for a 1 in 100 ARI. Private drains such as these are usually designed for a 1 in 5 ARI. It is beyond the scope of Council to consider private drains and functionality for the overlay modelling. Although the resident may not have experienced flooding, it cannot be certain that the property is not flood prone during a 100 year ARI as runoff can reasonably be expected to occur from the south east in the manner indicated by the SBO. Removal of the flood shape at this location would compromise the integrity of the SBO flood shape in its entirety. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
435.	9 Cliveden Court, Templestowe	Mullum Mullum Creek	SBO3	2	The submission states that the property slopes up from the street and that it would be impossible to flood. The flood shape at this location represents shallow overland runoff from uphill (west) flowing onto Cliveden Court, not water rising up from the court. This type of runoff is still considered a risk and the draft overlays will assist future development to consider the flow of stormwater through the property. A site visit has confirmed the topography of the area and that the modelled flood extent is consistent. The outcome of the review is that the flood shape be retained.	No
436.	19 Winters Way, Doncaster	Koonung Creek	SBO3	8, 11	The submission is correct in identifying that the flood shape incursion is minor. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under certain conditions, development within an easement or in an area previously designated as a shared driveway may be permitted in some cases. Existing properties may be redeveloped in the future and the proposed overlay will assist in the assessment of the impacts of any future development. In this case, the incursion is not considered to be significant and application of the SBO in this case would not yield any significant planning or risk mitigation benefit. Thus, the exhibited flood shape is recommended to be amended accordingly.	Yes. Remove SBO3 incursion from the property.
437.	37 Winston Drive, Doncaster	Ruffey Creek	SBO2 & SBO3	2	The submission states that flooding would not occur up a sloping driveway.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					A review of the flood shape has found that, at this location, the flow direction is out of the property according to the slope. The flood shape is reasonably consistent with the topographical contours at this location. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
438.	10 Myers Court, Doncaster	Koonung Creek	SBO2	1, 3	<p>The submission states the previous drainage upgrade works have addressed the issue of flooding at this location.</p> <p>A review has found that the upgraded pipes have been modelled, however the implementation of this design is to reduce the extent of inundation not to eliminate flooding entirely. In addition the upgrade is overshadowed by larger inadequacies in the surrounding network. There are records of flooding at this location since the drainage upgrade mentioned in the submission was constructed.</p> <p>The drainage infrastructure mentioned in the submission with regard to drainage pits along Myers Court is consistently represented as the in the model and has been confirmed on site. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No
439.	5 Pioneer Drive, Templestowe	Ruffey Creek	SBO2	2, 12	The incursion of the flood shape fulfils Cardno's original criteria for exclusion of properties from the SBO which are adjacent to flooded roads. This criteria applies to incursions within 5 metres of a	Yes. Remove SBO2 incursion from the property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					road reservation which impact less than 10% of the total property area. The flood shape is recommended to be deleted from the property.	
440.	2 Wren Court, Templestowe & 35 Fyfe Drive, Templestowe	Ruffey Creek	SBO3	2, 5, 7, 8	<p>The submission states that the Council should upgrade the drainage network rather than impose the SBO.</p> <p>Council allocates approximately \$2 million annually to the upgrade of its underground stormwater drainage system. These works are prioritised based on the frequency and extent of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor areas above the major storm flood level. The terrain data used for the flood modelling which underpins the SBO was captured in 2009 and is the highest quality and most up to date data available for the task.</p> <p>Building retaining walls and other structures are not modelled individually, but factored into the modelling by adopting high surface roughness values. The fall of the surrounding area, as well as the location and capacity of the Council drainage system, determine the size, shape and direction the SBO. Site visits confirmed the flood shape and SBO extent is consistent with the terrain and should be retained.</p>	No
441.	37 McGowans Road, Donvale	Mullum Mullum Creek	SBO3	4, 5	The submission states that the Council should upgrade the drainage network and undertake	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>better maintenance rather than impose the SBO. Council allocates approximately \$2 million annually to the upgrade of its underground stormwater drainage system. These works are prioritised based on the frequency and extent of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor areas above the major storm flood level. The culvert under the driveway referred to in the submission has been included in the modelling. The lack of flooding at the front of the property suggests that this drainage infrastructure is effective in reducing the risk of flooding to the property from McGowan’s Rd during major storm events. The incursion to the rear represents runoff from uphill flowing onto Roslyn Court with the required depth, velocity and duration to be delineated in the model.</p> <p>The submission also states no flooding has been experienced at this location, however observations are made regarding water flowing into the property. The flood shape is consistent with the tennis/basketball court cut into the slope at the rear of the property which collects runoff. The submission also states that flooding has only been avoided due to maintenance on the resident's behalf. Although an important issue, it is not relevant to the flood mapping exercise which</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					underpins the SBO. In the model it has been assumed the drainage network is operating at full capacity and that no blockages are present. Assuming blockages would increase the extent of the flood shape beyond that exhibited. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
442.	26-28 Ennismore Crescent, Park Orchards	Mullum Mullum Creek	SBO2	1, 2, 11	The submission states that no flooding has been experienced in the manner indicated by the SBO. The supporting material provided in the submission confirms the existence of a natural gully originating in the adjacent property to the north and cutting the corner of the submission property and onto Ennismore Crescent. The exhibited SBO is consistent with this topographical feature. It cannot be certain that this area is not prone to overland runoff simply because there are no recollections of such an event. It is possible the submitter has not experienced a 1 in 100 year ARI storm of critical duration at this location. The submission also states that, due to the setback required for the property, no building would occur in the area designated by the flood shape. This is not considered a valid basis to amend the flood shape as future development may occur in areas not currently permitted. The SBO identifies flood prone land and the intent is to ensure that future development is undertaken in a way that considers the overland flow paths during major storm events.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					In addition, amending the SBO would compromise the integrity of the flood shape at this location. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
443.	4 Millwood Court, Templestowe	Ruffey Creek	SBO2	1, 2, 8	The submission states that because the house is higher than the level of the road, no flooding has been experienced and the SBO should not apply. Although the resident may not have experienced flooding, it cannot be certain that the property is not flood prone during a 100 year ARI storm event of critical duration. The extent of the SBO is based on the flood prone land, not specifically where dwellings are flooded above floor level. The flood shape at this location represents runoff from the elevated areas to the rear being channelled onto the roadway by the topographical features of the modelled land. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
444.	32 Hotham Street, Templestowe Lower	Bulleen North	SBO3	2, 4, 5, 6	The submission argues that the property has a history of flooding and that Council has been negligent in it's provision of drainage for the property. In addition, the submission states that the experiences of flooding at this location does not match the SBO. The review has confirmed the surrounding topography and drainage assets as modelled. The submitter makes reference to the Council drainage upgrade undertaken during the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>2011/2012 financial year, which involved the construction of a 600mm diameter underground drain and inlet pits draining from the low point on Balmoral Avenue (in the valley upstream of 32 Hotham Street), along Windsor Road, Hotham Street, and Michael Street, which discharges to a retarding basin constructed in the reserve at the intersection of Roma Court and Michael Street. The submitter claims that the previous major drainage works have done little to alleviate the flooding problem. The submitter claims that several properties have been flooded on more than one occasion including 29, 30, 31 and 32 Hotham Street, 5, 7 and 9 Michael Street, 5 and 6 Roma Court and 31 and 33 Balmoral Avenue. It is unclear whether the flooding referenced in the submission has occurred since Council's drainage improvement works which have cut off overland flows from reaching the Hotham Street valley were completed in 2011. The flood mapping shows flooding of 30 and 32 Hotham Street and 5, 7 and 9 Michael Street. The lack of an SBO displaying for the remaining properties as modelled is consistent with the success of the previous Council drainage upgrade, as per the modelling results. A site visit from the street and desktop review has found the flood shape is indicative of the conditions, given the modelling methodology which represents the terrain as a gridded surface of cells 3 x 3 m in size.</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					The flood shape should remain as exhibited at this location.	
445.	13 Ardgowar Court, Templestowe Lower	Ruffey Creek	SBO3	2	The submission states that the property is elevated and would not experience flooding. The flood shape at this location represents overland runoff from the upstream catchment area south of the property which is concentrated along the steeper areas within the property terrain. It does not represent rising water from Ruffey Creek in this case. The SBO is delineated from a combination of depth, velocity and duration of flow, not necessarily rising floodwater. Buildings and other structures are factored into the modelling by adopting high surface roughness values. The topography of the surrounding area, as well as the location and capacity of the Council drainage system, determine the size, shape and direction the SBO. The flood shape is consistent with topographical contours and is recommended to be retained at this location.	No
446.	302 George Street, Doncaster	Ruffey Creek	SBO1	7, 14 Flooding is linked to the development of Westfield Shopping Town.	The property is traversed by a Melbourne Water main drain (Bonview Road Drain) and the applicable flood level for the property is 66.65 metres AHD for a 1 in 100 year storm event. The submission questions “whose responsibility it is to fix it”. Any capital works associated with flooding are beyond the scope of this planning scheme amendment. The amendment will ensure that drainage, floodplain management, and	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>environmental issues are addressed for any new development.</p> <p>The overlay has taken into consideration development upstream of the property. The overlay at this location is an overland flow path associated with the Bonview Road Main drain catchment.</p> <p>The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents.</p> <p>The outcome of the review is that the exhibited flood shape be retained at this location.</p> <p>The submission also states that flooding is linked to the development of Westfield Shopping Town. All land generates storm water runoff during major rainfall events, which then discharges to downstream areas. It is generally not feasible to contain storm water runoff in a major or 1 in 100 year ARI storm event on any land. In response to a previous planning permit for development on the Westfield Doncaster site, a storm water detention system was constructed and runoff from the site was directed to the detention system, limiting overland flows discharging from this site. Any further development of the Westfield Doncaster site will be subject to planning approval and</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					control of storm water runoff will be considered as part of this process.	
447.	28 Brackenbury Street, Warrandyte	Andersons Creek	SBO2	1, 7, 12	<p>The submission states the property has not flooded in the past and the open drain along the southern boundary of the property is sufficient to remove the risk of flooding.</p> <p>Although the resident may not have experienced flooding, it cannot be certain that the property is not partially flood prone during a 1 in 100 year ARI. The flood extent indicates that the volume of runoff is too significant for the current drainage in the area. There are planned underground drains in this area which will assist in reducing the amount of overland runoff if/when they are constructed. The flood extent is significant and removal of the SBO would compromise the integrity of the SBO flood shape in its entirety. Due to the proximity of the subject property to the flood extent, it is reasonably expected to be flood prone as the south boundary falls within a defined valley. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No
448.	17 Heads Road, Donvale	Mullum Mullum Creek	SBO3	2, 11	<p>The submission is correct in identifying that the flood shape incursion is minor. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under certain conditions, development within an easement or in an area previously designated as a shared driveway may be permitted in some cases.</p>	Yes. Remove SBO3 incursion from the property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					Existing properties may be redeveloped in the future and the draft overlay will assist in the assessment of the impacts of any future development. In this case, the incursion is not considered to be significant and application of the SBO in this case would not yield any significant planning or risk mitigation benefit. Thus, the exhibited flood shape is recommended to be amended accordingly.	
449.	10 Campbell Court, Warrandyte	Mullum Mullum Creek	SBO2	2, 4, 5, 6	<p>The submission argues that the maps provided in the technical report do not match the topography of the developed site.</p> <p>The LiDAR data used for modelling was captured in 2009 and is the most current and complete data available for this type of modelling. A review has found that the topographical data used in the modelling is reflective of the developed conditions and reflect the dwelling and tennis court on the property.</p> <p>The submission also questions the intent of the overlays and states that they do not prevent development and therefore will not help the drainage system inadequacies that exist. The results of the flood mapping have been used to identify potential drainage upgrades. Council is working through a process to prioritise these capital works. Development areas have been and are being managed with other policies/measures other than the SBO overlay for example On Site Detention systems and continual improvement of</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					capital works. The flood shape is consistent with the topography of the land and the fact that the submission property contains a defined gully. Removal is not recommended as this would compromise the integrity of the flood shape in this area.	
450.	8 Cliveden Court, Templestowe	Mullum Mullum Creek	SBO3	14 Object. No reasons given.	The flood shape is considered reasonable in this instance. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
451.	18 Montclair Court, Templestowe	Ruffey Creek	SBO3	1, 2, 4, 5	The submission states that the property is elevated and would not experience flooding. The flood shape at this location represents overland runoff from the upstream catchment area in addition to a small area of pit overflow. The SBO is delineated from a combination of depth, velocity and duration of flow, not necessarily rising floodwater. The modelled rainfall event is a 1 in 100 year ARI storm of critical duration which is in line with industry modelling practices. It is important to model such an adverse event in order to plan for overland flow paths when redeveloping a property and sitting new dwellings. The submission also refers to a past flood event however this represents a different flooding mechanism (rising water from Ruffey Creek) than what the SBO represents and during a time when the underground drainage infrastructure was different. The results of the flood mapping will be	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					used to identify potential drainage upgrades. Council is working through a process to prioritise these capital works. A site visit from the road has confirmed that the flood shape and extent is consistent with topography and drainage infrastructure in the area. The flood shape is recommended to be retained at this location.	
452.	26 Harris Gully Road, Warrandyte 10 West End Road and; 4 First Avenue WARRANDYTE	Andersons Creek	LSIO	2, 7, 8, 12, 13	The submission is based on the possible implications of an LSIO overlay would have on land value and insurance premiums for the retirement village. The submission also refers to drainage improvements undertaken as part of the development and changes to levels within the site as a result of the works. Private drainage assets are not considered as part of the flood mapping as these assets are privately managed and maintained and are subject to change. Further analysis of the modelled overland flow depths through the property and discussions with Melbourne Water have led to a recommendation that the flood shape be retained as exhibited but the designation of the flood shape be amended from LSIO to SBO3. It has been agreed with Melbourne Water that the cut off line for the division between SBO3 and LSIO would be the southern boundary of 26 Harris Gully Road. The submission addendum states that the proposed flood shape does not correlate to the contour data of the First Street and West End	Yes. Change the proposed LSIO to SBO3, for 26 Harris Gully Road without changing the shape of the overlay. This change will also affect properties located at 4 Mossy Creek Slope, 22 and 24 Harris Gully Road and 36-42 Drysdale Road Warrandyte. Refer to map at Attachment 10. No change is recommended

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					properties. A site meeting and inspection was held at 10 West End Road as requested. The inspection found that the flood shape is consistent with the terrain of the area, with runoff during major storm events reasonably expected to enter the West End Road property from a low point in the roadway and flowing in a northerly direction towards the Yarra River, through 4 First Street. In addition, the addendum states that the proposed overlays would negatively impact the ability to construct a retirement village due to the higher floor levels required. This point is acknowledged, but it is the responsibility of Council to ensure that floor levels are set above the 1 in 100 year ARI storm event flood level to minimise the risk of flooding of habitable areas. Therefore it is recommended that the flood shape remain unaltered through 4 First Street and 10 West End Road.	for 4 First Street and 10 West End Road.
453.	11 Cliveden Court, Templestowe	Mullum Mullum Creek	SBO3	1, 2, 4, 5, 7, 8, 10	Refer to Attachment 7 for the Further Technical Review of this submission.	No
454.	28 Harris Gully Road, Warrandyte	Andersons Creek	LSIO	2, 12	The modelling of the overland flow path is part of the whole catchment area and while the runoff from the property next door is a part of the runoff it is not the reason for the flooding. The overlay designation has been reviewed and reconfirmed as being appropriate based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					locations of abutting SBO extents. The outcome of the review is that the exhibited flood shape be retained at this location.	
455.	9 Lyons Place, Doncaster East	Mullum Mullum Creek	SBO2	9, 11	The submission states that the proposed overlay is unnecessary as it covers an area that could not be built on. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under certain conditions, development in close proximity to property boundaries, on shared driveways or within easements may be permitted in some cases. The existence of an easement is not a valid basis for amendment of the flood extent. Although the incursion of the flood shape makes up a small percentage of the property, the block may be subdivided in the future. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
456.	122-124 Old Warrandyte Road, Donvale	Mullum Mullum Creek	LSIO & SBO2	2, 12	The submission argues that due to the current construction of Mullum Estate including earthworks and stormwater infrastructure, the exhibited flood shape should not apply to the property. This work has occurred since the capture of the LiDAR survey data used in the modelling. This LiDAR data and the derived flood shape are reflective of the ground conditions at a point in time. The exhibited flood shape is reflective of the conditions at the time of modelling. The submitter further argues that the existing dam will be filled as	Yes. It is recommended to delete the flood shape from Lot 1, 122-124 Old Warrandyte Road.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					part of the subdivisional works. Given the pending subdivisional works, removal of the flood shape from Lot 1, 122-124 Old Warrandyte Road Donvale is recommended.	
457.	19 Lilian Street, Bulleen	Koonung Creek	SBO2	5	The submission objects to development in the surrounding areas and states that increased runoff has caused the property to be flood prone. New developments are required to manage runoff to minor storm event standards with on-site detention systems where necessary. Underground drainage infrastructure is typically designed to minor storm events standards with excess flow occurring overland during major storms. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. Due to the proximity of the submission property to the flood extent, is it reasonably expected to be flood prone during major storm events. The review has	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
458.	27 Eucalypt Avenue, Templestowe Lower	Ruffey Creek	SBO3	1, 2, 11	The submission is correct in identifying that the flood shape incursion is small. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under certain conditions, development within an easement, or in an area previously designated as a shared driveway, may be permitted in some cases. Existing properties may be redeveloped in the future and the draft overlay will assist in the assessment of the impacts of any future redevelopment. In this case, as the incursion extends more than 5 metres in to the property, it is recommended that the exhibited flood shape be retained.	No
459.	44-54 Alexander Road, Warrandyte	Mullum Mullum Creek	SBO3	2, 14 Fencing exemptions (25% permeability and 400mm plinth height) are absurd for this area.	The submission states that the topography of the property and the catchment size would not result in the level of runoff indicated by the flood shape. A site visit has confirmed the terrain within the property is consistent with the flood shape and each area of runoff pertains to a viable catchment area or source or overflow. The SBO is delineated from a combination of depth, velocity and duration of flow. The submission also refers to permit exemption requirements for fencing. It is intended that any fence along an existing alignment may be replaced like-for-like. A fence along a new alignment would	No with respect to the exhibited flood shape. In Schedule 3 to the Special Building Overlay, change the last dot point under Clause 1.0 Permit requirement as follows;

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>have to be constructed in a manner that allowed passage of runoff.</p> <p>The intent of the draft overlays is to allow redevelopment to take place in a way that considers the overland flow path. It is considered important to retain the flood shape at this location to facilitate this. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p> <p>The submission also states that fencing exemptions (25% permeability and 400m plinth height) are absurd for this area in Warrandyte. In respect to the fencing permeability issue, it is considered that allowing water to flow across properties and not be encumbered or diverted by fencing structures is an important development principle.</p> <p>Notwithstanding, it is recommended to amend the wording in the SBO 3 to include a minor text change to the Schedule to SBO3 to address some potential ambiguity with the controls.</p> <p>Specifically, in Schedule 3 to the Special Building Overlay, it is recommended to change the last dot point under Clause 1.0 Permit requirement as follows;</p> <p>“New fencing with at least 25% openings or with a plinth at least 400mm above the natural surface level”.</p>	<p>“New fencing with at least 25% openings or with a plinth at least 400mm above the natural surface level”.</p>
460.	30 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	14 Requested to	The SBO is based upon the extent of overland flows that would result from a 1 in 100 Storm Event	Yes.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				attend an information session. No further submission made.	which has a 1% chance of occurring in any given year. The property is currently subject to an SBO along the property frontage and under the proposed mapping, the mapped extent will be reduced from the existing situation. The overlay extent has been reviewed and reconfirmed as being appropriate based on the direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure and the relative locations of abutting SBO extents. Review of the associated flow depths has however resulted in a recommendation to amend the overlay designation for this property from SBO1 to SBO3.	It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3. Refer to map at Attachment 10.
461.	23 Marcus Road, Templestowe Lower	Bulleen North	SBO2	1, 2, 7, 13	The submission questions the accuracy of the SBO, stating that drain information is inaccurate and Council has not considered historical records of flooding. The flood modelling which underpins the SBO has been undertaken using the best available GIS data. Numerous validation checks have been performed on the data to ensure it is fit for purpose. In addition, the results of the flood modelling have been verified against historic data from customer service requests received following high intensity rainfall events in the municipality and evidence of the impacts experienced in previous floods. A site visit has confirmed that the flood shape is consistent with the topography of the land as there is a natural slight valley running through the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					properties on this side of Marcus Road. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
462.	21 Marcus Road, Templestowe Lower	Bulleen North	SBO2	1, 7	The submission states that no flooding has been experienced in 10 years of living at the address and that water flows straight down Marcus Road towards Thompsons Road rather than through the property. While the roadway does experience runoff during major storm events, topographical contours also indicate a slight valley running north-south through the properties on the west side of Marcus Road. There is also Council drainage infrastructure along this alignment which is indicative of drainage patterns in this location. Site visits have also been undertaken in this area to verify the flood shape. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
463.	28 Victoria Street, Bulleen	Bulleen North	SBO3	2, 7	The submission correctly states that, due to the slope of the property, water would run off and not remain flooded. Although the flood shape does not represent standing water, overland runoff or flash flooding is still considered a significant risk. The purpose of the proposed overlays is to ensure that future development is protected from flooding. In this case, the incursion is not considered to be significant and application of the SBO in this case would not yield any significant	Yes. Remove the SBO3 incursion from the property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					planning or risk mitigation benefit. Thus, the exhibited flood shape is recommended to be amended accordingly.	
464.	6 Pambara Court, Donvale	Mullum Mullum Creek	SBO2	1, 2, 8	The submission states that there have never been any issues with flooding on the property. Given the existence of a major gully through the property it is assumed the submission is referring to not experiencing flooding of habitable floor areas. The flood shape does not extend through the house footprint and does not suggest flooding of habitable floor areas. The private spoon drains are not considered to have a significant effect on runoff patterns during major storm events and have not been modelled individually. A site visit confirmed the topography and drainage assets on the property, with the flood shape being consistent with the gully lines and slight depressions on the north facing slope which concentrate the runoff into the gully. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
465.	20 Ernst Street, Doncaster	Koonung Creek	SBO3	1, 2, 7, 8, 9	The submission refers to the height difference between No 18 and 20 Ernst Street. Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the catchment. Private infrastructure such as retaining	Yes. Remove SBO3 incursion from the property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					walls, structures and buildings are not individually modelled as they are not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures such as buildings and features such as landscaping and fences on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. A site visit has confirmed the topography and as-built drainage infrastructure is consistent with that modelled. However, the incursions are considered minor and would not yield any significant planning or risk mitigation benefit. Thus, the extent of the flood shape is recommended to be amended accordingly.	
466.	27 Airdrie Court, Templestowe Lower	Ruffey Creek	LSIO	2	The property is adjacent to Ruffey Creek. The mapping at this location is an update of the existing LSIO. The depths range from 5cms to 21cms and Melbourne Water agrees that the house is set back from the main flow. Even though access to and from the property in the 1 in 100 year event would be possible, the outcome of the review is that the exhibited flood shape be retained at this location.	No
467.	41 Lookover Road, Donvale	Mullum Mullum Creek	SBO2	1, 12	The submission describes having lived at the property for 20 years and not experienced flooding.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>It is possible that the submitter has not experienced a 100 year ARI event of critical duration.</p> <p>The submission also refers to a drain running through this property, which has been confirmed as being modelled. Council drainage infrastructure of this age generally does not have the capacity to completely convey runoff from major storm events. Based on the topography and the size of the catchment, it is reasonable to expect this property would experience flooding in the manner indicated by the SBO. A site visit confirmed that the drainage infrastructure in the area was modelled correctly and flood shape is consistent with the terrain. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
468.	20 Peachwood Rise, Doncaster East	Mullum Mullum Creek	SBO2	2, 8	<p>The submission states that, due to the location of the property, flooding is not seen as a risk. The property contains a minor incursion of the flood shape which represents flow out of the property. Based on the size of the incursion and a review of modelled depths and connectivity, it is recommended the flood shape be deleted from the property.</p>	Yes. Remove the SBO2 incursion from the property.
469.	1 Parkside Court, Warrandyte	Andersons Creek	SBO2	1, 2, 3	<p>The submission states that the property is on the side of a hill, and that the property is unlikely to experience flooding.</p> <p>The flood shape at this location represents runoff</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					along the gully which the submission property is adjacent to. Although the flood shape does not represent standing water, overland runoff or flash flooding is still considered a significant risk. The purpose of the proposed overlays is to ensure that future development is protected from flooding. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
470.	86-90 Webb Street, Warrandyte	Andersons Creek	SBO2	2, 8, 10, 12	The submission correctly identifies that the property is elevated and located a significant distance away from the Yarra River. However, the flood shape represents runoff along the creek on the property. The flood shape is consistent with the topographical features of the property. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under certain conditions, development in close proximity to property boundaries or within easements may be permitted in some cases. In this case, the incursion is considered to be significant and amendment is not recommended as it would hinder the ability to consider flow paths during future development of the site.	No
471.	50 Windella Quadrant, Doncaster	Koonung Creek	LSIO & SBO2	2, 7, 8, 12	The submission states that the backyard has had earthworks undertaken since 2009 that affect the extent of the SBO that should apply to the property. A desktop review and site visit has found the submission property has probably had this work undertaken since the capture of the LiDAR	Yes. Change LSIO to SBO2 at southern boundary of property. Similarly, convert

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>survey data used in the modelling. This LiDAR data and the derived flood shape are reflective of the ground conditions at a point in time and will become outdated in the future as changes are made to the existing ground surface around the municipality. In addition, the submission states that multiple overlays should not apply to the property. The exhibited flood shape indicates most of the incursion is designated as SBO2 with a very small area designated as LSIO. The outcome of the review is that the extent of LSIO currently encroaching on the property be changed to SBO2 and the LSIO commence at the southern property boundary.</p>	<p>the LSIO at the rear of 52A Windella to SBO2. In addition, it has been agreed with Melbourne Water that the LSIO incursion into the Koonung Creek Reserve (1-11 Church Road Doncaster) at the rear of 44 Windella Quadrant should be removed. Refer to map at Attachment 10</p>
472.	13 Tandarook Crescent, Donvale	Mullum Mullum Creek	SBO2	1, 2, 4	<p>The main points of the submission relate to adequacy of drain maintenance and refer to blocked pits on Tandarook Crescent. The modelling has been undertaken on the assumption that the drainage network is operating at capacity. Should the modelling be undertaken with pits partially blocked, the flood shape would be even more extensive than that indicated by the proposed SBO2.</p> <p>The submitter also describes their experiences of runoff during storm events as less extensive than</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					that indicated by the SBO, however it is possible that the submitter has not experienced a 1 in 100 year storm event at the property. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
473.	13 Dillwynia Avenue, Templestowe Lower	Ruffey Creek	SBO2	2, 5, 6, 7, 8, 13	The flood shape represents runoff flowing out of the property and onto the street rather than rising up from street level as suggested in the submission. The purpose of the proposed overlays is to ensure that future development is protected from flooding. The flood shape is consistent with the topographical features of the property. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
474.	39 The Boulevard, Doncaster	Ruffey Creek	SBO2	2, 8, 9	The submission states that the property is elevated from the roadway and would not experience flooding. In addition, there are properties at lower elevations that do not have the overlay. A review has found that the property is at a low point on The Boulevard which experiences significant depths of runoff during the modelled 1 in 100 year ARI storm event. There are three grated side entry pits at this location however these are typically not designed to cope with runoff from major storm events. The incursion on the driveway of the property represents runoff from uphill being concentrated onto the street. It does not indicate that the dwelling will experience	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					flooding. It is unclear which specific lower lying properties are referred to in the submission, however as runoff follows the natural gully lines and depressions it is reasonable that areas of lower elevation do not experience flooding if they are not on the main flow path. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
475.	Unknown, Unknown	Unknown	Unknown		The submission contains no property address upon which to review the modelling or proposed flood shape.	N/A
476.	3/76 Franklin Road, Doncaster East	Koonung Creek	SBO3	3	The submission states that there was a history of flooding at the location but a recent upgrade has been done which has removed the risk of flooding. A desktop investigation has found the upgraded drains to be represented in the model. It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location since the upgrade has taken place. The upgrade was implemented to reduce the extent of flooding but does not remove overland flow entirely from the submission property. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
477.	10 Amberwood Court, Templestowe	Ruffey Creek	SBO3	7, 8	The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
478.	14 Nottingwood Street, Doncaster East	Ruffey Creek	SBO1	14 Object but no reasons given.	The property is adjacent to a Melbourne Water main drain (George street drain). The applicable flood level for the property is 90.79 metres AHD. This submission is an objection without any specific issues listed. The outcome of the review is that the exhibited flood shape be retained at this location.	No
479.	19 Olympus Drive, Templestowe Lower	Ruffey Creek	SBO3	1, 2	The submission references previous storm events and states that flooding has not been experienced in the manner indicated by the SBO. In addition, the submission refers to previous instances of flooding of downhill properties which are not affected by the proposed overlays. It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. The modelled flood extent is based on a simulation which assumes the drainage network is operating at capacity and no blockages are present. Real-life storms often result in blockages which may alter the flood path. This may be one reason why the flood shape differs to the submitter's experiences of runoff at this location. In any case, the incursion of the flood shape onto the submission property is minimal and is recommended to be deleted from the property.	Yes. Remove SBO3 incursion from the property.
480.	211/187 Reynolds Road, Doncaster East	Mullum Mullum Creek	SBO3	14 Object as on third floor of apartment block.	The submission objects to the amendment as they are located on the third floor of an apartment block. The proposed overlays are not intended to be applied retrospectively but will apply to any proposed future development of the site. Such proposals could include earthworks or the erection	Yes. Remove SBO3 incursion proposed from the property.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					of new fencing which has the potential to exacerbate flood impacts or full redevelopment of the site. Notwithstanding, the incursion on the eastern boundary of the property at No. 187 Reynolds Road is considered to be minor and is recommended to be deleted from the entire property as it fulfils the minor incursion criteria.	This change affects all apartments located at 187 Reynolds Road.
481.	21 Olympus Drive, Templestowe Lower	Ruffey Creek	SBO3	1, 5, 7, 8	The submission states that no flooding has been experienced in 22 years in this location and that Council should upgrade the drainage. It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. In addition, typically, underground drainage systems are designed to cater for minor storm events. It is not possible for Council to build a network that can cope with all events. The flood shape is indicative of the Council drainage infrastructure and topography at this location, with a drainage pit outside the adjacent property and the front yard of the submission property cut in below the level of the road. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
482.	5 Chaim Court, Donvale	Mullum Mullum Creek	LSIO	2	The submission expresses doubt that water would build up and flood the area of the property encumbered by the exhibited LSIO, and that any stormwater runoff is carried away by the driveway and does not reach the gully within the property. Although the driveway may experience runoff,	Yes The LSIO overlay should be changed to SBO3 and the flood extent should be

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>during major storm events it can be expected that the gully on the property would experience a concentration of shallow runoff from the north east as indicated by the exhibited flood shape. The flood depths on this property are not representative of inundation from Mullum Mullum Creek, therefore it is recommended that the flood shape be retained but the current LSIO designation of the incursion be changed to SBO3. These changes should also affect 3 and 5 Chaim Court and 59 Beckett Road.</p>	<p>retained. These changes also affect 3 and 5 Chaim Court and 59 Beckett Road. Refer to map at Attachment 10.</p>
483.	Applewood Residents' Assoc, 5 Grand Boulevard, Doncaster	Koonung Creek	SBO2	2, 12	Refer to Attachment 7 for the Further Technical Review of this submission.	<p>Yes. Delete the SBO2 flood extent at south-eastern corner of site. Convert the SBO2 flood extents to SBO3 for flood shapes connecting to the north-south main flowpath at the eastern side of the site. See Submission 124 for details of treatment of isolated flood shape located at</p>

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
						15 and 17 Grand Boulevarde and 10 and 12 Eagleview Walk. Refer to map at Attachment 10.
484.	1 Narcissus Court, Doncaster East	Mullum Mullum Creek	SBO Removed	14 Question whether affected by amendment. Want confirmation that not affected.	A review of this property has demonstrated that an overlay is not proposed to apply to this property as part of Amendment C109.	N/A
485.	12 West End Road, Warrandyte	Andersons Creek	SBO3	2, 10, 12	The submission objects to the proposed overlays because of the distance away from local waterways and the potential impact on future development. The property experiences runoff from the south west, the flood shape at this location does not represent inundation from a river or creek. This type of flooding is still considered a risk. The intent of the proposed overlays is not to prevent future development but ensure it is undertaken in a manner which considers the risk of flooding. The outfall drain constructed as part of this development is not relevant to the flood shape affecting the subject property. The flood shape is consistent with the topography of the area and catchment size. The review has confirmed the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
486.	418 Doncaster Road, Doncaster	Koonung Creek	SBO3	5, 8	The submission highlights the urgent need for the provision of adequate drainage in the vicinity of 418 Doncaster Road. The fact that flooding in this area has been observed is consistent with the justification to apply the SBO3. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2 million annually to upgrading its underground drainage network.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					These works are prioritised based on frequency of flooding of habitable floor areas. It is not feasible for Council to resolve all flooding issues across the municipality immediately. In the interim, there is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
487.	42 Cantala Drive, Doncaster	Ruffey Creek	SBO2	2, 3, 4, 7, 8	The submission states that the drainage infrastructure in the area was upgraded in the past and should remove the risk of flooding. Although the upgrades have taken place, they were implemented to reduce flooding of habitable floor areas and do not remove all overland flow entirely during a 1 in 100 year ARI storm event. The property is in a position prone to flooding and previous experiences of flooding described in the submission supports the application of the SBO in this area. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
488.	252 Church Road, Templestowe	Ruffey Creek	SBO3	2	The submission opposes the amendment and argues that Council should upgrade drainage in the area rather than imposing the SBO. Underground drainage systems are usually designed to convey a 1 in 5 year ARI or 20% AEP rainfall event, with overland flow occurring once	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>the capacity of the underground drainage network is exceeded. Since the 1970s improved controls have been in place that consider overland flow paths for up to the 1 in 100 year ARI/1% AEP storm event. Australian Rainfall & Runoff was updated in 1987 to reflect updated design practices, with pipes conveying minor flows from a 1 in 5 year ARI/20% AEP rainfall event and overland flow paths to safely convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are not obligated to upgrade drainage systems in place prior to the new standard from the 1970s/80s, however Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas.</p> <p>In addition, the submission argues that redevelopment in the area is unlikely to change the topography. It cannot be certain what form future development of the site may take. There are examples of multi-unit developments in the municipality with significant underground garage excavations which could pose a significant flood risk if the overland flow path is not considered during design. The proposed overlays ensure that whatever form it may take, future development will consider the risk of flooding. A desktop review has found that the flood shape is consistent with the topography and Council drainage infrastructure</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					and it is recommended to retain the flood shape at this location.	
489.	2 Glenwood Close, Donvale	Mullum Mullum Creek	SBO3	2, 7	The submission expresses doubt that the SBO should be applied to the property. The SBO2 and SBO3 flood extents in general are associated with flash flooding from a 1 in 100 year ARI major rainfall event impacting local catchments. These events can cause damage to houses and property but due to the relatively small catchment sizes involved, these events are typically characterised by much shorter duration flows. A site visit confirmed the overlay along the alignment of a small gully which concentrates runoff from adjacent properties onto the street. In addition, the submitter recalls storm events which damaged properties in the street and resulted only in surface water runoff. It is possible that the described storm is not representative of a 1 in 100 year ARI storm event. The SBO extent was modelled on a 1 in 100 year ARI or 1% AEP rainfall event in accordance with industry practices. Although the affected area of the property is minor, it represents half the width of the flood shape at this location and removal would compromise the integrity of the flood shape in this area. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
490.	48 Hall Road, Warrandyte South	Andersons Creek	SBO2	2, 5, 7	The submission states that the SBO should not be applied to the property.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>The SBO2 and SBO3 flood extents in general are associated with flash flooding from a 1 in 100 year ARI major rainfall event impacting local catchments. These events can cause damage to houses and property but due to the relatively small catchment sizes involved, these events are typically characterised by much shorter duration flows. A site visit confirmed that the overlay reflects the topography.</p> <p>The submitter maintained that the experienced flooding was less extensive than that indicated by the SBO and that during storms runoff is largely restricted to the spoon drains on the property. It is possible that the described runoff behaviour is not representative of a 1 in 100 year ARI storm event. The SBO extent was modelled on a 1 in 100 year ARI or 1% AEP rainfall event in accordance with industry practices. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
491.	17 Banool Quadrant, Doncaster East	Ruffey Creek	SBO3	2, 14 Dispensations for heights, setbacks and site coverage restrictions for planning permits should be	<p>A key argument of the very comprehensive submission is that the flood shape is not indicative of the topography of the property. A contour map from the Lands Department has been provided in the submission with the contention that there is no land depression to form the ponding and flood inside the property. These represent 1.0 metre contours. In addition, a site survey plan has been provided complete with 0.1 metre contours</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				<p>given to compensate for raised floor levels resulting from flood controls. Cost effective alternatives to providing solutions for managing or redirecting overland flow should be provided as part of the planning application process</p>	<p>however these are not interpolated through the structures. Given the extent of the catchments involved, each catchment area has been broken up into a grid with cells 3m by 3m in size. This approach is considered to provide adequate resolution to define topographical features within the catchment. Private infrastructure, such as retaining walls, structures and buildings, is not individually modelled as it is not protected and can be subject to change in the event of property redevelopment. Consideration has been given to the impacts of structures, such as buildings, and features, such as landscaping and fences, on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated using aerial photography, taking consideration of land use and type and density of development for individual sub catchment areas. The contours of the property itself and associated upstream areas influence the shape of SBO in a combined manner. Shallow overflow from the easement drain pits along the rear of the property contribute to the flood shape and runoff will remain in those areas for a certain depth, duration and velocity. The overall topography of the property and surrounding area has been verified with a site visit. The 225 mm easement drain running along the northern boundary was also verified from the laneway to the rear.</p>	

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>The submission also references the development engineering controls and permit trigger points proposed as part of the amendment. The intent of the proposed overlays is not to prevent development but to ensure that it is undertaken in a manner which considers flood risk. Should the permit exemption requirements for properties with the SBO3 overlay not be met with respect to floor levels and obstruction of the overland flow path, the developer must demonstrate appropriate methods for considering the overland flow path through the site as part of a planning permit. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p> <p>Increasing heights for development will be considered on a site-by-site basis depending on local zoning and conditions. Developments are encouraged to provide onsite solutions for managing overland flow as part of the planning permit process.</p>	
492.	11 Owens Street, Doncaster East	Ruffey Creek	SBO3	7, 8, 11	<p>The submitter is correct in identifying that the area affected by the SBO3 at the rear of the property is minor. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Under certain conditions, development close to existing property boundaries or within easements may be permitted in some cases. In this case, the incursion is not considered to be</p>	<p>Yes. Remove the SBO3 incursion from the property.</p>

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					significant and application of the SBO in this case would not yield any significant planning or risk mitigation benefit. Thus, the exhibited flood shape is recommended to be amended accordingly.	
493.	Unit 2 /29A Turnstone Street, Doncaster East	Koonung Creek	SBO2	1, 6, 7, 8, 12	The submission refers to private drainage infrastructure installed as part of the development of the property and states that the units were built according to the requirements at the time. Although this is the case, there is a need to ensure future development is protected from flooding. The flood modelling which underpins the SBO provides new information not previously available to Council when approving development within the municipality. The private stormwater system constructed as part of the development is designed to minor storm event standards and is not expected to significantly impact the flood extent during major storm events. In addition they are subject to change and Council does not maintain and cannot guarantee effectiveness. The property is in a defined valley and can reasonably be expected to experience flooding in the manner indicated by the SBO. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No
494.	15 Totara Court, Templestowe Lower	Ruffey Creek	SBO3	1, 2, 3, 7, 8	The submission states that no flooding has been experienced at this location. It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					location. In addition, the flood shape represents collective runoff from uphill (to the east) which is channelled down the driveway and onto Totara Court. A site visit was undertaken which confirmed the topography of the area in addition to Council drainage infrastructure. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
495.	29 Council Street, Doncaster	Ruffey Creek	SBO2	2	The submission states that the property would not flood due to the relative elevation of the neighbouring property which is lower. A review has found that the flood shape forms within the property and flows west so the relative height compared to the neighbouring property is not a valid basis for amendment. A site visit has confirmed the topography and drainage infrastructure. The flood shape should remain as exhibited at this location	No
496.	19 Banool Quadrant, Doncaster East	Ruffey Creek	SBO3	2, 10, 14 Cost effective alternatives to providing solutions for managing or redirecting overland flow should be provided	The submission states that the modelled flow paths are unlikely to occur. Specifically in relation to the submission property, no flooding has been experienced by the submitter in the manner indicated by the SBO. It is possible the submitter has not experienced a 1 in 100 year ARI storm event of critical duration at this location. In addition, given the size of the catchment, the terrain in the model has been represented as a grid of cells 3 m x 3 m in size. This approach is considered to provide appropriate	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				as part of the planning application process.	<p>resolution to define the topographical features within each catchment. The submission refers to 1.0 m contour data not suggestive of water pooling. 0.5 m contour data suggests overflow of the easement drain along the rear of the property would occur in the manner indicated by the SBO. The submission also references the development engineering controls and permit trigger points proposed as part of the amendment and argues that many requirements are unreasonable. The intent of the proposed overlays is not to prevent development but ensure it is undertaken in a manner which considers flood risk. Should the permit exemption requirements for properties with the SBO3 overlay not be met with respect to floor levels and obstruction of the overland flow path, the developer must demonstrate appropriate methods for considering the overland flow path through the site as part of a planning permit. The fencing requirements only apply to fences along new alignments, fences along existing alignments may be replaced like-for-like. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p> <p>Developments are encouraged to provide onsite solutions for managing overland flow as part of the planning permit process.</p>	
497.	19 Clancys Lane, Doncaster	Ruffey Creek	SBO3	2, 5, 8	The submission argues that the property is sloping and flooding is not an issue.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					The flood shape represents shallow runoff through the property from the west and onto the street. This type of flooding is still considered a risk, and a desktop review has found that the flood shape is consistent with the topographical contours in the area and the Council drainage assets and should be retained.	
498.	3 Kelly Street, Doncaster	Ruffey Creek	SBO3	2	Refer to Attachment 7 for the Further Technical Review of this submission.	Yes. Remove SBO3 from 1, 3, 5 Kelly Street. Refer to map at Attachment 10.
499.	Applewood Residents' Assoc, No. 5 Grand Boulevard, Doncaster	Koonung Creek	SBO2	7, 12,	Refer to Attachment 7 for the Further Technical Review of this submission.	Yes. Delete the SBO2 flood extent at south-eastern corner of site. Convert the SBO2 flood extents to SBO 3 for flood shapes connecting to the north-south main flowpath at the eastern side of the side. See Submission 124 for details of treatment of

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
						isolated flood shape located at 15 and 17 Grand Boulevarde and 10 and 12 Eagleview Walk. Refer to map at Attachment 10.
500.	17 Alexander Road, Warrandyte	Mullum Mullum Creek	SBO2	2	The submission property contains an incursion of the flood shape into the rear of the property. Although the incursion represents a small percentage of the property area, it does not meet the criteria for trimming as it is too significant and subdivision of the property may occur in the future. A review has found the flood shape to be consistent with the topography and drainage assets in this area and is therefore recommended to be retained.	No
501.	19 Tandarook Crescent, Donvale	Mullum Mullum Creek	SBO2	2	The submission acknowledges flooding occurs through the property but questions the extent of the flood shape and the LiDAR data used in the modelling. The photographic evidence provided supports the application of the SBO at this location with significant amounts of runoff shown. In addition, it is possible the submitter has not experienced a 1 in 100 year ARI storm of critical duration at this location. The flood study has used LiDAR data collected as part of the 2008-9 Greater Melbourne Urban LiDAR Project and obtained from DELWP.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					When collecting the data, DELWP employed numerous methods for ensuring accuracy. This data represents the most complete and up-to-date data available for this kind of flood mapping and the use of this data represents industry practice. Having regard to the position of the property relative to the catchment and to evidence supplied by the submitter, the property can reasonably be expected to experience runoff in the manner indicated by the SBO. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
502.	27 Heads Road, Donvale	Mullum Mullum Creek	SBO2	14 Concerned about implications of amendment. No further details provided.	The property receives runoff from the west and contains two intersecting gullies. The flood shape is consistent with the topography and the existing Council infrastructure present on the property. It is recommended that the flood overlay be retained on this property.	No
503.	1 Lansell Drive, Doncaster	Ruffey Creek	SBO3	1, 2	The submission states that the property is not near a river or creek and no flooding has been experienced since 1968. The flood shape at this location represents runoff from the south being concentrated and channelled onto the roadway and joining with the main flood shape on Lansell Drive, with the roadway conveying the runoff to the west which is why the	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					houses on the lower side of the street are not affected. It is possible this property has not experienced a 1 in 100 year ARI storm event of critical duration at this location. This flood shape is consistent with the flow characteristics at this location. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
504.	21 Ada Street, Doncaster	Koonung Creek	SBO3	11, 14 Query if including a plinth on the fence will divert any water and therefore allow for overlay to be removed.	The submission argues that a small area is affected by the SBO. The incursion is too significant to meet the minor incursion criteria for trimming. The flood shape is consistent with the Council drainage assets in the easement to the rear and the fall of the land to the north east and is recommended to be retained. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location. The submission also queries if including a plinth on the fence will divert any water and therefore allow for overlay to be removed. There is no certainty that development on a site or on adjoining sites such as a plinth on a fence will remain and continue to block the flow path of water. If these structures are removed, then properties on the site or further down the flow path may be affected by overland flows.	No
505.	23-31 Tills Drive, Warrandyte	Andersons Creek	LSIO	2, 12	See Cardno report pages 62 - 64 for details. Further flood shape amendments were also	Yes.

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>identified in the vicinity of this property based on discussions with Melbourne Water. Applicable considerations include flow depths, the minor nature of several incursions and the ability of the proposed flood shapes to assist with the management of flood risk. The proposed changes include the removal of the proposed LSIO flood shapes from 50-60 Tills Drive (Black Flat), the southern LSIO from 36-48 Tills Drive and the small incursion into 22-34 Tills Drive. The minor LSIO incursion across the southern boundary of 22-34 Tills Drive is also proposed to be deleted. It is proposed to modify the proposed LSIO flood extents at 8-20 Tills Drive to SBO1.</p>	<p>It is proposed to retain the flood shape at 23-31 Tills Drive but convert the LSIO to SBO3, based on a review of the subject flows. The proposed changes include the removal of the proposed LSIO flood shapes from 50-60 Tills Drive (Black Flat), the southern LSIO from 36-48 Tills Drive and the small incursion into 22-34 Tills Drive. The minor LSIO incursion across the southern boundary of 22-34 Tills Drive is also proposed to be deleted. It is proposed to modify the</p>

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
						proposed LSIO flood extents at 8-20 Tills Drive to SBO1. Refer to map at Attachment 10.
506.	282 Yarra Street, Warrandyte	Andersons Creek	LSIO	2, 12	The front of this property is encumbered by the existing LSIO. The exhibited flood shape for this amendment does not appear to encroach on to the submission property.	No
507.	280 Yarra Street, Warrandyte	Andersons Creek	LSIO	2, 12	The front of this property is encumbered by the existing LSIO. The exhibited flood shape for this amendment does not appear to encroach on to the submission property.	No
508.	3 Glenwood Close, Donvale	Mullum Mullum Creek	SBO3	2	The submission expresses doubt that the SBO should be applied to the property. The SBO2 and SBO3 flood extents in general are associated with flash flooding from a 1 in 100 year ARI major rainfall event impacting local catchments. These events can cause damage to houses and property but due to the relatively small catchment sizes involved, these events are typically characterised by much shorter duration flows. A site visit confirmed the overlay along the alignment of a small gully which concentrates runoff from adjacent properties onto the street. In addition, the submitter recalls storm events which damaged properties in the street and resulted only in surface water runoff. It is possible that the described storm is not representative of a	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					1 in 100 year ARI storm event. The SBO extent was modelled on a 1 in 100 year ARI or 1% AEP rainfall event in accordance with industry practices. Although the affected area of the property is minor, it represents more than half the width of the flood shape at this location and removal would compromise the integrity of the flood shape in this area. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
509.	361-363 Ringwood-Warrandyte Road, Warrandyte	Andersons Creek	SBO1	2	The flow path generally follows the drainage line for the tributary of the Yarra River. No changes recommended to the exhibited flood shape.	No
510.	25 Park Road, Donvale	Mullum Mullum Creek	SBO2, SBO3	2	The submission states that the existing 900mm drain on the site was not included in the modelling and that the flood shape needs to be reviewed. A desk top review has found that the 900mm drain which discharges under EastLink was not included in the flood model. Due to storage effects present at the site and complexities in the flow of water through the property, further modelling is required to determine the impact of this upgrade on the flood shape. This modelling is expected to be undertaken prior to the Panel Hearing.	No
511.	6 Birbank Court, Doncaster	Ruffey Creek	SBO3	1, 2, 4, 7, 8, 10	The submitter states that she has lived at 6 Birbank Court for 12 years and has never experienced any flooding while living at this property. A review of available pluviograph data for rainfall gauges located at the Eastern Golf Course site and	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>Zerbes Reserve indicates that over the last 12 years, there is no evidence of this area having been impacted by a 1% AEP storm event in that period. The submitter's observations are consistent with this assessment. As such, the grounds of the submission are not considered to warrant review of the proposed SBO3 overlay. It is recommended that the overlay be retained to protect habitable floor areas in any future development. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
512.	76 St Clems Road, Doncaster East	Koonung Creek	SBO2	1, 2, 3, 7, 8	<p>The submitter states that 76 St Clems Road flooded at the rear approximately 20 years ago in a high intensity storm, but not to the extent mapped as part of SBO2.</p> <p>Local rain gauge records indicate that the property would have experienced a 1 in 40 ARI storm event (approx.) in 1999. As the flood mapping is based on a critical duration 1 in 100 year ARI storm event, the reported inundation is considered to be consistent with the mapped flood extent as part of SBO2. Upgrades on St Clems Road (450 mm drains) and through the property at No. 66 (525 mm drains) undertaken in 1995, would have little impact on the overland flows along the valley at the rear of 76 St Clems Road. The SBO 3 only covers a relatively small area at the rear of the property emanating from the floodway at the rear of the property in St Clems Reserve. The flood</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>overlay is consistent with the expected property flooding in major storm event and should be retained. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
513.	35 Rowan Street, Doncaster East	Ruffey Creek	SBO3	1, 4, 7, 8	<p>While the property is located near the top of Rowan Street Doncaster East, it is also located in a valley of a medium sized sub- catchment where overland flows from Owens Street, Gaudion Road, Craiglea Court and Woodlea Street contribute flows a major storm event. The low point in Owens Street upstream of the submitter’s property is located at number 62, with overland flows in a major storm event directed through 62 Owens Street, then through the front of 35 Rowan Street. The topography at this location is consistent with the Lidar data and with the modelled flood extent. The submitter claims to have lived at the property for 50 years and that the property has never experienced flooding. It is difficult to establish if this sub-catchment has been impacted by a 1% AEP event in the last 50 years. From rain gauge data at Zerbes Reserve dating back to 1984, the most intense event recorded would have been comparable to an estimated 40 year ARI event. The drainage system designed and constructed circa 1960, has capacity to convey runoff from a 1 in 5 year ARI rain storm event. There is opportunity to consider this location for inclusion</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					in a future drainage upgrade works program. The flood shape is consistent with the expected flow of water from the catchment area upstream of the property in the 1% AEP event. It is recommended that the proposed SBO3 overlay remain unchanged. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	
514.	13 Marianne Way, Doncaster	Koonung Creek	SBO3	1, 2	<p>This submission has objected to the proposed overlay on the basis that there is an error in the elevation of the terrain model of + or - 100 mm and if SBO 3 has maximum depth of 100 mm could make the depth 0.0 mm at their property and the overlay should not exist within this property, however, if the error was + 100 mm the depth of flow would be 200 mm making it SBO 2. The variation in the terrain model is used to explain level variations to the AHD, however, the flood overlay is measured in depth and velocity of flow relative to the terrain model. The depth would be the same regardless of the elevation of the model, since the difference would be uniform at all points in the terrain model, this indicates that the depths indicated in the overlay are still valid.</p> <p>The submitter also states that this property is located in a steep section of Marianne Way and does not understand how it could flood.</p> <p>The existing drainage system in Marianne Way is only capable of carrying the 1 in 5 ARI event storm</p>	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>water flow, the road is located in a steep valley and the road way conveys the additional runoff created by the 1 in 100 ARI storm event. In this event the whole road reserve is taken up by the overland storm water flows. At the intersection flows from Ernst Street the flow joins the overland flow in Marianne Way increases in depth and runs over the corner of 13 Marianne Way.</p> <p>The flood overlay is consistent with the expected hydraulic function and flows on this property in major storm event and should be retained. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
515.	26 Baradine Cres Donvale	Mullum Mullum Creek	LSIO to be removed	14. Supports proposed removal of LSIO. No objection to amendment.	Submitter wanted to confirm that LSIO was still proposed to be removed under Amendment C109. No objection to amendment.	No
516.	11 Sowter Court Donvale	Mullum Mullum Creek	SBO2	1	The submission contains no specific objection to the flood shape however requests a review of the inclusion of the property in the proposed SBO2 overlay. The purpose of the proposed overlays is to ensure that future development is protected from flooding. In this case, the incursion is not considered to be significant and application of the SBO in this case would not yield any significant planning or risk mitigation benefit. Thus, the	Yes. Remove property from SBO2

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					exhibited flood shape is recommended to be amended accordingly.	
517.	50 Riverview Terrace Bulleen	Koonung Creek	SBO3	2	The submission states that the SBO3 should be removed on the basis that the submitter has resided in the dwelling since 1962 has not witnessed flooding of the property. A site inspection has been conducted as requested, which confirmed that storm water overland runoff would affect the rear of this property. This property may not have experienced a 1 % AEP event since 1962 and the absence of witnessed flooding in this time does not negate the flood mapping results. Owing to the elevation of the existing house, flood effects on the existing dwelling would have been minimal as the SBO3 flood extents affect the rear of the allotment and are generally less than 100 mm in depth. Based on the site observations and officer analysis of the submission, it is recommended that the proposed SBO3 flood overlay on this property remains in place as exhibited.	No
518.	7 Aminga Avenue, Doncaster	Mullum Mullum Creek	SBO3	14 Submission withdrawn.	Submission withdrawn.	No
519.	25 Baradine Terrace, Donvale	Mullum Mullum Creek	LSIO to be removed	14 Support proposed removal of LSIO. No	Submission wanted to confirm that LSIO was still proposed to be removed under Amendment C109. No objection to amendment.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				objection to amendment.		
520.	103 James Street Templestowe	Ruffey Creek	SBO2	2	The submission states that the modelling which underpins the proposed overlays is inaccurate due to the modelling assumptions relating to terrain, in addition to changes in the land surface due to road construction being inadequately considered. No site-specific observations have been provided so a desktop assessment was considered adequate to review the flood shape at this location. The terrain had been modelled based on LiDAR data dated 2008-9 and this represents the most complete and up-to-date data available for flood mapping and the use of this data is consistent with industry practice. In addition, the flood source at this location is from the north west and is not influenced by the roadway. A desktop review has found the flood shape is consistent with the terrain data and capacity of the easement drain to the north of the property, which was designed and constructed to a 1 in 5 year ARI rainfall event standard. The flood shape is modelled on a 1 in 100 year ARI rainfall event in accordance with industry standards. It is recommended to retain the flood shape at this location as exhibited.	No
521.	36 Henry Street, Doncaster	Mullum Mullum Creek	SBO2	7, 14 Concerned about impact of Amendment	The submission contests the flood mapping primarily based on concerns regarding potential impacts on insurance and land value. It is recommended to retain the flood shape at this location as exhibited.	No

SUMMARY OF SUBMISSIONS

AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY AND SPECIAL BUILDING OVERLAY

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				on growth in Manningham	The amendment will not prohibit redevelopment in Manningham. Rather, it seeks to have in place controls regarding siting and design.	
522.	20-23 Airdrie Court, Doncaster	Ruffey Creek	SBO2	2	The flood overlay shown on this land has been estimated using LIDAR data dated 2009. The submission states that the land has been filled in 2012 and a preliminary assessment of the site by Stormy Water Solutions states that flooding is now unlikely at this site. The site inspection confirms that there has been filling placed on this land and the flood shape is likely to be impacted but the extent of these impacts on 20-23 Airdrie and the abutting site located at 26-44 Herlihys Road is unclear. Field survey and modelling would be required to assess the impacts on the flood extent which is beyond the scope of the current Amendment. It is recommended that the impacts of the filling be reviewed when the flood mapping is reviewed in future years, based on updated LIDAR data. It is recommended that the flood shape be retained as exhibited.	No
523.	3 Bernarro Court, Donvale	Mullum Mullum Creek	SBO2	2	Refer to Panel	No

ATTACHMENT 10

RECOMMENDED CHANGES TO EXHIBITED OVERLAYS IN AMENDMENT C109

- 104 changes affecting 154 properties (a minor text change to control is also recommended) – 20% of submissions
- 1 change to text within the controls

RECOMMENDED CHANGES IN RESPONSE TO SUBMISSIONS			
SUB.NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
1	10 Louisa Place, Templestowe	SBO2	Change SBO2 to SBO3 also remove SBO2 from southern western boundary. Refer to map below.
19	32 Fairbank Crescent, Lower Templestowe	SBO3	Remove SBO3
20	3 Daws Road, Doncaster East	SBO3	Remove area of isolated SBO3 ponding
34	11 Gairlock Court, Doncaster	SBO3	Remove SBO3. Refer to map below.
35	66 Knees Road, Park Orchards	SBO2	Remove SBO2
37	4 Birchgrove Crescent, Templestowe	SBO1	Change from SBO1 to SBO3
46, 235, 456	112-126 Old Warrantyte Road, Donvale 35 Illawong Drive, Donvale 122-124 Old Warrantyte Road, Donvale	LSIO, SBO2	Amend the designation of the flood shape on the main tributary gully to LSIO resulting in the entire gully being under Melbourne Water control. Further, it is proposed to delete the flood shape from Stages 1 and 2 of the subdivision and 7 Yileen Court. It is recommended to delete the flood shape from Lot 1, 122-124 Old Warrantyte Road. Refer to map below.
53	3 Parkside Court, Warrantyte	SBO2	Remove SBO2 on common boundary between 2 and 3 Parkside Court. Refer to map below.
71	8 Chaim Court, Doncaster	LSIO	Change from LSIO to SBO3. Also make this change for 3 and 5 Chaim Court, 59 Beckett Road. Refer to map below.
74	13/1 Daws Road, Doncaster East	SBO3	Remove area of isolated SBO3 ponding
81	43 Knees Road, Park Orchards	SBO3	Remove the SBO from the house footprint, however, retain the SBO in the gully running through the property. Refer to map below.

RECOMMENDED CHANGES IN RESPONSE TO SUBMISSIONS			
SUB.NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
83	6 Robyn Street, Doncaster	SBO2	Remove SBO2
96	6 Hillcroft Drive, Templestowe	SBO1	Change SBO1 to SBO3. Refer to map below.
97	34 Anthony Avenue, Doncaster	SBO3	Remove SBO3
98	6 Judith Court, Doncaster	SBO2	Remove SBO2
104	33 Balmoral Avenue, Lower Templestowe	SBO3	Remove SBO3
108	393/395 Park Road, Park Orchards	LSIO	Remove section of LSIO – refer to attached map
110	4 Hillcroft Drive, Templestowe	SBO1	Remove SBO1. Refer to map below.
113	10 Hillcroft Drive, Templestowe	SBO1	Change SBO1 to SBO3. Refer to map below.
114	60 Millicent Avenue, Bulleen	SBO2	Remove SBO2
115	286 Church Road, Templestowe	SBO2	Remove SBO2
118	13-19 Tram Road, Doncaster	SBO2	Amend SBO2 – refer to Attachment 7
122	30 South Valley Road, Park Orchards	SBO2	Change SBO2 to SBO3
124, 483 & 499	Applewood Retirement Village, 5 Grand Boulevard Doncaster	SBO	Remove SBO2 overlay from 15 and 17 Grand Boulevard and from 10 and 12 Eagleview Walk. Remove SBO2 flood extent at south-eastern corner of site. Convert the SBO2 flood extents to SBO3 for flood shapes connecting to the north-south main flowpath at the eastern side of the site. Refer to map below.
126	12 Hillcroft Drive, Templestowe	SBO1	Change SBO1 to SBO3. Refer to map below.
134	14-16 Elgin Crescent, Park Orchards	SBO3	Reduce extent of SBO3. Refer to map below.
136	6 Anton Court, Doncaster	SBO2	Remove SBO2
137	5 Cerberus Street, Donvale	SBO2	Remove SBO2
145	5 Mossy Creek Slope, Warrandyte	LSIO	Change LSIO to SBO3. Refer to map below.
152	7 Montclair Court, Templestowe	LSIO	Change LSIO to SBO3 and also change for adjacent properties at 2, 3, 4, 5, 6, 8 Montclair Court, Templestowe. Refer to map below.

RECOMMENDED CHANGES IN RESPONSE TO SUBMISSIONS			
SUB.NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
159	10 Omar Street, Templestowe	SBO3	Remove SBO3
180	27 Lisbeth Avenue, Donvale	SBO2	Remove SBO2
182	10 Cypress Avenue, Templestowe	SBO3	Remove SBO3
188	476-480 Ringwood Warrandyte Road, Warrandyte	SBO2	Remove SBO2
192	291 George Street, Doncaster	SBO2	Remove SBO2
193	20 Phillip Avenue, Doncaster	SBO3	Remove SBO3
205	72 Olympus Drive, Templestowe	SBO3	Modify SBO3 in line with Attachment 7. Refer to map below.
210	41 Hazel Drive, Templestowe	SBO2	Remove SBO2
215	30 and 30A Anthony Avenue, Doncaster	SBO3	Remove SBO3
216	34 Dellfield Drive, Templestowe Lower	SBO3	Remove SBO3. Refer to map below.
223	3 Cliveden Court, Templestowe	SBO3	Remove SBO3
228	55 Caringal Avenue, Doncaster	SBO2	Remove SBO2
235	35 Illawong Drive, Donvale	LSIO, SBO2	SBO2 be modified along tributary gullies to SBO1
238	2/1 Harry Street, Doncaster	SBO2	Remove SBO2
240	6 Linton Avenue, Lower Templestowe	SBO3	Remove SBO3
242	84 Gold Memorial Road, Warrandyte	SBO2	Remove SBO2
252	16 Dellfield Drive, Lower Templestowe	SBO3	Remove SBO3
253	6 Montclair Court, Templestowe	LSIO	LSIO be modified to a SBO3. Refer to map below.
262	1 Forest Place, Templestowe	SBO3	Remove SBO3
266	14 Alison Avenue, Bulleen	SBO1	Remove SBO1
268	20 Stanley Drive, Doncaster	SBO3	Remove SBO3
273	70 Roseland Grove, Doncaster	SBO2	Change SBO2 to SBO3 Also make changes to 62 and 64 Roseland Grove. Refer to map below.
274	15 Brindy Crescent, Doncaster	SBO3	Remove SBO3

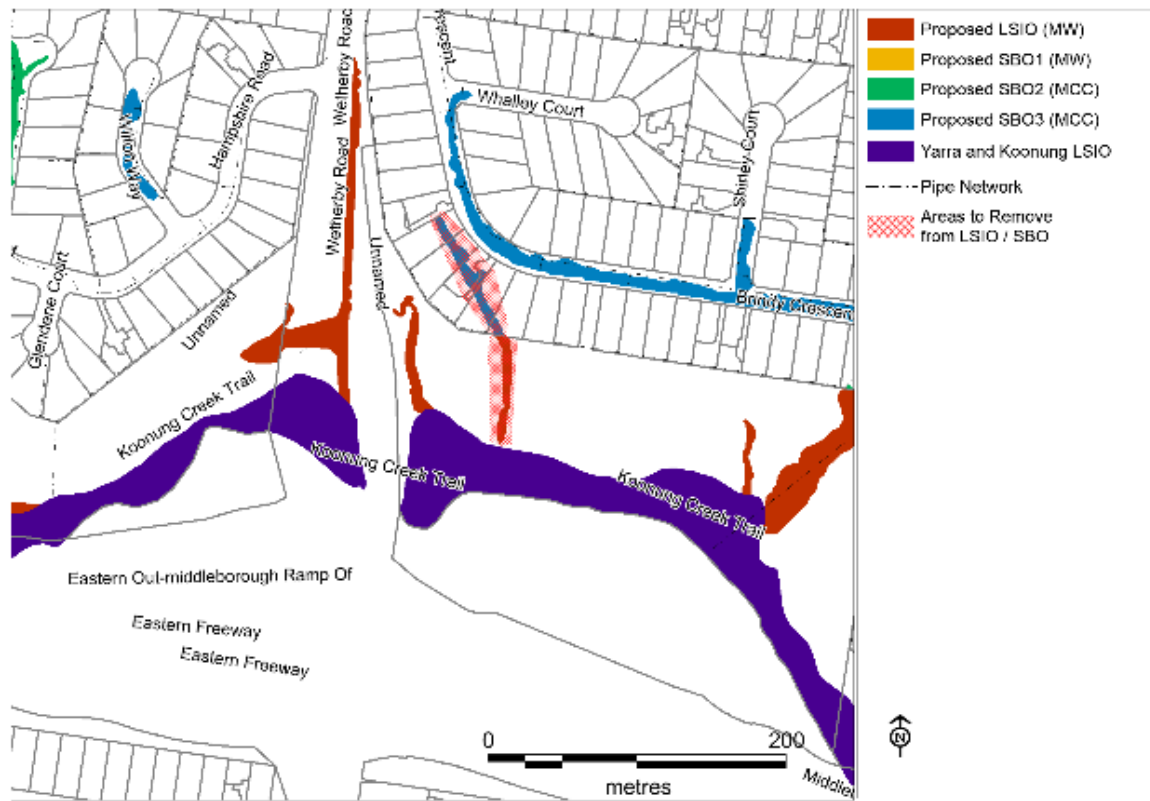
RECOMMENDED CHANGES IN RESPONSE TO SUBMISSIONS			
SUB.NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
283	27 Menarra Street, Doncaster	SBO3	Remove SBO3
284	5 Amberwood Court, Templestowe	SBO3	Retain SBO3, however, remove part of SBO3 higher up on site. Refer to map below.
315	23 Thiele Street, Doncaster	SBO3	Remove SBO3
320	6 Eric Avenue, Lower Templestowe	SBO3	Remove SBO3
323	7 Ambrose Street, Doncaster	SBO2 & SBO3	Remove SBO2, retain SBO3
329	129 Gosford Crescent, Park Orchards	SBO2	Change to SBO3 for the north-south flow path. Refer to map below.
330	92 Canopus Drive, Doncaster	SBO3	Remove SBO3. Refer to map below.
332	245 Thompsons Road, Lower Templestowe	SBO3	Remove the SBO3 flood shape on this property and neighbouring properties at 243 Thompsons Rd, and Nos. 16 and 18 Sylvia St to the rear. Refer to map below.
334	1/16 Coolabah Street, Doncaster	SBO2	Remove SBO2
337	7 Ashford Street, Lower Templestowe	SBO3	Remove SBO3
339	23-71 Alexander Road, Warrandyte	SBO1	Change small section of SBO1 to LSIO – refer to Attachment 7
340	26 Hillcroft Drive, Templestowe	SBO1	Change SBO1 to SBO3. Refer to map below.
345	24 Hillcroft Drive, Templestowe	SBO1	Change SBO1 to SBO3. Refer to map below.
351	50 Lawanna Drive, Templestowe	SBO2	Amend flood shape in north-east corner. Refer to map below.
356	17-25 Brindy Crescent Doncaster East	SBO3	Remove area of isolated SBO3 ponding and connecting section of LSIO from Koonung Reserve to the south. Refer to map below.
359	108 McGowans Road Donvale	SBO2	Change SBO2 to SBO3
361	14 Oak Crescent, Templestowe	SBO2 & SBO3	Remove SBO3, SBO2 shape to be trimmed along eastern boundary. Refer to map below.
364	86 Larnoo Drive, Doncaster East	SBO3	Remove SBO3
366	29 Lynwood Parade, Lower Templestowe	SBO1	Remove SBO1
378	8 Montclair Court, Templestowe	LSIO	Change LSIO to SBO3. Refer to map below.

RECOMMENDED CHANGES IN RESPONSE TO SUBMISSIONS			
SUB.NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
381	6 Raymond Elliot Court, Park Orchards	LSIO	Remove two minor LSIO extents which intrude into south-eastern boundary. Change LSIO at northern end of property to SBO2. Refer to map below.
382	3 Orchid Court, Park Orchards	SBO2	Remove SBO2
388	16 Hillcroft Drive, Templestowe	SBO1	Change SBO1 to SBO3. Refer to map below.
394	14 Hillcroft Drive, Templestowe	SBO1	Change SBO1 to SBO3. Refer to map below.
406	160 Bulleen Road, Bulleen	LSIO	Remove LSIO from eastern side of property
410	66 Beecroft Crescent, Templestowe	SBO2	Remove SBO2
412	49 Ashford Street, Templestowe	SBO3	Remove SBO3
420	4 Conway Avenue, Donvale	SBO3	Remove SBO3
421	50 Millicent Avenue, Bulleen	SBO2	Remove SBO2 and also from 52 and 54 Millicent Avenue
427	50-52 Ennismore Crescent Park, Park Orchards	SBO1	Change SBO1 to SBO3 for 50-52 Ennismore Crescent and remove SBO1 from eastern boundary but not from road frontage boundary for 54-56 Ennismore Crescent. Change SBO1 to SBO3 in the gully between the two properties (Dirlton Reserve). Refer to map below.
	The Pines	SBO2 & SBO3	Remove SBO from The Pines (181 Reynolds Road) to remove the flood extent from existing roof areas. Refer to map below.
	Mossdale Court, Templestowe	SBO1	Change SBO1 to SBO3 for 1 and 2/13, 1 and 2/14, 15, 15A, 16, 17 and 18 Mossdale Court and 28, 1 and 2/30, 32 and 32A Greenridge Avenue. Refer to map below.
	Gairlock Court & Brentvale Court, Doncaster	SBO3	Remove the SBO3 from properties 11 Gairlock Court, 2/10, 9 & 9A Brentvale Court. Refer to map below.
433	37A Ross Street, Doncaster East	SBO2	Remove SBO2
436	19 Winters Way, Doncaster	SBO3	Remove SBO3
439	5 Pioneer Drive, Templestowe	SBO2	Remove SBO2

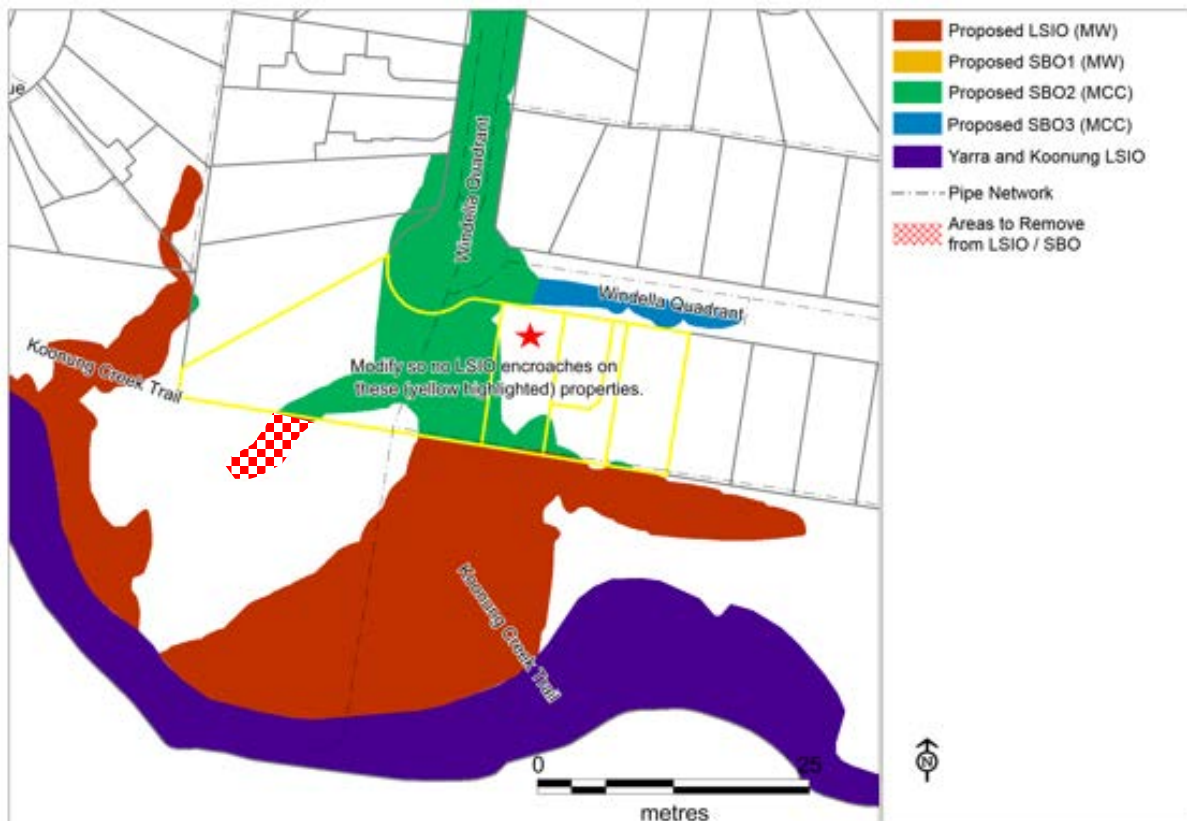
RECOMMENDED CHANGES IN RESPONSE TO SUBMISSIONS			
SUB.NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
448	17 Heads Road, Donvale	SBO3	Remove SBO3
452	26 Harris Gully Road and 10 West End Road and 4 First Avenue Warrandyte	LSIO (26 Harris Gully Road), SBO3 (10 West End Road), SBO2 (4 First Avenue)	Change the proposed LSIO to SBO3. This change will also affect properties located at 4 Mossy Creek Slope, 22 and 24 Harris Gully Road and 36-42 Drysdale Road Warrandyte. No change for 10 West End Road or 4 First Avenue. Refer to map below.
460	30 Hillcroft Drive, Templestowe	SBO1	Change SBO1 to SBO3. Refer to map below.
463	28 Victoria Street, Bulleen	SBO3	Remove SBO3
465	20 Ernst Street, Doncaster	SBO3	Remove SBO3
468	20 Peachwood Rise, Doncaster	SBO2	Remove SBO2
471	50 Windella Quadrant, Doncaster	LSIO & SBO2	Change LSIO to SBO2 at southern boundary of 50 Windella Quadrant and the rear of 52A Windella Quadrant. Remove LSIO at rear of 44 Windella Quadrant. Refer to map below.
479	19 Olympus Drive, Lower Templestowe	SBO3	Remove SBO3
480	211/187 Reynolds Road, Doncaster East	SBO3	Remove SBO3 from all apartments
482	5 Chaim Court, Donvale	LSIO	Change LSIO to SBO3 also apply changes to 3 Chaim Court and 59 Beckett Road. Refer to map below.
492	11 Owens Street, Doncaster	SBO3	Remove SBO3
498	3 Kelly Street, Doncaster	SBO3	Remove SBO3 from 1, 3 and 5 Kelly Street. Refer to map below.

RECOMMENDED CHANGES IN RESPONSE TO SUBMISSIONS			
SUB.NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
505	23-31 Tills Drive, Warrandyte	LSIO	Change LSIO to SBO3 for 23-31 Tills Drive The proposed changes include the removal of the proposed LSIO flood shapes from 50-60 Tills Drive (Black Flat), the southern LSIO from 36-48 Tills Drive and the small incursion into 22-34 Tills Drive. The minor LSIO incursion across the southern boundary of 22-34 Tills Drive is also proposed to be deleted. It is proposed to modify the proposed LSIO flood extents at 8-20 Tills Drive to SBO1. Refer to map below.
516	11 Sowter Court, Donvale	SBO2	Remove SBO2
OTHER CHANGES TO AMENDMENT RECOMMENDED IN RESPONSE TO SUBMISSIONS			
<p>In Schedule 3 to the Special Building Overlay, it is recommended to change the last dot point under Clause 1.0 Permit requirement as follows;</p> <ul style="list-style-type: none"> • <i>“New fencing with at least 25% openings or with a plinth at least 400mm above the natural surface level”.</i> 			

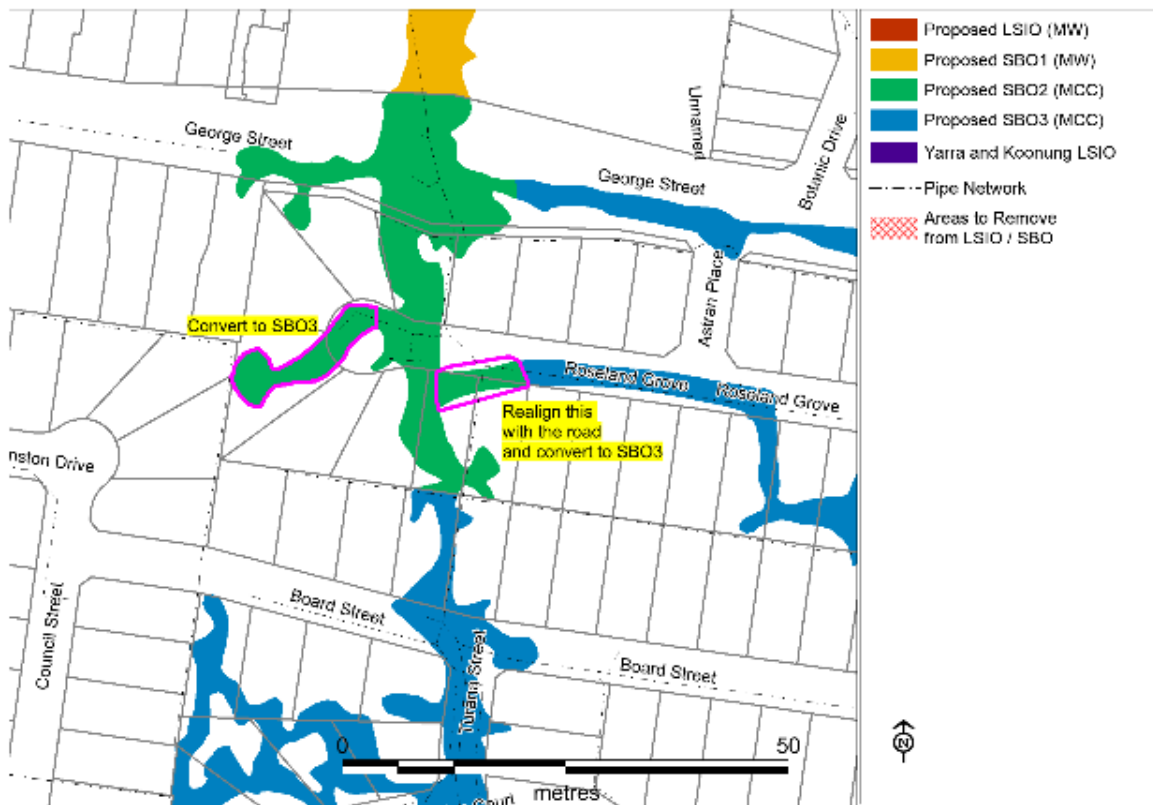
Submission 356 - 15, 17, 19, 1/21, 23 and 25 Brindy Crescent & 74 Wetherby Road, Doncaster East



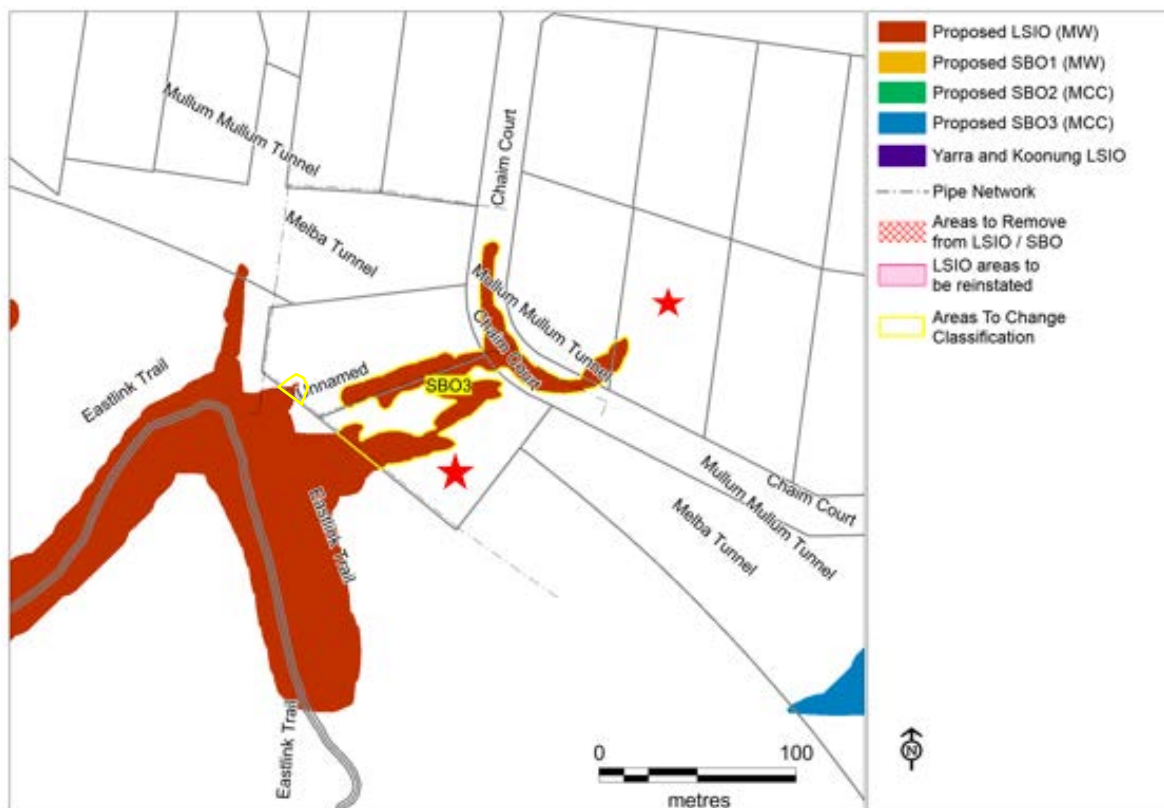
Submission 471 - 50 and 52A Windella Crescent & 1-11 Church Road, Doncaster



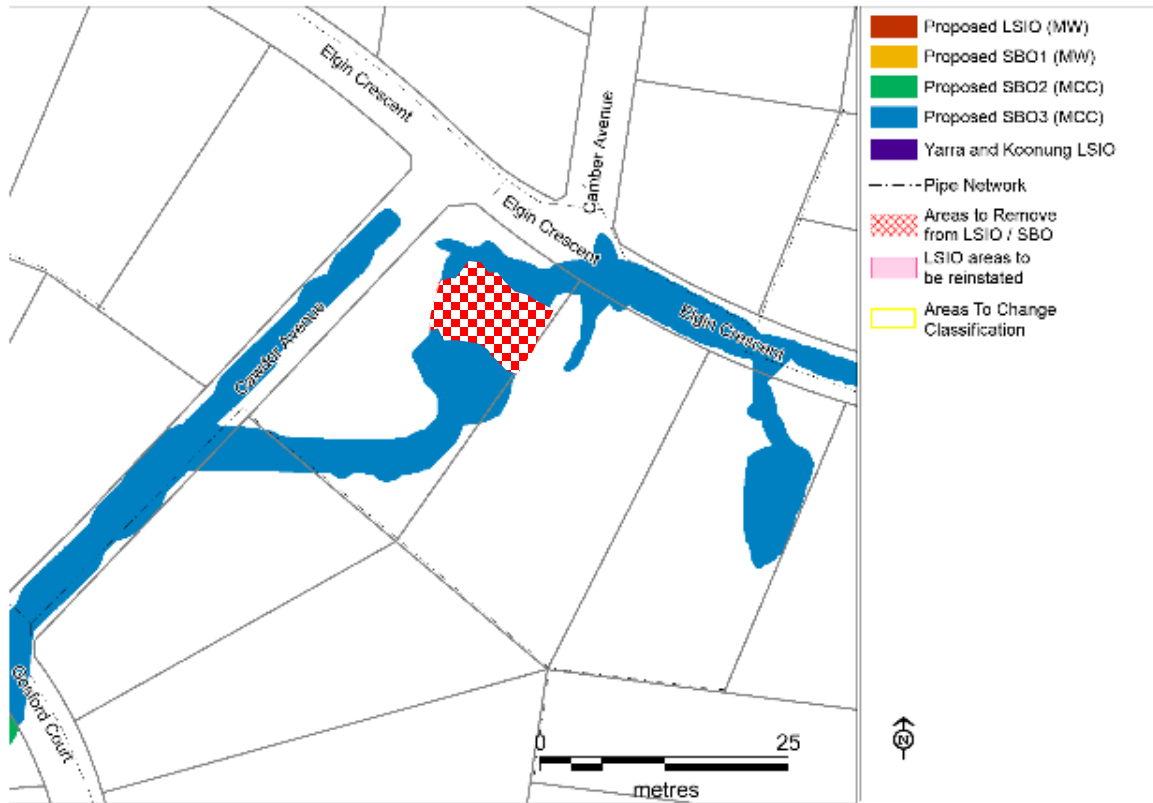
Submission 273 - 62, 64 and 70 Roseland Grove, Doncaster



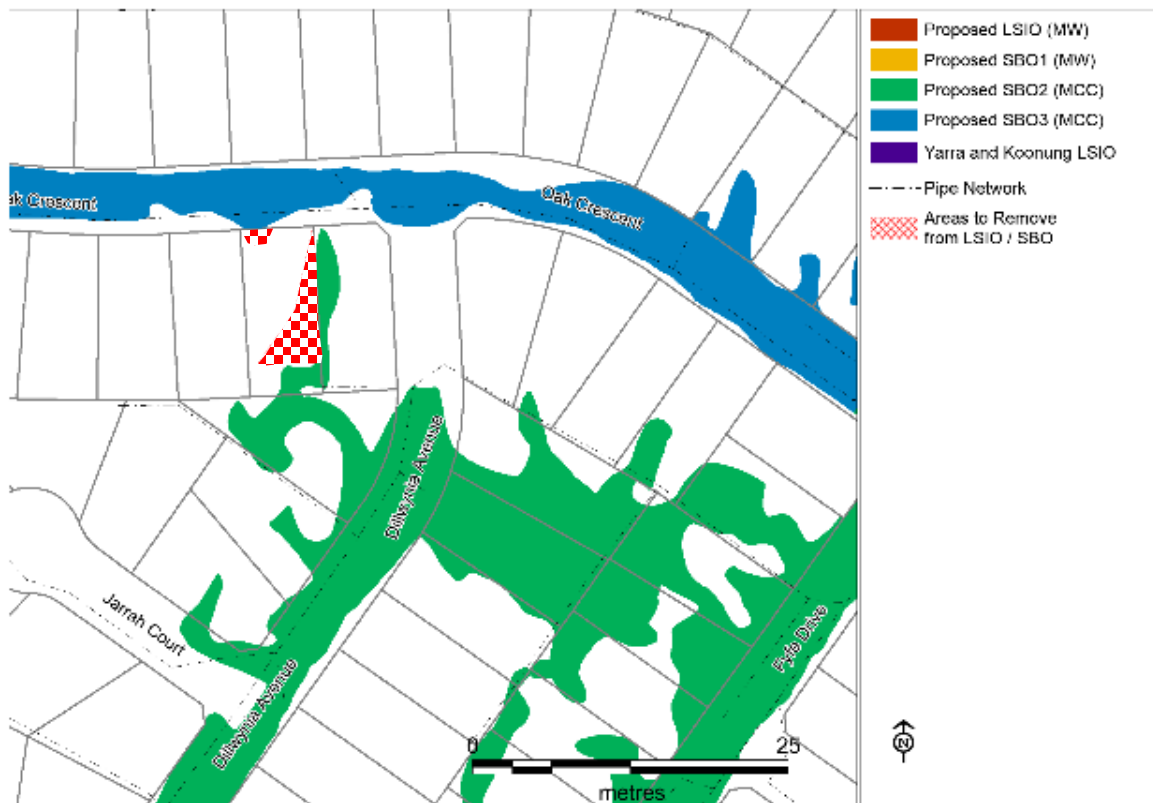
Submissions 71 and 482 - 3, 5, & 8 Chaim Court and 59 Beckett Road, Donvale



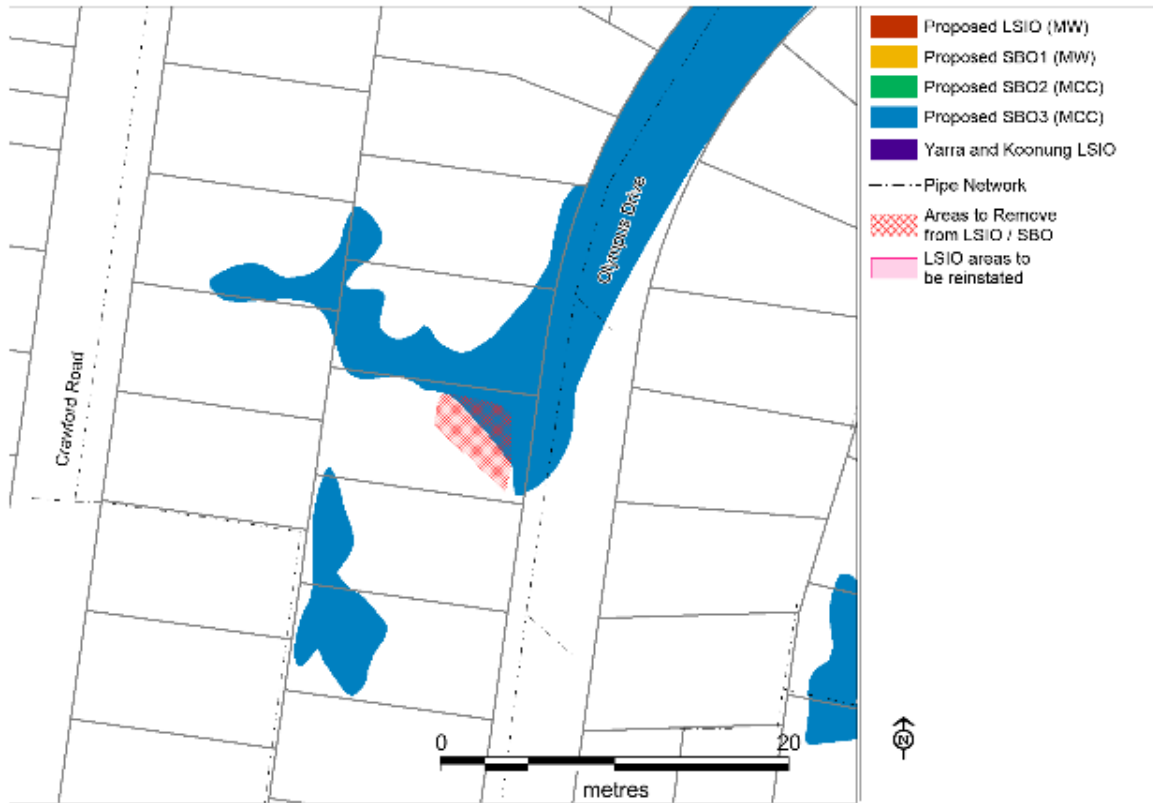
Submission 134 - 14 Elgin Crescent, Park Orchards



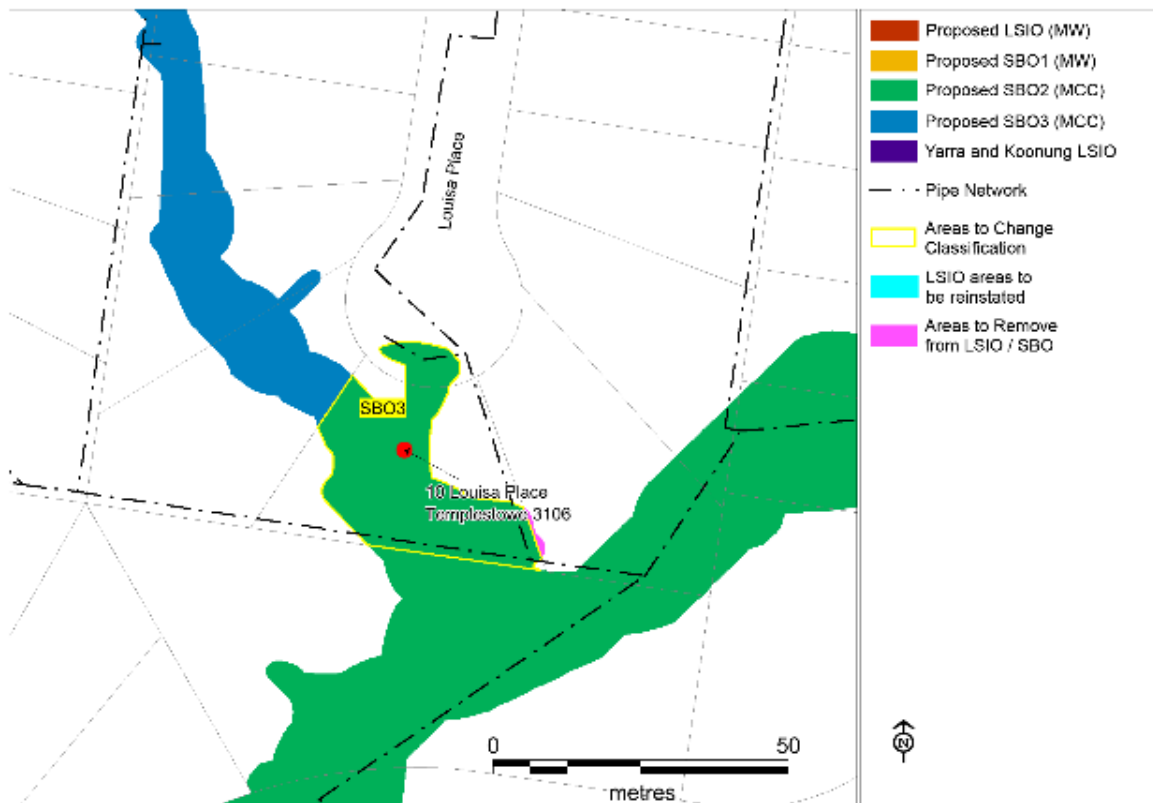
Submission 361 - 14 Oak Crescent, Templestowe Lower



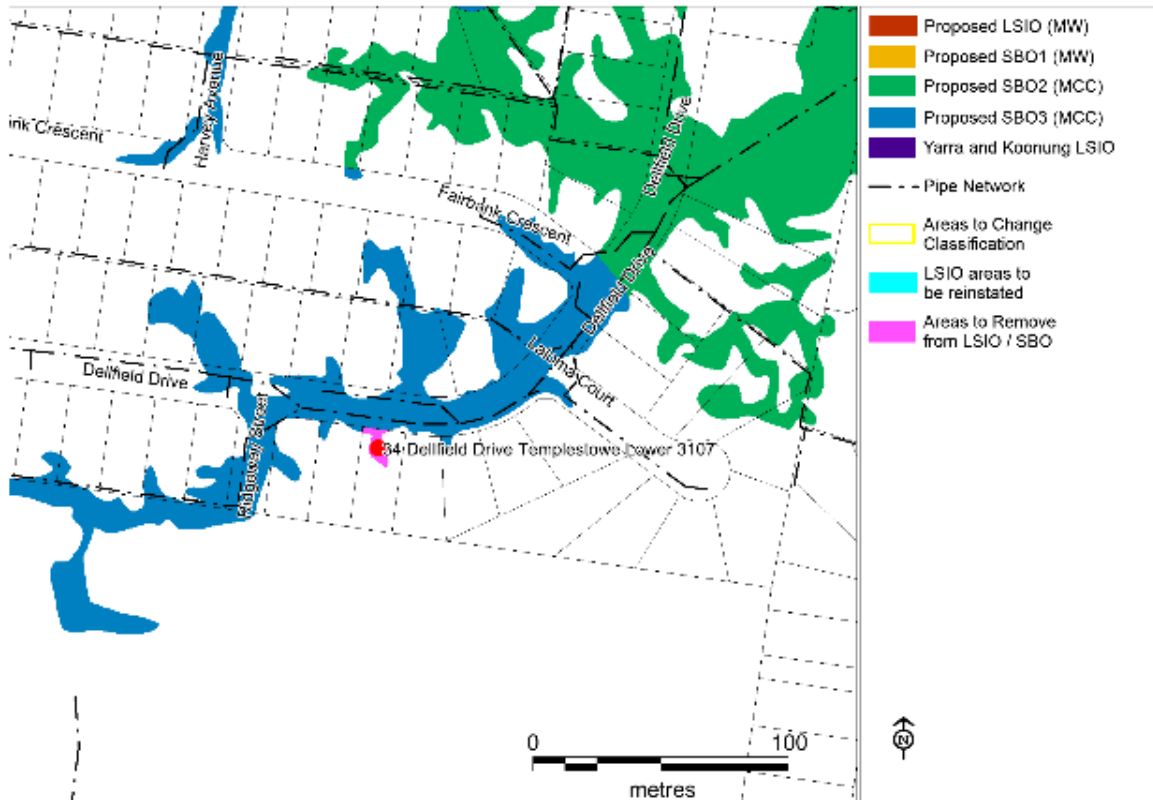
Submission 205 - 72 Olympus Drive, Templestowe Lower



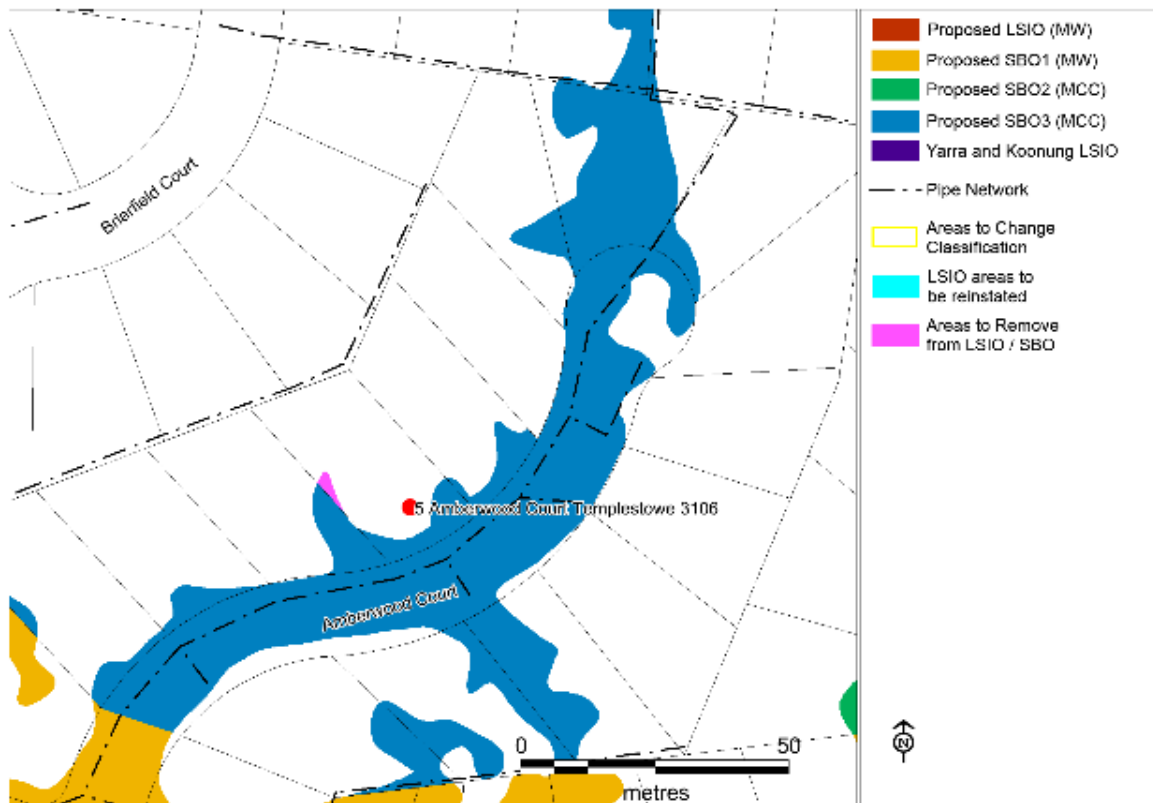
Submissions 1 - 10 Louisa Place, Templestowe



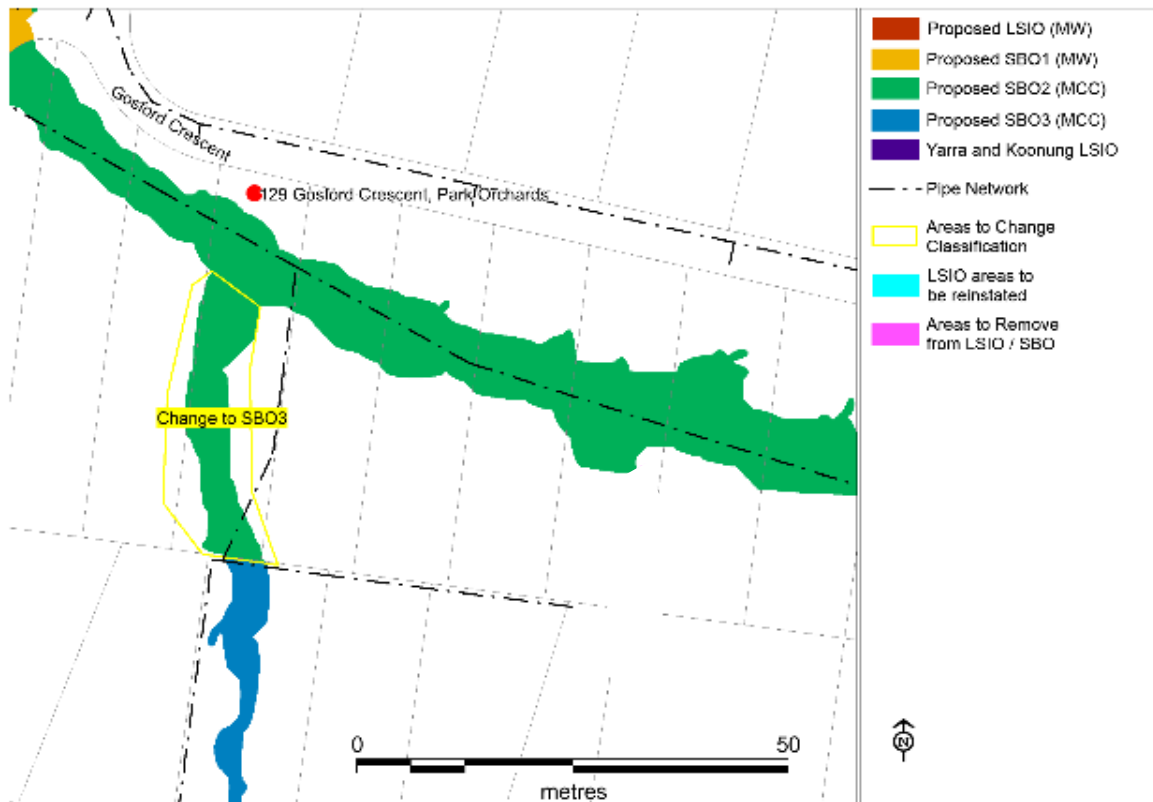
Submission 216 - 34 Dellfield Drive, Templestowe Lower



Submission 284 - 5 Amberwod Court, Templestowe



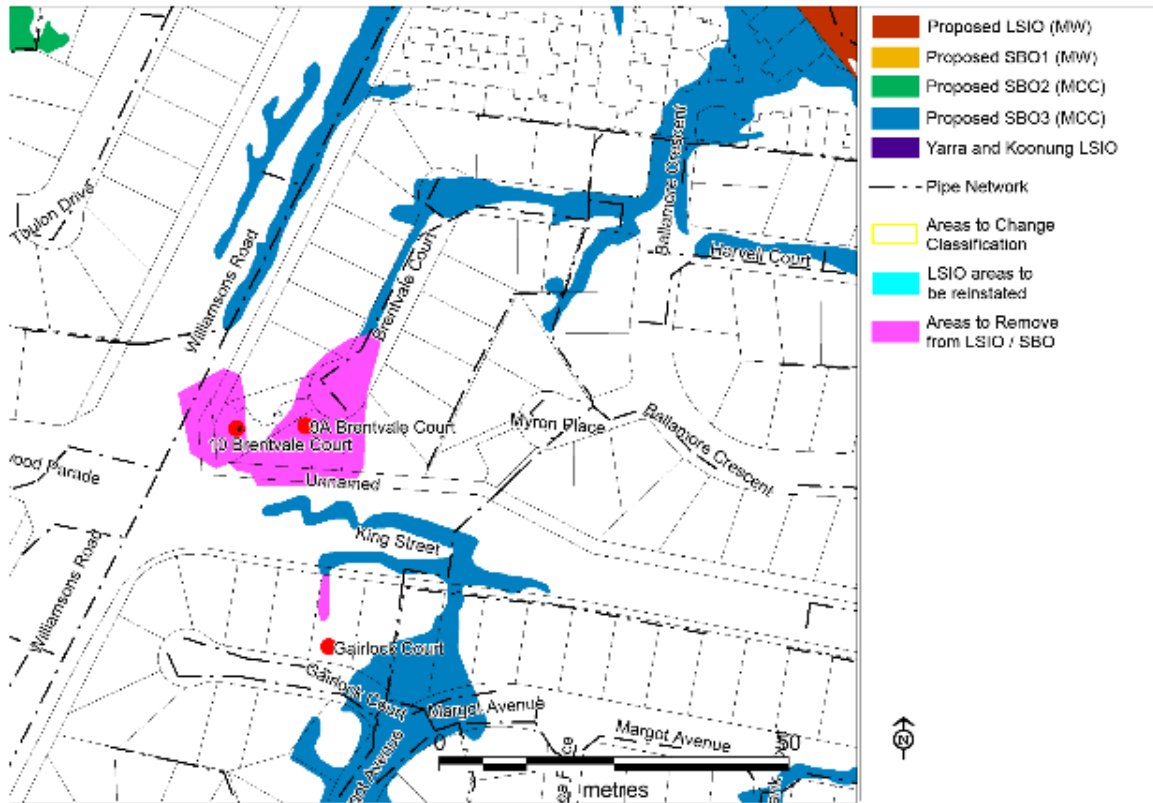
Submission 329 - 129 Gosford Crescent, Park Orchards



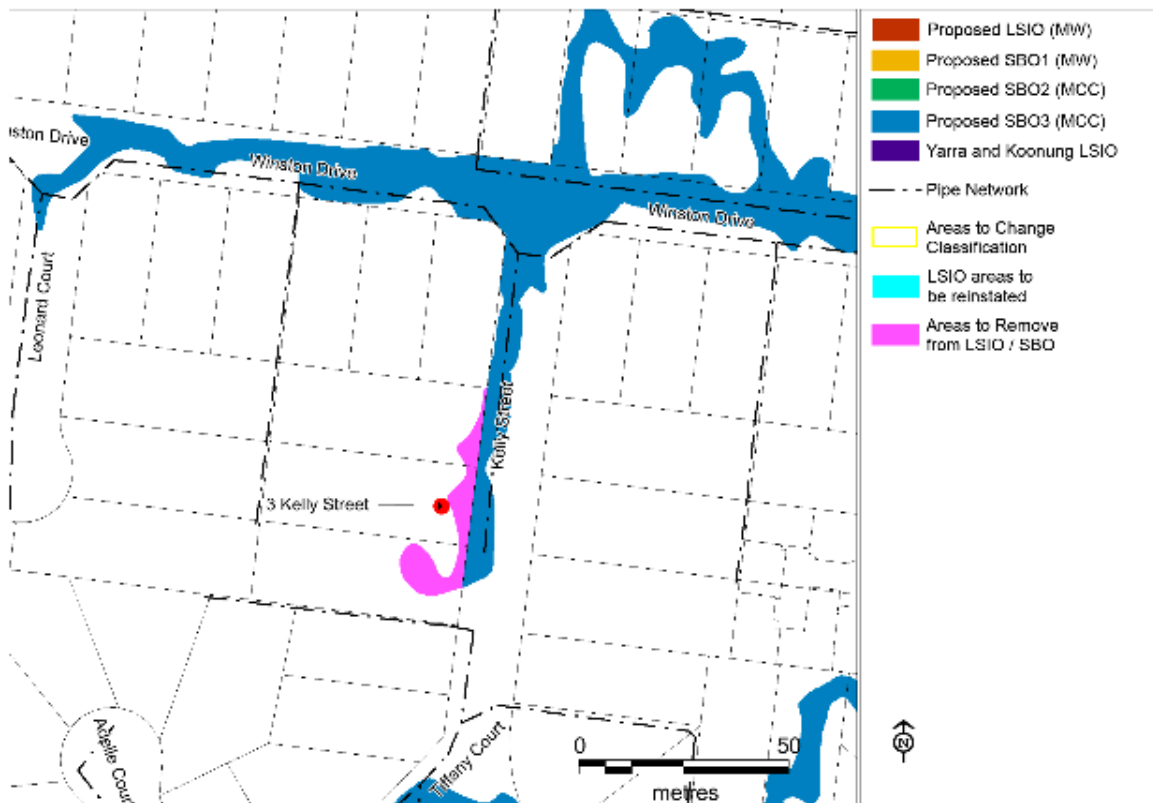
Submission 330 - 92 Canopus Drive, Doncaster East



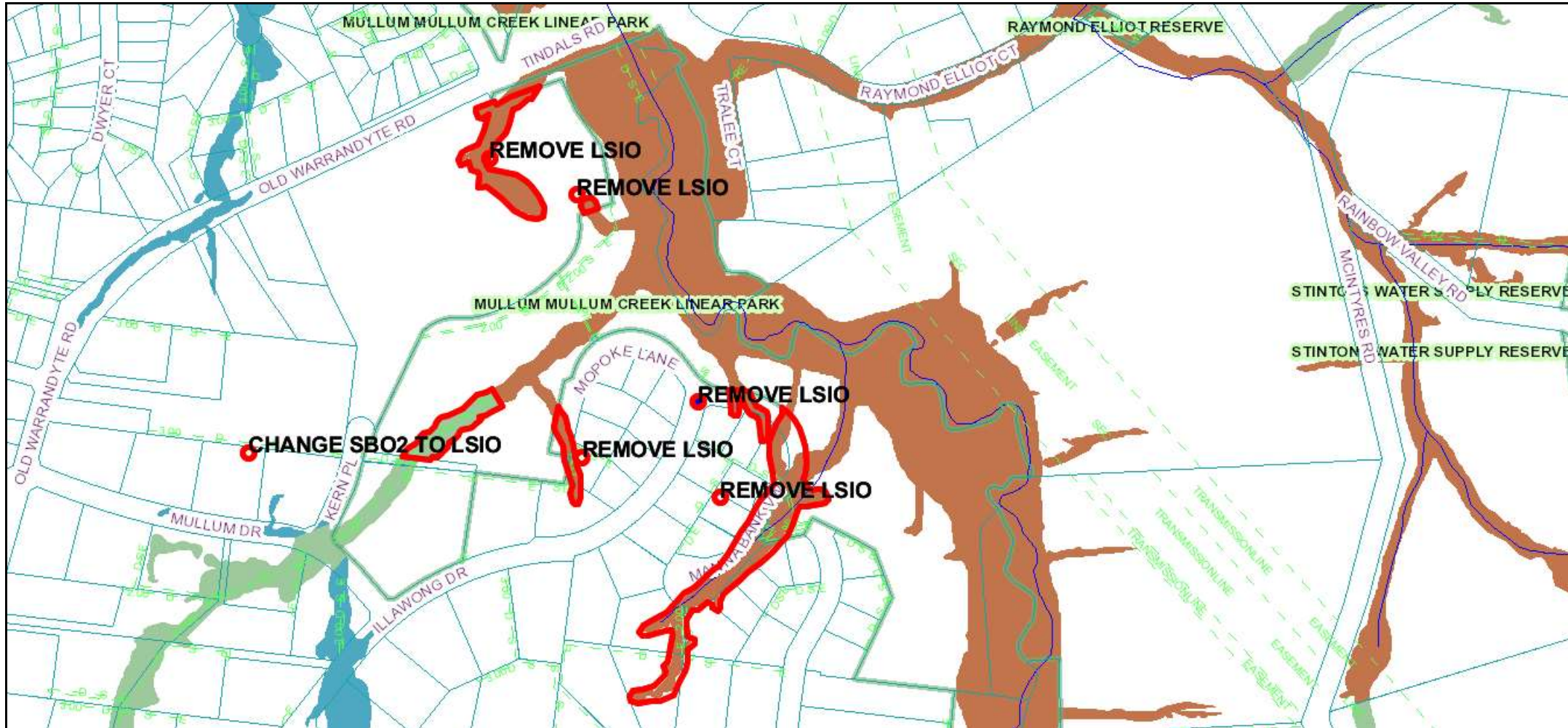
Submissions 34, 427 - 9, 9A, 2/10 Brentvale Court and 11 Gairlock Court, Doncaster



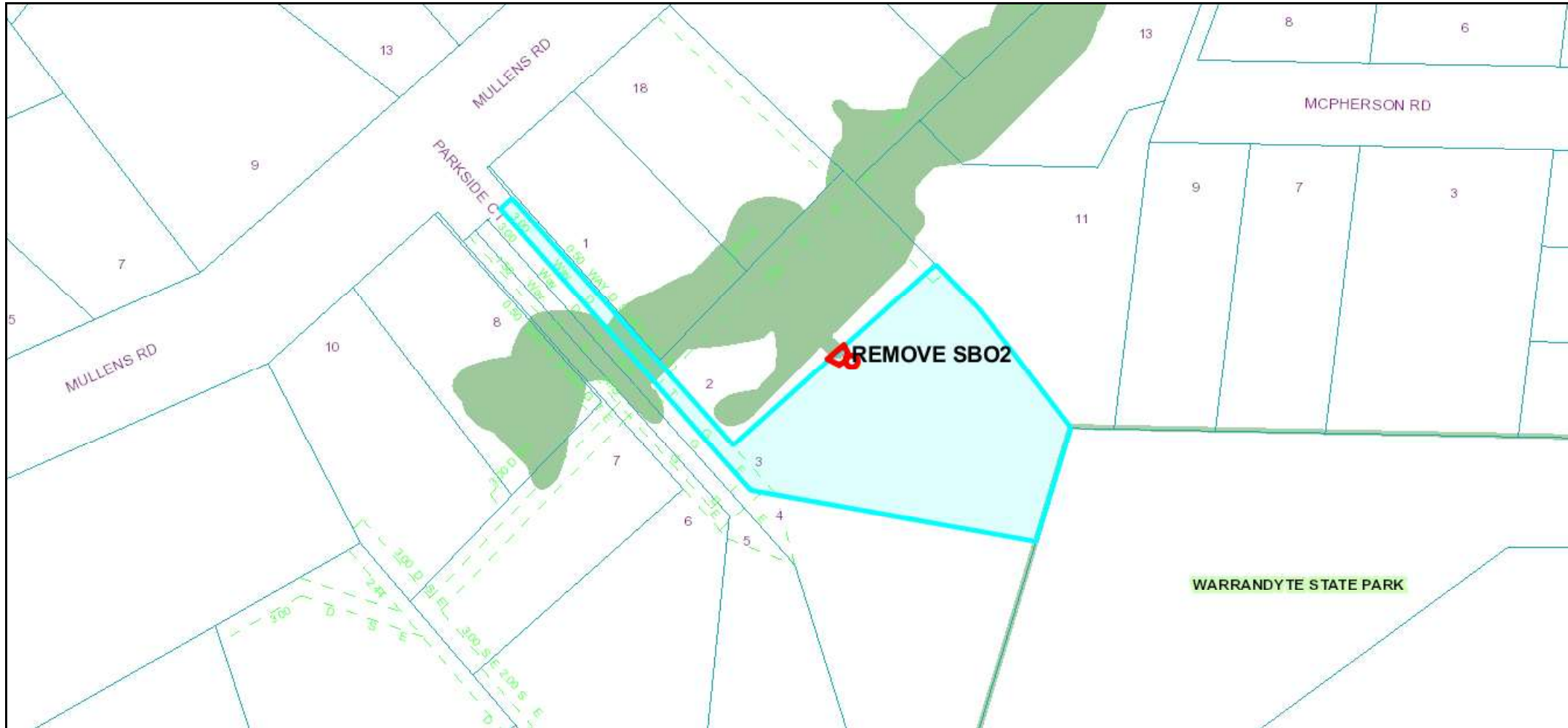
Submission 498 - 1, 3 and 5 Kelly Street, Doncaster



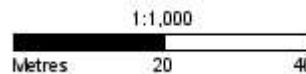
Submission 46, 46.1, 46.2, 235, 456 - 112 to 126 Old Warrandyte Road, 35 Illawong Drive, Park Orchards



Submission 53 - 3 Parkside Court Warrandyte

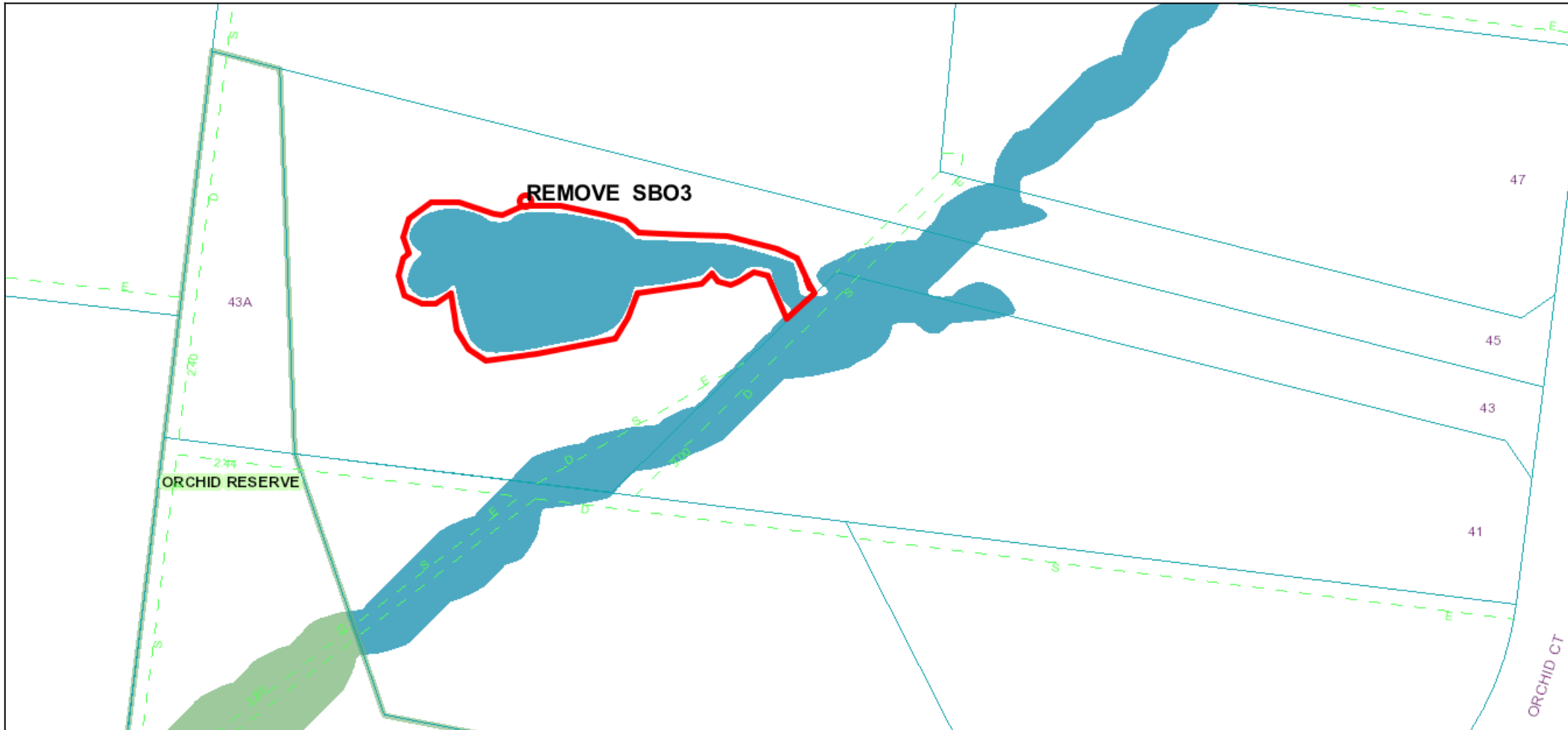


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Submission 81 - 43 Knees Road Park Orchards - removal of SBO3

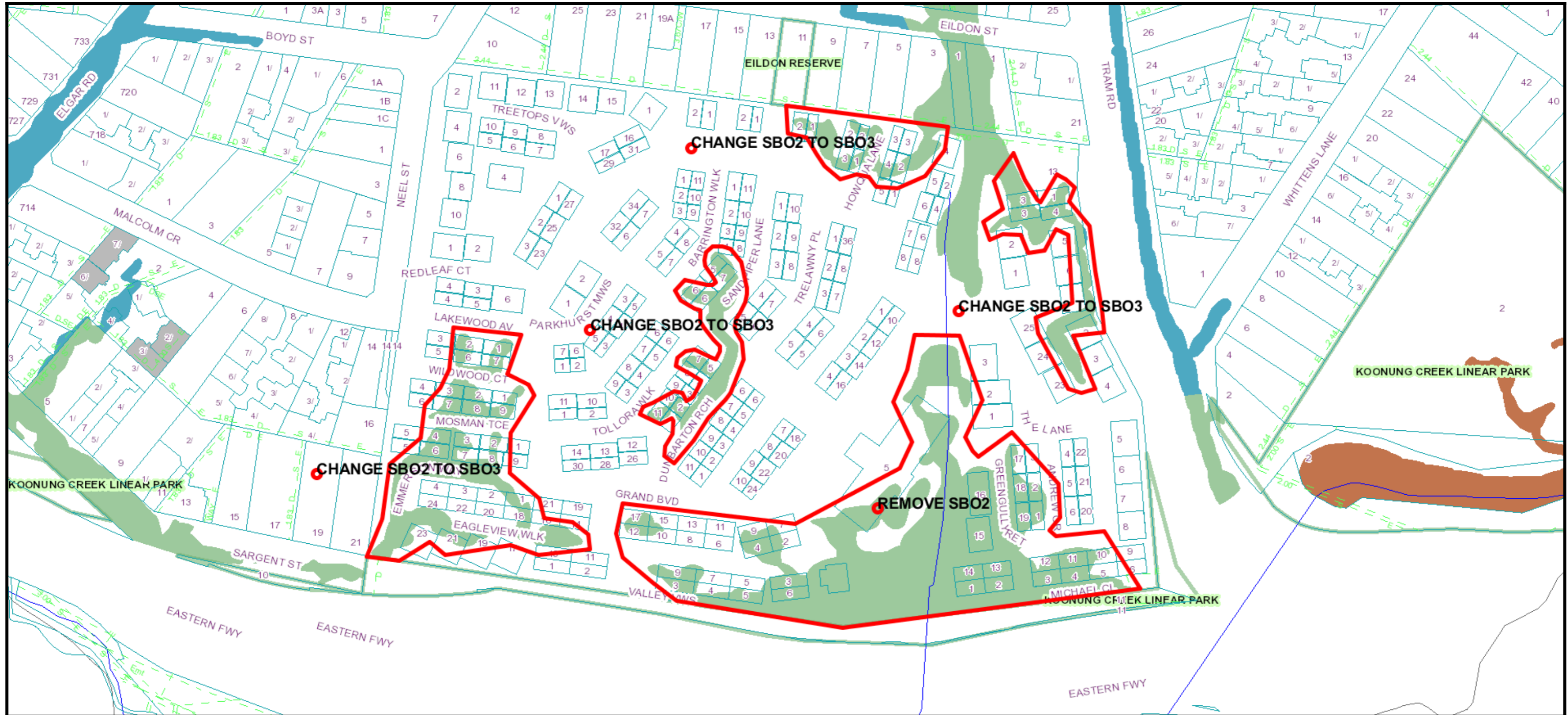


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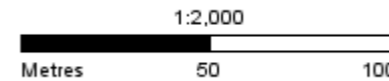


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Submission 124, 483 & 499 Applewood Retirement Village, Doncaster

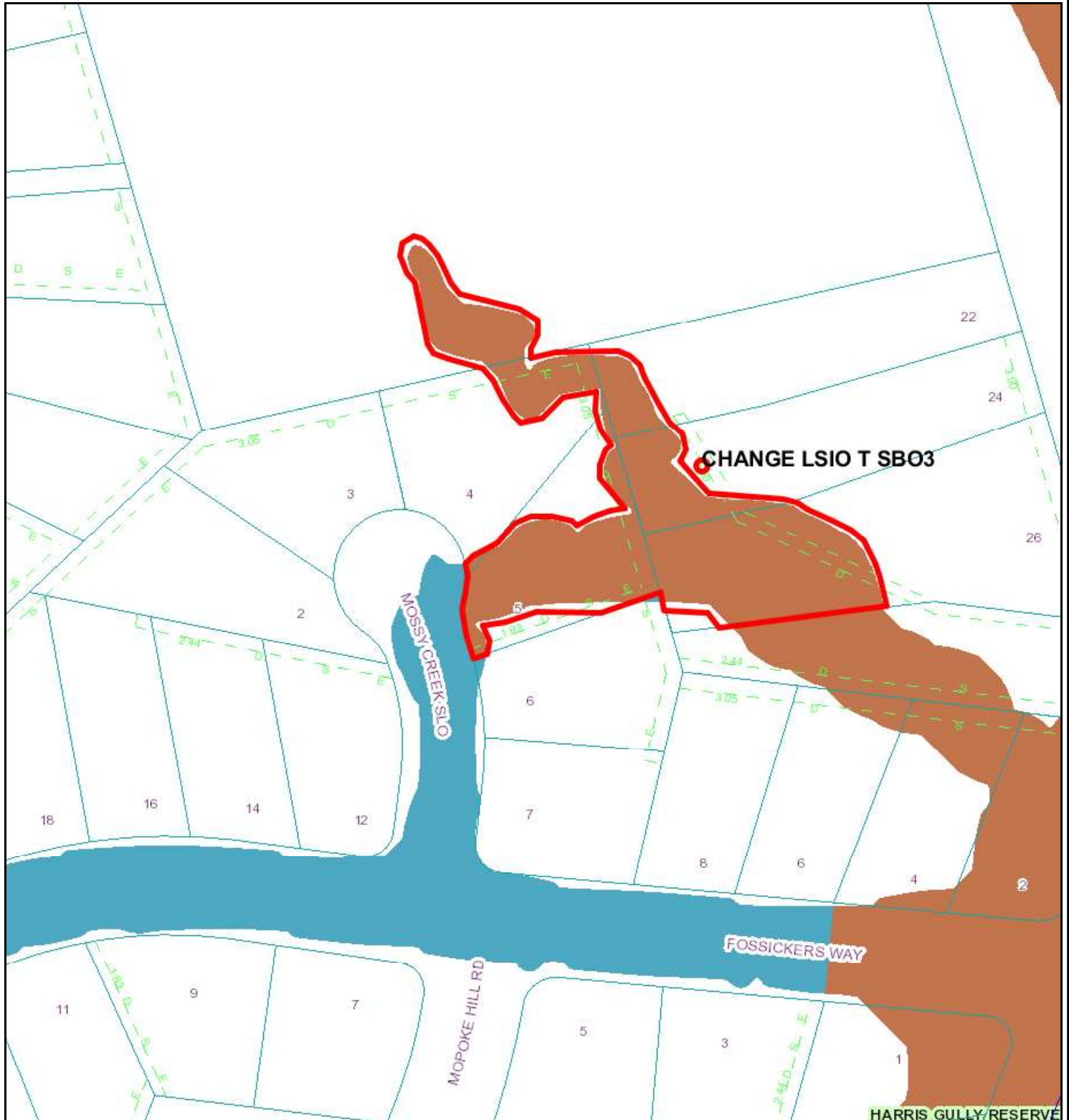


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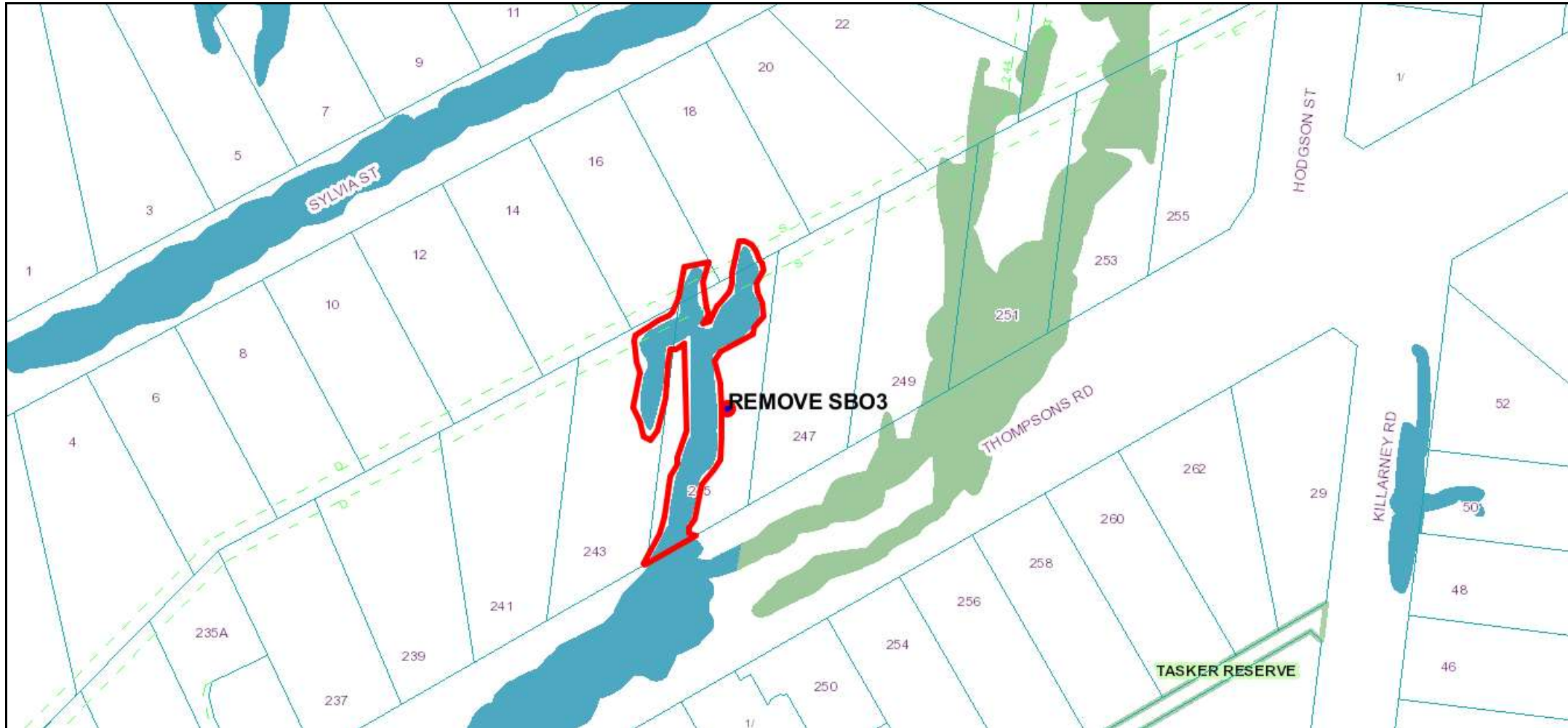


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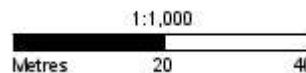
Submission 145, 452A - 26 Harris Gully Road and 5 Mossy Creek Slope, Warrandyte



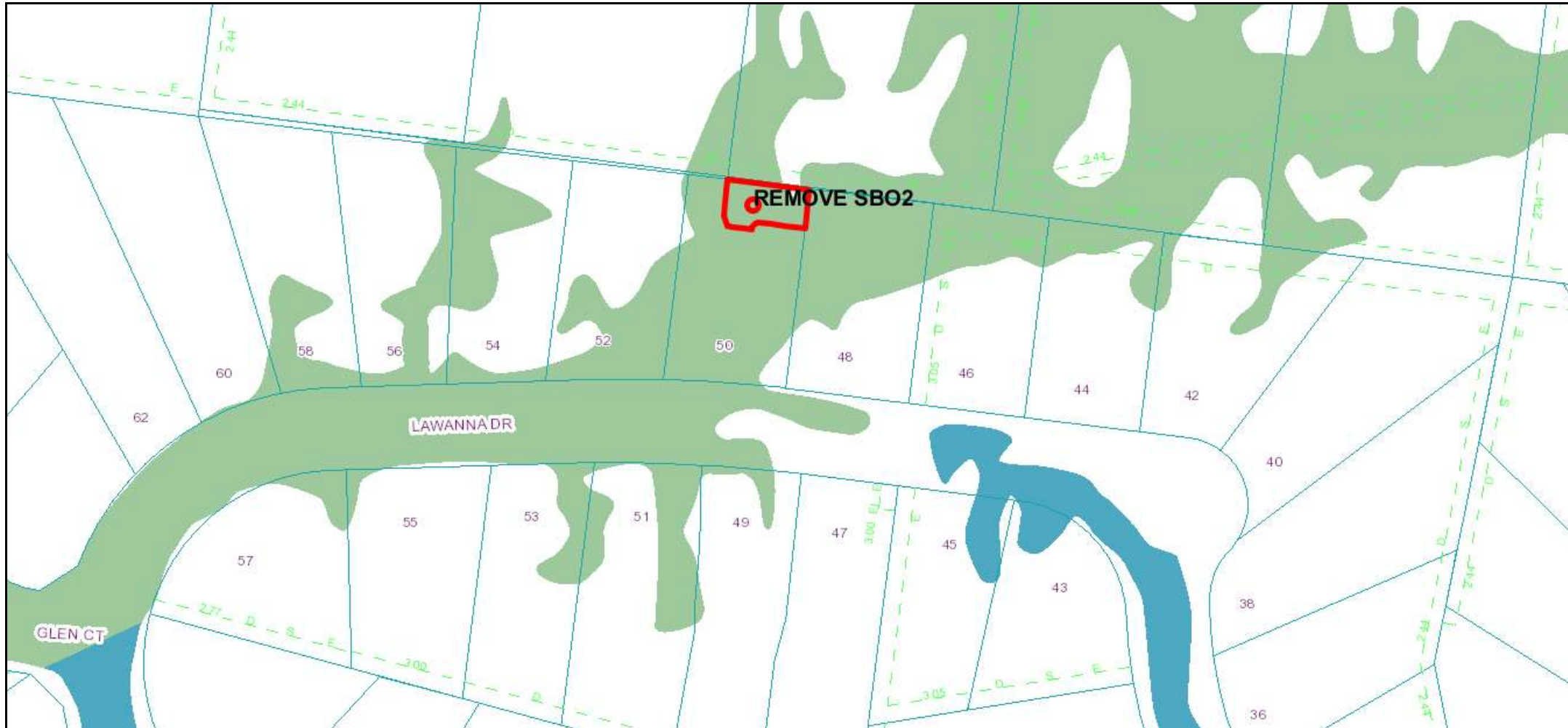
Submission 332, 243 and 245 Thompsons Road & 16-18 Sylvia Street, Templestowe Lower



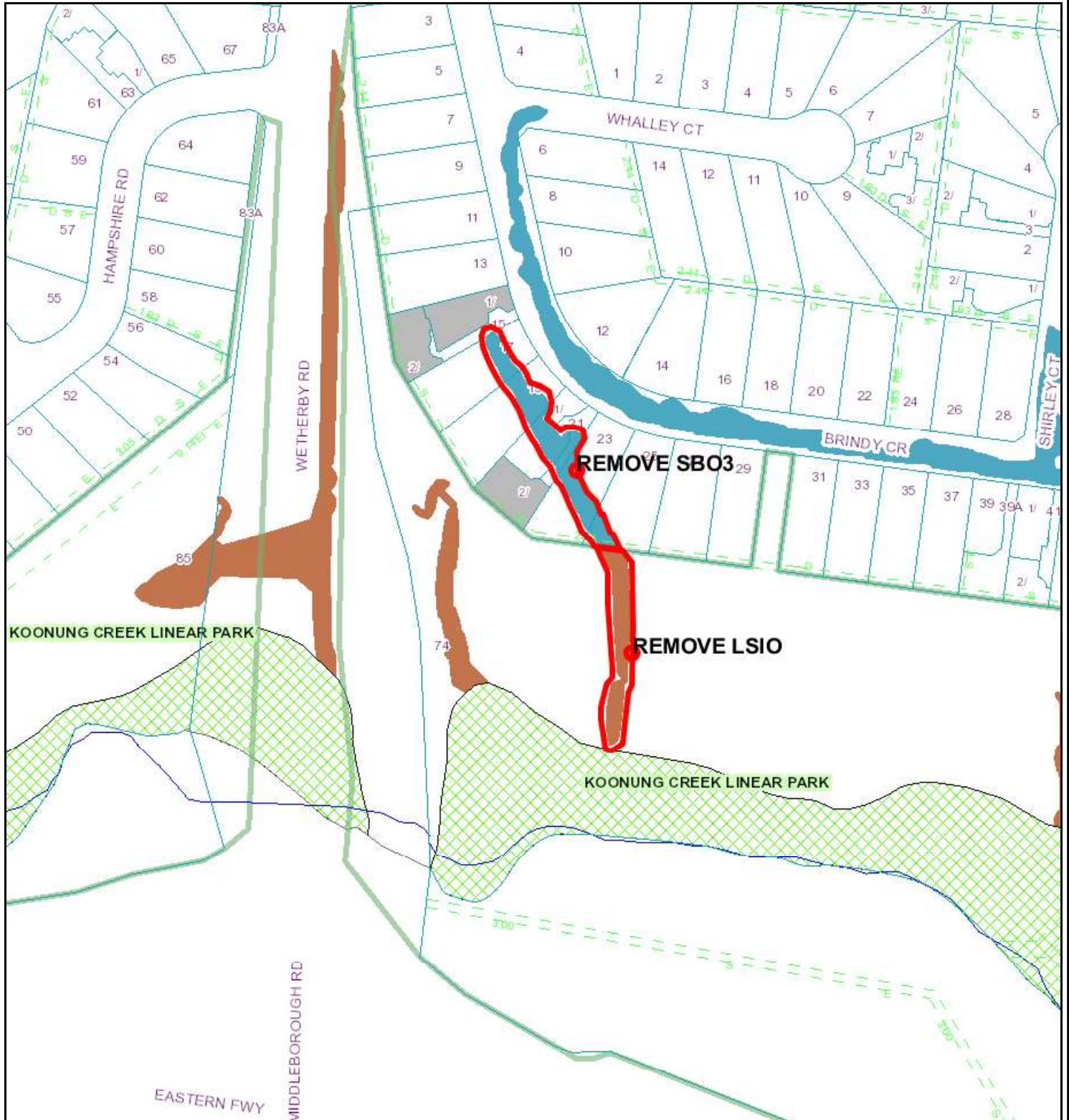
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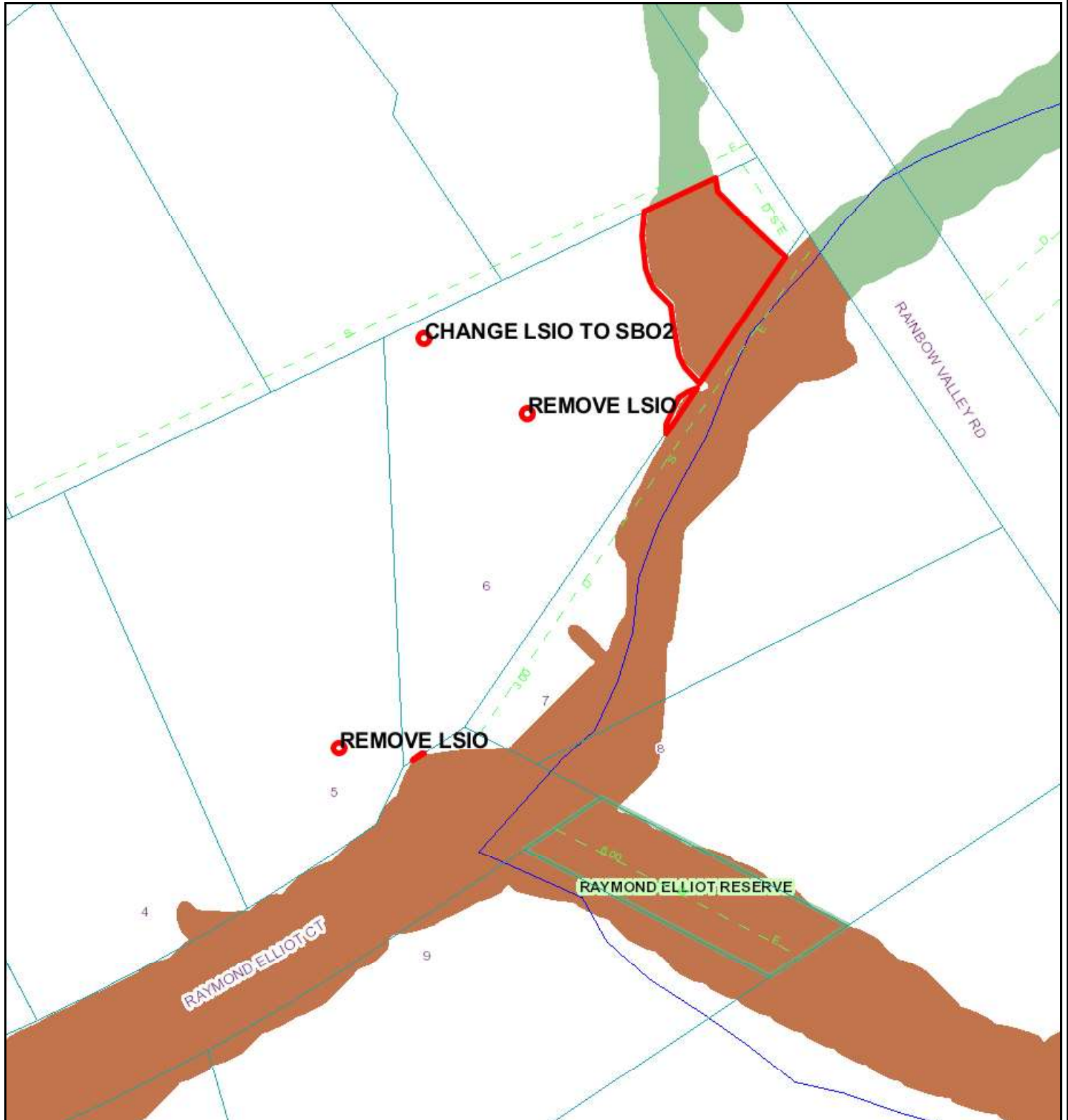
Submission 351 - 50 Lawanna Drive, Templestowe - removal of SBO2 within red boundary



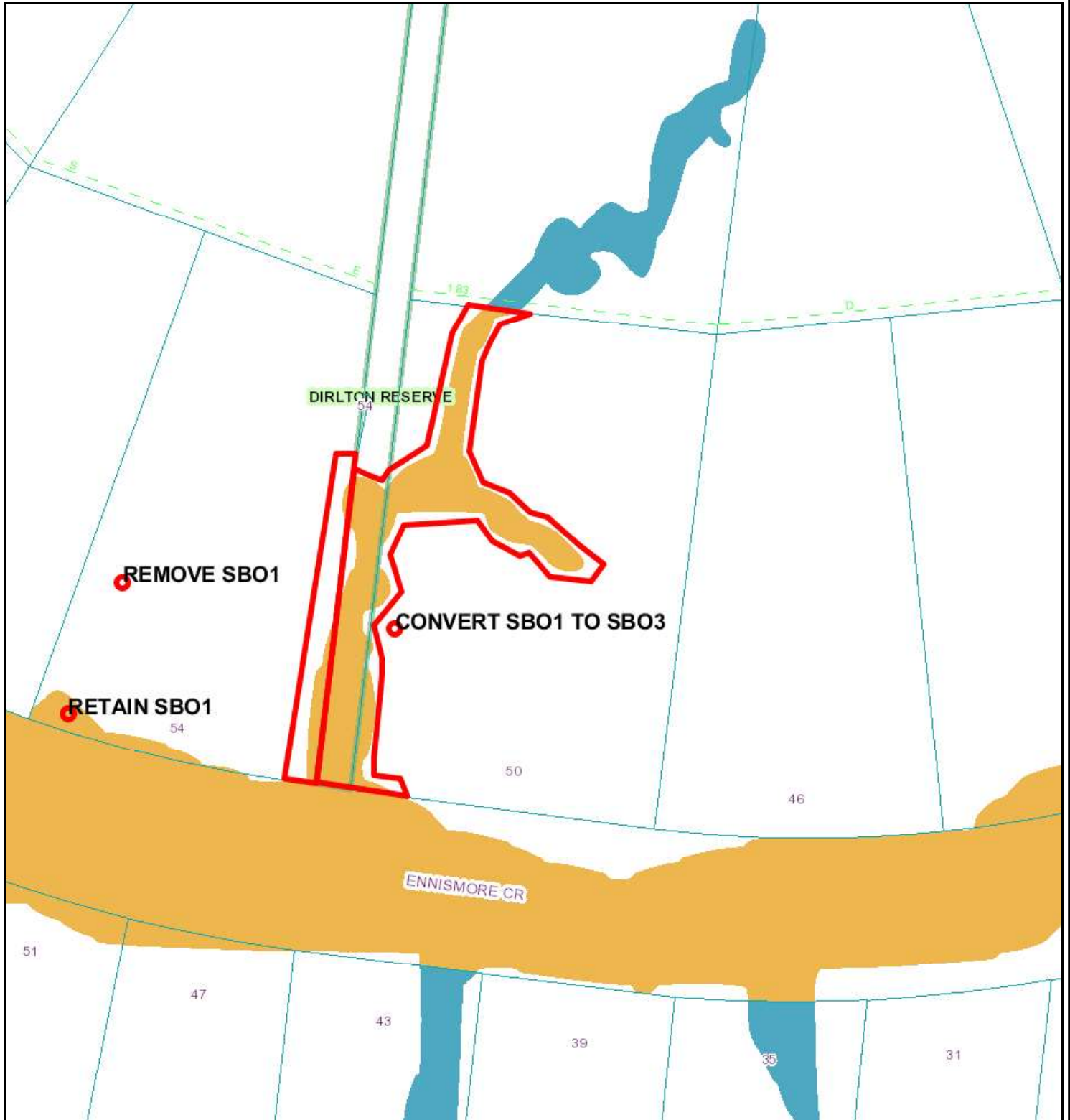
Submission 356 – 17-25 Brindy Crescent, Doncaster East



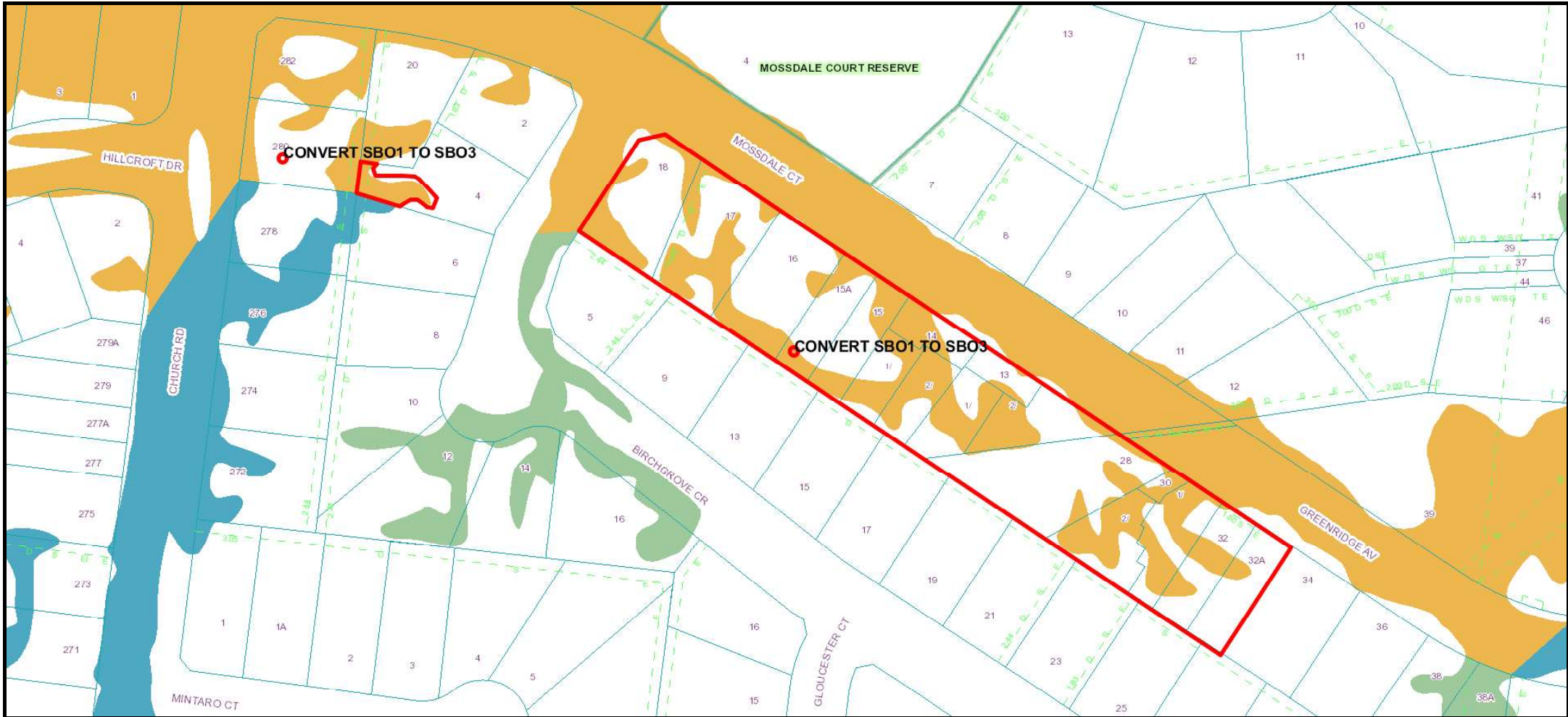
Submission 381 - 6 Raymond Elliot Court, Park Orchards



Submission 427 - 50 to 52 and 54 to 56 Ennismore Crescent, Park Orchards



Submission 427A 13-18 Mossdale Court, 4 Birchgrove Cres and 28-32A Greenridge Av Templestowe



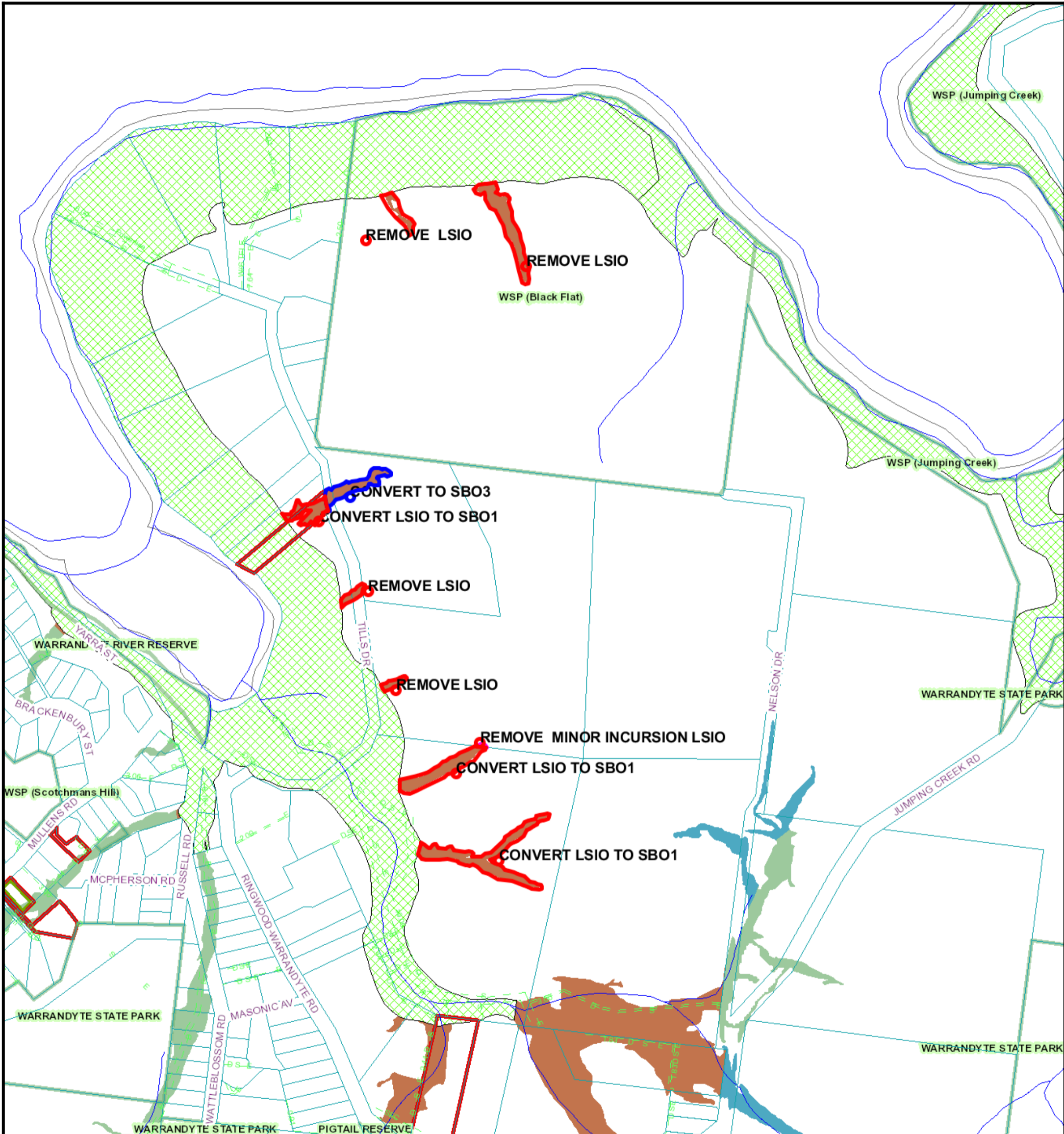
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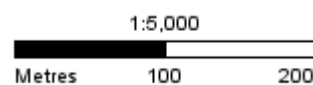
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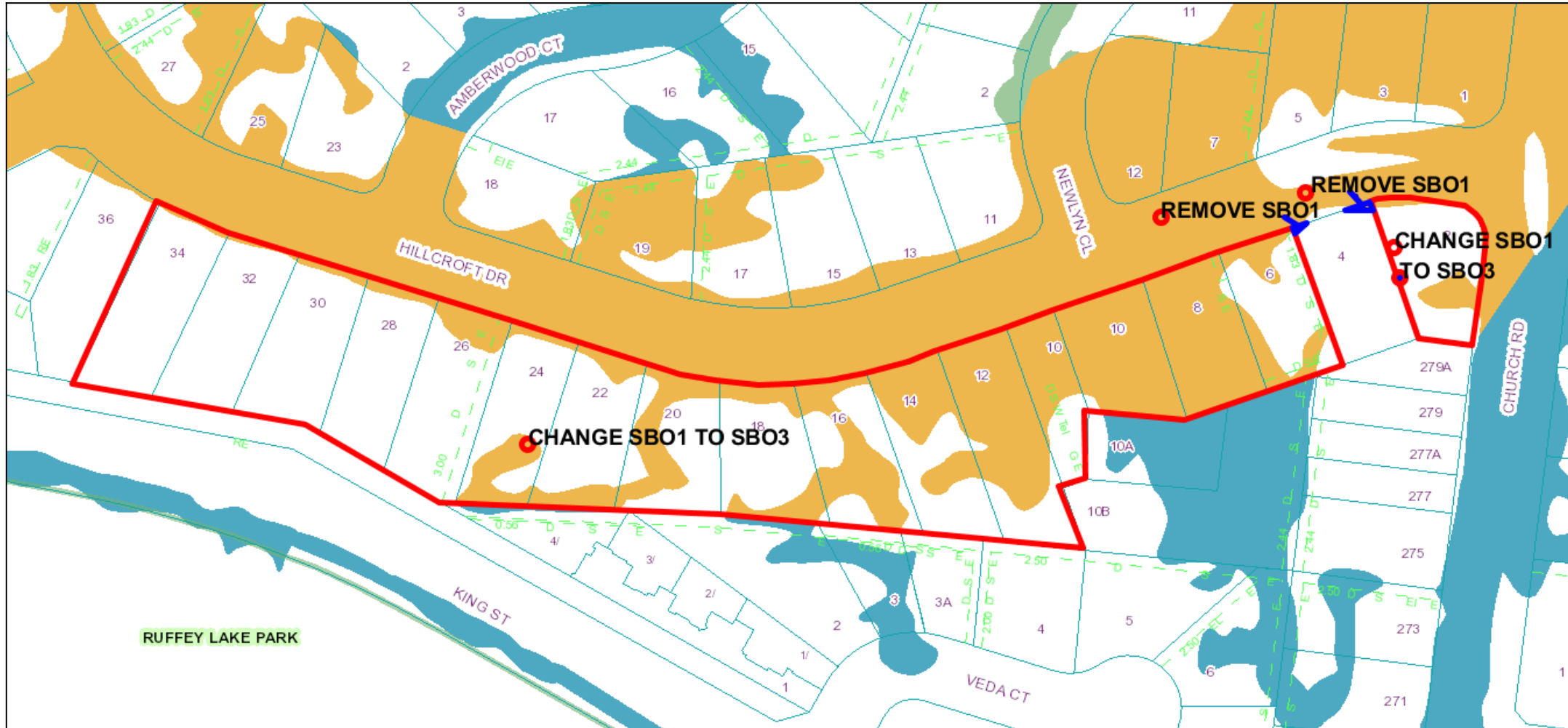


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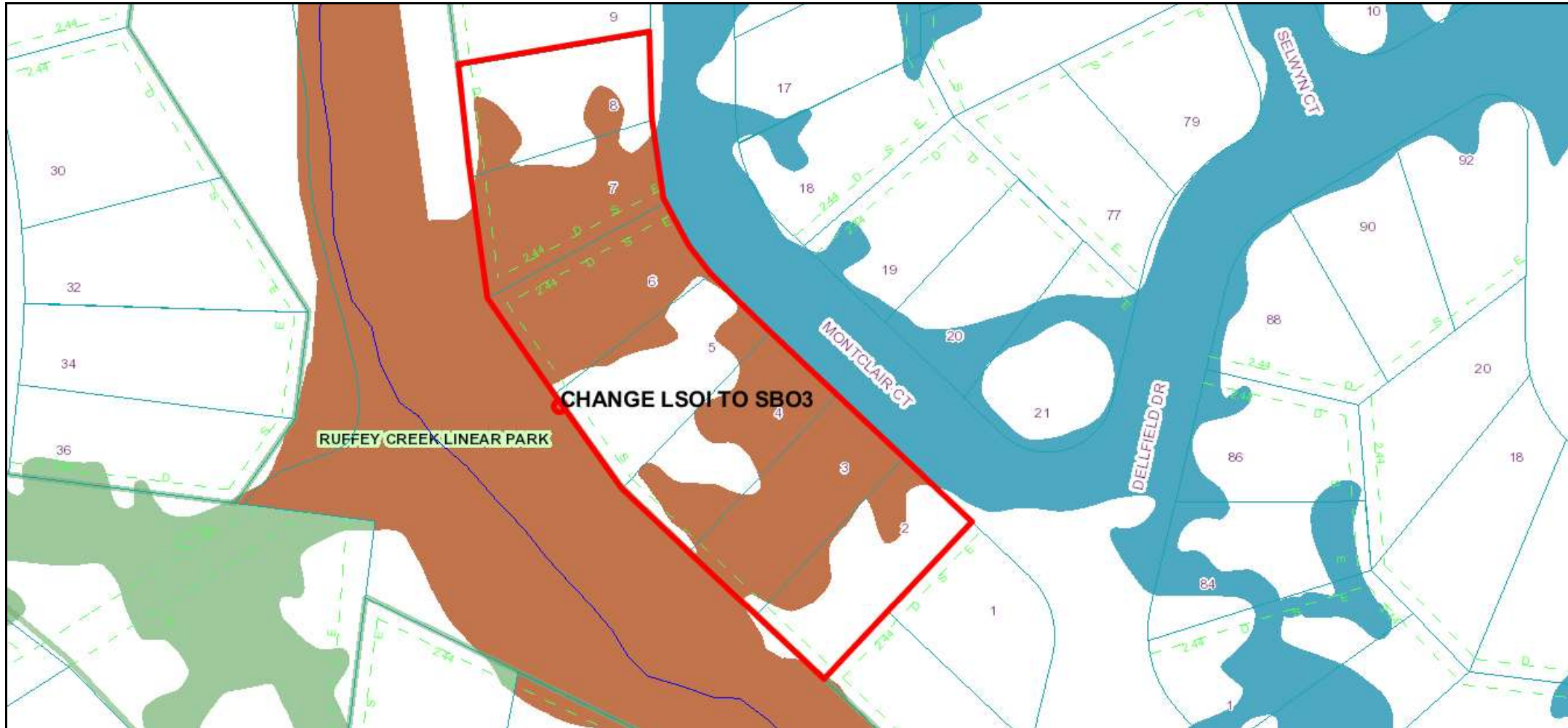
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Submissions 152, 253, 378 _ 2, 3, 4, 5, 6, 7, 8 Montclair Court, Templestowe



Special Building Overlay

Value Impact Assessment

City of Manningham - Am C109
November 2016

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Special Building Overlay Property Value Impact Assessment

Contents.

1. Introduction	5
1.1 Background.....	5
1.2 Purpose	5
1.3 Methodology	5
2. Flood Management Controls & the Victorian Planning System	6
2.1 Flood Management Controls	6
3. City of Manningham – Amendment C109	8
3.1 Amendment C109.....	8
4. Land Use Regulation & Property Values	10
4.1 Land Use Regulation & Value Impacts	10
4.2 The Potential Effects of Land Use Regulation	10
5. The Impacts of Flood on Property Values	11
5.1 Flood Risk & Property Value Implications	11
5.2 Case Studies - Disclosure of Flood Risk & Property Values	11
6. Previous SBO Amendments	12
6.1 Background.....	12
6.2 Previous Panel Findings	12
7. City of Manningham - Assessment of Sales	14
7.1 Assessment Method	14
7.2 Assessment Results.....	14
8. Value Effects of the SBO.....	15
8.1 Potential Value Effects of the SBO	15
8.2 Requirements of the SBO	15
9. Conclusion	16
10. Appendices	17

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1. Introduction

1.1 Background

Manningham City Council is currently undertaking Amendment C109 to the Manningham Planning Scheme.

The purpose of the amendment is to introduce and revise the Land Subject to Inundation Overlay (LSIO) and Special Building Overlay (SBO) in five catchments in the municipality. The amendment affects approximately 10,100 properties.

The amendment proposes to introduce the following controls:

- LSIO and SB01 – Relates to Melbourne Water watercourses and main drains respectively, and affects approximately 1300 properties.
- SB02 – Relates to the Council local drains, where there is a possible flood depth of more than 100mm, and affects approximately 3900 properties.
- SB03 – Relates to the Council local drains, where there is a possible flood depth of less than 100mm, and affects approximately 4900 properties.

1.2 Purpose

Charter Keck Cramer ('Charter') has been appointed by the Manningham City Council to provide advice on what, if any impact the SBO will have on the values of those properties affected in the short and long term.

1.3 Methodology

In preparing this advice, a number of tasks have been undertaken. These are outlined as follows:

- A review of Amendment C109 documentation (including the Explanatory Report and the planning maps, SBO Schedules, and Consultation Report);
 - A review of previous advice prepared by Charter Keck Cramer for the City of Stonnington (2004);
 - An analysis of historic sales of directly comparable properties sold (with and without the SBO) within the City of Manningham;
 - Internal advice sought from Charter Keck Cramer's Residential Valuers;
 - Review of relevant literature and research;
 - Review of previous SBO amendments and Independent Panel findings;
 - Case Studies of SBO Amendments in other Local Government Areas; and
 - Internal advice sought from Charter Keck Cramer's Quantity Surveying Team.
-

2. Flood Management Controls & the Victorian Planning System

2.1 Flood Management Controls

In Victoria, planning controls relating to flood management are provided for in the Victoria Planning Provisions (VPPs) through various overlay and zone controls. These are implemented through the planning scheme of the relevant local government authority (LGA). The purpose of these controls is to:

- Minimise the effects of overland flows and flooding on new buildings, and
- Ensure new developments don't adversely affect existing properties.

These controls are based on the extent of flooding resulting from a 1 in 100 year storm. That is, a storm event of such intensity, based on historical rainfall data, which has a one per cent chance of occurring in any given year.

There are three types of overlay and one zone that relate to flood control. The purpose of these overlays and zone is to set appropriate conditions and floor levels to address any flood risk to developments. These overlays and zone require a planning permit for various buildings and works. These are:

Special Building Overlays (SBO)

The SBO is applied to areas identified as prone to overland flooding. The purpose of the SBO is to set appropriate conditions and floor levels to address any flood risk to developments. These overlays require a planning permit for buildings and works.

The purpose of the SBO is as follows:

- *To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.*
- *To identify land in urban areas liable to inundation by overland flows from the urban drainage system as determined by, or in consultation with, the floodplain management authority.*
- *To ensure that development maintains the free passage and temporary storage of floodwaters, minimises flood damage, is compatible with the flood hazard and local drainage conditions and will not cause any significant rise in flood level or flow velocity.*
- *To protect water quality in accordance with the provisions of relevant State Environment Protection Policies, particularly in accordance with Clauses 33 and 35 of the State Environment Protection Policy (Waters of Victoria).*

Land Subject to Inundation Overlays (LSIO)

The LSIO applies to land affected by flooding associated with waterways and open drainage systems, i.e. floodplains. These overlays require a planning permit for buildings and works.

The purpose of the LSO is as follows:

- *To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.*
- *To identify land in a flood storage or flood fringe area affected by the 1 in 100 year flood or any other area determined by the floodplain management authority.*
- *To ensure that development maintains the free passage and temporary storage of floodwaters, minimises flood damage, is compatible with the flood hazard and local drainage conditions and will not cause any significant rise in flood level or flow velocity.*
- *To reflect any declaration under Division 4 of Part 10 of the Water Act, 1989 where a declaration has been made.*
- *To protect water quality in accordance with the provisions of relevant State Environment Protection Policies, particularly in accordance with Clauses 33 and 35 of the State Environment Protection Policy (Waters of Victoria).*
- *To ensure that development maintains or improves river and wetland health, waterway protection and flood plain health.*

Floodway Overlays (FO)

The FO applies to land identified as carrying active flood flows (in excess of one metre) associated with waterways and open drainage systems.

The purpose of the FO is as follows:

- *To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.*
- *To identify waterways, major floodpaths, drainage depressions and high hazard areas which have the greatest risk and frequency of being affected by flooding.*
- *To ensure that any development maintains the free passage and temporary storage of floodwater, minimises flood damage and is compatible with flood hazard, local drainage conditions and the minimisation of soil erosion, sedimentation and silting.*
- *To reflect any declarations under Division 4 of Part 10 of the Water Act, 1989 if a declaration has been made.*
- *To protect water quality and waterways as natural resources in accordance with the provisions of relevant State Environment Protection Policies, and particularly in accordance with Clauses 33 and 35 of the State Environment Protection Policy (Waters of Victoria).*
- *To ensure that development maintains or improves river and wetland health, waterway protection and flood plain health.*

Urban Floodway Zone (UFZ)

Unlike the overlays, the UFZ controls land use as well as development, with land use being restricted to low intensity uses such as recreation and agriculture. Development is generally not encouraged in the UFZ.

Where applicable, these controls are expressed in council planning schemes and show the location and extent of special features, such as where land may be subject to flooding.

The purpose of the UFZ is as follows:

- *To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.*
- *To identify waterways, major floodpaths, drainage depressions and high hazard areas within urban areas which have the greatest risk and frequency of being affected by flooding.*
- *To ensure that any development maintains the free passage and temporary storage of floodwater, minimises flood damage and is compatible with flood hazard, local drainage conditions and the minimisation of soil erosion, sedimentation and silting.*
- *To reflect any declarations under Division 4 of Part 10 of the Water Act, 1989.*
- *To protect water quality and waterways as natural resources in accordance with the provisions of relevant State Environment Protection Policies, and particularly in accordance with Clauses 33 and 35 of the State Environment Protection Policy (Waters of Victoria).*

3. City of Manningham – Amendment C109

3.1 Amendment C109

Amendment C109 applies to land within five local catchments in the City of Manningham. These have been identified by Melbourne Water and Council as being liable to inundation in a 1 in 100 year storm event. The land affected is shown on the proposed planning scheme maps that form part of the amendment.

Amendment C109 will result in:

- Approximately 200 properties no longer being covered by the SBO and LSIO;
- Approximately 9500 properties being covered by the SBO and LSIO for the first time; and
- Approximately 1000 properties remaining in the SBO and LSIO (noting this may include some revision to the extent of the SBO and LSIO over an individual property).

In relation to the SBO, the Amendment proposes to change the Manningham Planning Scheme to:

- *Replace the existing SBO Schedule at Clause 44.05 with three new schedules to the SBO that distinguish between areas subject to inundation in relation to the 'main' drainage system (Melbourne Water drains) and the 'local' drainage system (Council drains), and establish additional planning permit exemptions for certain areas where Council is the nominated drainage authority.*

The schedules are referred to as SBO1, SBO2 and SBO3 and these areas are defined on the planning Scheme (SBO) maps. Each schedule defines what permit exemptions apply to the relevant areas.

- Schedule 1 to the Special Building Overlay (SBO1) covers the Melbourne Water drainage system and nominates Melbourne Water as the Determining Referral Authority. All applications for development in this overlay are referred to Melbourne Water to assess and provide the appropriate permit conditions and floor levels.
- Schedule 2 to the Special Building Overlay (SBO2) covers the local drainage system and Council is the responsible authority for drainage. Council assesses all applications for development in this overlay and provides appropriate permit conditions and floor levels.
- Schedule 3 to the Special Building Overlay (SBO3) is similar to SBO2, except that a planning permit will be required in fewer circumstances – such as when a building or extension is constructed with a floor level below an identified level. All applications for development in this overlay (not exempted from needing a permit) are referred to Council to assess and provide the appropriate permit conditions and floor levels.

3.1.1 Planning Permit Requirements

The SBO and LSIO do not prevent development but rather, through requiring a planning permit, ensure that development is sited and designed to minimise the impact of flooding. Implementation of the SBO and the LSIO can influence the siting of buildings and set appropriate conditions, such as raised floor levels, to address any flood risk to new development.

Exemptions from requiring a planning permit for specified buildings and works are nominated in the parent clause to the SBO and LSIO. A schedule is not proposed to be included in the LSIO and therefore additional exemptions are not included. SBO1 and SBO2 also do not propose any additional exemptions beyond those included in the parent clause. SBO3, however, does include a number of additional exemptions (i.e. where a permit is not required). Permit requirements of the SBO, and associated schedules are outlined in the following table:

Table 1: Planning Permit Requirements

SBO (Schedule)	Permit Requirements	Permit Exemptions
1	<p>A permit is required to construct a building or to construct or carry out works, including:</p> <ul style="list-style-type: none"> - A fence. - Roadworks. - Bicycle pathways and trails. - Public toilets. - A domestic swimming pool or spa and associated mechanical and safety equipment if associated with one dwelling on a lot. - A pergola or verandah, including an open-sided pergola or verandah to a dwelling with a finished floor level not more than 800mm above ground level and a maximum building height of 3 metres above ground level. - A deck, including a deck to a dwelling with a finished floor level not more than 800mm above ground level. - A non-domestic disabled access ramp. <p>A permit is required to subdivide land.</p>	<p>Yes (<i>the Schedule states that a permit is not required in various circumstances</i>).</p>
2	<p><i>See Above</i></p>	<p>Yes</p>
3	<p>The permit requirements for Schedule 1 and 2 do not apply to Schedule 3 which provides numerous permit exemptions (see adjacent).</p>	<p>A permit is not required to construct or carry out the following buildings or works:</p> <ul style="list-style-type: none"> - A new dwelling where the floor level is at least 400 mm above the natural surface level and the sub floor does not obstruct the overland flow path. - A replacement dwelling where the floor level is at least 400 mm above the natural surface level, the sub floor does not obstruct the overland flow path and the original building footprint remains the same. The responsible authority may require evidence of the existing building envelope. - A single or multiple dwelling extension where: <ul style="list-style-type: none"> • the sub floor level does not obstruct the overland flow path; and • the floor level of the proposed dwelling extension/s is at least 400 mm above the natural surface level. • an alteration to an existing building where the original building footprint remains the same and floor levels are constructed to at least 400mm above natural surface level. • a replacement building (not including an outbuilding) where the floor level is at least 400 mm above the natural surface level, the original building footprint remains the same and the sub floor does not obstruct the overland flow path. The responsible authority may require evidence of the existing building envelope. <p>New fencing with at least 25% openings and with the plinth at least 400 mm above the natural surface level.</p>

4. Land Use Regulation & Property Values

4.1 Land Use Regulation & Value Impacts

Providing a general description of the various effects that land use regulation may have on property values establishes a number of important principles when considering any possible value impact of the proposed SBO in the City of Manningham.

Land use regulations can affect the market value of property in different ways. Though some of the impacts can be easily established, in many cases they are complex and can be misconstrued. Land use regulations often have a complex set of negative and positive effects on private property values and the net effect of regulatory restrictions cannot be known in advance or easily attributed.

Though it is often assumed that land use regulations negatively impact (reduce) property values, in recognising local externalities, such regulations often preserve or provide amenities that make communities more attractive and which have positive value implications.

The complexity of attempting to understand the specific impact of land use regulations on property values is highlighted in the scenario whereby a zoning regulation that limits development may lower the value of property on which it is applied but which if also applied to neighbouring properties may result in raising the first property's value due to one or more positive effects (e.g., enhanced neighbourhood amenities). Hence, these reciprocal effects may make the net effect positive.

A property affected by multiple regulations with different effects (negative and positive) further complicates the ability to establish an understanding of the effect on values.

It is difficult to establish whether a negative restriction effect will be greater than or smaller than the potential positive amenity effect. Therefore one must look at specific land values to know whether, for a particular land-use regulation or set of regulations, the net effect is positive, negative, or neutral.

4.2 The Potential Effects of Land Use Regulation

Land-use regulations can broadly be described as having three potential effects on land values. These are restriction effects, amenity effects, and scarcity effects. In describing these, Jaeger states:

"The first effect likely will be negative for restricted properties, but in many cases amenity and/or scarcity effects have a positive and potentially offsetting effect. As a result, and despite the widespread belief that most land-use regulations have negative effects on property values, the opposite may be true in many cases.

Restriction effects result when a regulation limits the use of a particular piece of land so that its "highest and best use" is prevented, therefore decreasing the property's value. If, however, the prohibited use would not be chosen because it is not the "highest and best use" of that piece of land, then the regulation will have no effect on the property's value.

Significantly, many land use regulations are implemented to generate positive amenity effects and in doing so, generate positive value impacts. For example, regulations are often introduced to support and/or enhance the liveability of a neighbourhood by excluding incompatible land uses and development outcomes deemed inappropriate. Zoning that achieves this and protects the characteristics of residential properties can make neighbourhoods more appealing and predictable.

Scarcity effects occur when land-use regulations change the supply of land that can be put to a particular use in a specific location. Simply, if a regulation allows an office use but prohibits a residential use, the supply of land for office use will increase and the supply of land for residential use will decrease. Depending on how binding the restriction is, the price of land for office use may decline, and the price of land for residential use may rise".¹

¹ W.Jaeger; *How Have Land-use Regulations Affected Property Values in Oregon*; 2007

5. The Impacts of Flood on Property Values

5.1 Flood Risk & Property Value Implications

Though there is a perception that residential property values are adversely affected by flood risk expressed through the introduction of regulatory mechanisms such as the SBO, it is important to distinguish that there is a practical difference between disclosure of flood risk and actual flooding events.

Research indicates that actual flooding is much more likely to trigger an adverse effect on property values than floodplain designation or regulation² with the extent of discounting likely to be directly related to the degree of risk and any discount generally attributable to an actual flood event. Where multiple floods have occurred in a relatively short timeframe, the extent of discounting is generally higher. Significantly, the discount experienced as a result of flood generally diminishes and property values typically recover in time. The resilience of property values in flood affected areas is often due to waterfront locations which often attract price premiums and which often outweigh any discount.

In the case of land use regulation pertaining to flooding, the disclosure of flood risk through the introduction of flood related overlay controls by local government authorities often generates concerns amongst landowners who presume that such controls will have an adverse impact on property values.

In contemplating any potential value impact associated with the disclosure of flood risk via mapping or the introduction of regulatory control, it is important to recognise that the level of flood risk does not in fact change but simply recognises an existing condition of the land. In the case of Amendment C109, the expansion of the proposed SBO is the result of recent modelling undertaken by Melbourne Water in conjunction with the City of Manningham.

5.2 Case Studies - Disclosure of Flood Risk & Property Values

In a comprehensive review of international and local research findings relating to the disclosure effect on residential properties, it was found that “the bulk of studies found no change in property values upon disclosure”³. One study provided evidence for the devaluation of properties. These results were based on a study of the effect of flood notification on Section 149 certificates in Sydney’s Blacktown, Penrith and Hawkesbury Council areas, which found that the robustness of the housing market was such that individual property characteristics were stronger determinants of price than flood notification⁴.

In a separate study, a change to the official 100 year ARI flood level at Penrith in western Sydney in 1994 was anticipated to have a short-term impact on affected properties. However an examination of sales prices in 1999–2000 did not detect any noticeable variation.⁵ Additionally, an assessment of property values that followed the release of the United Kingdom’s Environment Agency’s flood maps concluded that “the impact on residential property price growth was non-existent in the absence of flood events”.⁶

In the one study where there was evidence for the devaluation of flood liable properties upon disclosure (Sydney’s Georges River district), the 25% decline in property values in 1984 was perceived to be due to the release of floodplain maps. The subsequent recovery in values in 1985 was interpreted as a response to the withdrawal of the maps. Research into the annual data that provided the basis to these results was however considered to be inadequate. The research also revealed that community perceptions can affect property values, warranting the need for considered consultation and best practice flood risk assessment in the first instance.

² S.Yeo; *Are Residential Property Values Adversely Affected By Disclosure of Flood Risk?*

³ Ibid

⁴ Egan National Valuers, 2000

⁵ Ibid

⁶ Lamond, J et al; *The impact of flooding on the price of residential property: a transactional analysis of the UK market*

6. Previous SBO Amendments

6.1 Background

Since the introduction of the Victoria Planning Provisions in 1997, numerous planning scheme amendments to introduce the SBO into metropolitan planning schemes have been undertaken.

In considering submissions made on grounds of negative property value impacts associated with the SBO, Panels have consistently dismissed these for a variety of reasons, including that this is not a valid planning consideration. Significantly, a review of relevant Panel reports relating to the proposed implementation of the SBO has found that no evidence demonstrating a reduction in property values due to the SBO has been provided.

It is noteworthy that as of September 2016, every one of the 31 Melbourne metropolitan local government authorities (LGAs), has a flood related Overlay within its planning scheme. Of these LGAs, 29 apply the Special Building Overlay.

6.2 Previous Panel Findings

A summary of the relevant Panel Reports findings, in relation to the issue of property values – including reference to the advice previously prepared by Charter Keck Cramer - is outlined below.

6.2.1 City of Port Phillip - Amendment C111 [2016]

Referring to the advice prepared by Charter Keck Cramer and previously referred to by other Panels, the Planning Panel in relation to Amendment C111 to the Port Phillip Planning Scheme concluded that:

Panels have consistently found that there is no justification for setting aside of any SBO amendment on the basis of requests for compensation, loss of property value, and possible increase in insurance premiums.

The Panel in relation to Amendment C50 to the Moreland Planning Scheme stated that:

The value of any property is determined by the complex interplay of many different factors such as overall economic conditions, public economic policies, location, streetscape and amenity, and it is difficult to assign what effect, if any, the identification of land as liable to overland flows may have on the value of a property.

This view is consistent with the conclusions of the Planning Panels for Amendment C3 to the Yarra Planning Scheme and Amendment C18 to the Stonnington Planning Scheme. These Panels generally found no correlation between the application of the SBO and property values.

Melbourne Water also reported that the Stonnington Council commissioned Charter Keck Kramer (CKC) to review the effects on property prices of the application of the SBO. CKC examined property prices in the City of Port Phillip and found no correlation. The Panel was not provided with any contrary evidence and concludes that the SBO or the LSIO are highly unlikely to affect property prices, and that it is appropriate that the condition of the land be recorded and available to interested people.

This Panel is satisfied that Council's approach in relation to this issue is appropriate, and that property value conclusions by previous Panels should be similarly applied to this Amendment.

6.2.2 City of Moreland - Amendment C50 [March 2008]

The Planning Panel, in relation to Amendment C50 to the Moreland Planning Scheme stated that:

A number of submitters expressed concerns that the disclosure of the flood prone nature of their properties will have a detrimental impact on property prices.

The Panel commented:

Both Council and Melbourne Water suggested that perception of impacts of planning controls on property values is not usually considered relevant to the assessment of planning proposals. The value of any property is determined by the complex interplay of many different factors such as overall economic conditions, public economic policies, location, streetscape and amenity, and it is difficult to assign what effect, if any, the identification of land as liable to overland flows may have on the value of a property.

This view is consistent with the conclusions of the Planning Panels for Amendment C3 to the Yarra Planning Scheme and Amendment C18 to the Stonnington Planning Scheme. These Panels generally found no correlation between the application of the SBO and property values.

The Panel was not provided with any contrary evidence and concludes that the SBO or the LSIO are highly unlikely to affect property prices, and that it is appropriate that the condition of the land be recorded and available to interested people”.

6.2.3 City of Stonnington – Amendment C18 [September 2004]

In response to the large number of the submitters to Amendment C18 who expressed concern about the perceived impact of the SBO on property values, the City of Stonnington commissioned Charter Keck Cramer, to investigate the potential for there to be an adverse effect on the value of land subject to the SBO. Based on a review of the SBO that had been in place in the City of Port Phillip for four years, the following conclusion was made:

We have confirmed that there is a general purchaser awareness of the SBO within the City of Port Phillip, and that purchasers understand the consequences that some properties affected by the overlay may, in the course of renovation and extension, have to meet special planning and building requirements that would otherwise not apply.

Notwithstanding the pattern of sales and analysis, gives no evidence or cause to believe that the application of the SBO to any of the properties has had a measurable effect on the value of those properties when offered to the market on normal reasonable terms and conditions. Simply stated, the application of the overlay within the City of Port Phillip appears to have had no adverse impact on the property values.

For the reason that there is a strong socio economic and demographic similarity between the City of Port Phillip and the City of Stonnington, and as many of the properties affected in the City of Port Phillip are of a similar style, construction mode and market value range as many of those likely to be affected within the City of Stonnington by the proposed introduction of the SBO, we consider it reasonable to anticipate that the introduction of the SBO in Stonnington will, similarly, have no measurable impact on the value of properties to which it will apply.

In response to the Charter Keck Cramer advice, the Panel concluded:

“It is submitted that this conclusion is consistent with what one would expect, particularly as the potential for flooding identified by the SBO reflects that which already exists. It is submitted that the overlay does no more than to document what is already important and relevant information, and make it readily available to property owners or a prospective purchaser.

The application of the overlay does not prevent land from being developed, it only requires consideration of issues arising from flooding to be dealt with in detail, in a timely manner.

The SBO, therefore, does not affect property values. What it does is to enable the proper value of a property to be determined, having regard to all relevant site opportunities and constraints, including any constraint arising from the fact that the land is subject to inundation. It also equally protects all land by ensuring that development that may have an adverse effect on adjoining land is properly assessed”.

6.2.4 City of Yarra – Amendment C3 [October 2000]

Completed in 2003, the Panel considering Amendment C3 made the following comments:

The panel supports the views of the Council and Melbourne Water that property values are determined by a range of factors which, in addition to the classic criteria of “position, position, position”, may include size, design, location, historic character, etc., etc..

Purchasers, in the normal course of events, make trade-offs between these criteria. In the current economic climate it would appear to the panel that real estate values in inner city locations are at an all-time premium and there is no evidence, at present, that there is any correlation between the approval of a SBO and a major downturn in property values”.

7. City of Manningham - Assessment of Sales

7.1 Assessment Method

In determining if the application of a SBO has a measurable effect on property values, we undertook a direct comparison analysis of properties within the City of Manningham subject to the current SBO. Notwithstanding, we understand the impact of property values is vulnerable to a complex range of different variables such as location, streetscape, amenity, improvements and economic considerations, making the determination of an impact on property values as a result of the SBO both challenging and in some degrees subjective.

In undertaking the assessment, we identified properties within the City of Manningham subject to a SBO, specifically focusing on properties where at least 50% of the site is affected. Furthermore, we focused on properties that transacted between 2013 - 2016, and benchmarked these properties against sale evidence of a directly comparable nature, although not subject to a SBO. Our research was tested on a number of affected properties in order to establish a pattern.

7.2 Assessment Results

Of the sales analysed there is no evidence or basis to indicate that the Special Building Overlay has had an adverse impact on property values in the City of Manningham (see Appendix 1). Charter is of the opinion that this can be attributed to the sound level of demand for residential property within the municipality and whilst purchasers have a general awareness of the Special Building Overlay, a measurable effect on value was not evidenced. Our research was tested on a number of affected properties in order to establish a pattern.

8. Value Effects of the SBO

8.1 Potential Value Effects of the SBO

Though the SBO indicates that flooding is an issue that needs to be taken into account in the planning of future development, the real risks to those properties affected by it have not changed. This is because it is not the application of the SBO which makes land more prone to flooding as the SBO is simply a planning mechanism to identify the flooding characteristics of land at risk.

To establish the value implications of applying the SBO throughout the City of Manningham, understanding the specific regulatory requirements imposed by it, in particular consideration of what aspects of it are likely to have a negative value impact, is fundamental. Importantly, the SBO does not prohibit either use or development but requires drainage matters to be considered in detail when a development application is submitted to the responsible authority for consideration.

To understand the potential value impacts of the SBO it is instructive to begin with consideration of the identified effects of land-use regulation (as described in Section 3.0). As outlined, these effects are described as 'restrictive', 'amenity', and 'scarcity'. In terms of potential restrictive effects, the SBO will not prevent individual properties from functioning as their highest and best use. Nor will it impact the supply of land that can be used for its current use (residential) resulting in a scarcity effect. On this basis, application of the SBO is not envisaged to impact property values.

Where land use regulation aims to protect or create positive characteristics of residential properties this often results in neighbourhoods remaining, or becoming, more appealing. The introduction of the new residential zones in Victoria is an example of land use regulation where this objective is likely to have such an effect. Though SBO permit requirements for new development will contribute to minimising the flooding of properties, it is unlikely this will have any positive (or negative) value impact on properties. In achieving this objective it may however contribute to preserving values in the long term. Nevertheless, it is important to recognise that without the SBO, development of neighbouring properties could obstruct flows and result in a general rise in flood levels to the detriment of their own property.

8.2 Requirements of the SBO

Practically, the requirements of the SBO only take effect when certain buildings and works are proposed to be undertaken at an affected property. These requirements vary according to the applicable Schedule as there are different permit requirements and exemptions for each (see Table 1).

Until the time that certain buildings and works are proposed, the SBO has no impact on the existing use or functional requirements of the property. In such circumstances, the SBO has no material impact on the inherent value of the property.

The question of whether there is a negative value impact can therefore only be answered in the context where proposed buildings and works warrant the practical permit requirements of the SBO to be met. Though different permit requirements (and exemptions) are prescribed, a review of the SBO and associated Schedules indicates that the most onerous requirement of the SBO relates to the need for new dwellings or dwelling extensions, to meet minimum floor level requirements. For the purposes of this task, this is the measure against establishing which value impacts of the SBO have been considered.

As the minimum floor level requirements to be imposed by the SBO would be specific to each location, the extent and type of development (including size and number of dwellings) and the costs to meet these requirements could reasonably be expected to vary. However, the standard costs of constructing above natural ground level to achieve compliance with the minimum floor level requirements⁷ are generally not considered significant in the context of a project's total development costs⁸.

Further to the above, it should be noted that minimum ground level requirements prescribed within the SBO and associated schedules are provided as a basis for which building and works would be exempt from requiring a planning permit. Buildings and works below these specified levels may be achieved if permission from the City of Manningham or where relevant, Melbourne Water, is provided.

⁷ Up to 400mm as per the requirements of SBO3

⁸ Though this cannot be quantified for all potential development outcomes on all affected sites, this general advice has been provided by Charter's Quantity Surveying Group and assumes standard costs.

9. Conclusion

In undertaking this assessment Charter has not been able to establish that the application of the SBO will negatively impact the values of those properties to be affected. This is consistent with the findings of the study undertaken by Charter for the City of Stonnington in 2004.

Though concern over value impacts is regularly expressed in submissions to amendments to introduce the SBO, there has been no evidence provided through the Independent Panel process to establish this. This outcome is reinforced through numerous studies that have found that while actual flood events can impact property values, flood related policies and controls have no noticeable effect. This is further reaffirmed in the analysis of sales in the City of Manningham, undertaken by Charter, which shows there is no evidence that the Special Building Overlay has had an adverse impact on property values.

Property values are determined by a multitude of factors and are subject to a wide variety of influences. These include:

- Economic considerations (i.e. interest rates, employment levels, income growth, finance availability, consumer confidence, supply and demand);
- Population and demographic trends;
- Suburb, location and street desirability; and
- Dwelling characteristics and features (lot size, style/age of property, internal space, renovation potential, quality of finishes).

In a strong housing market, such as metropolitan Melbourne, these factors are all considered to be stronger determinants of price than flood notification, which tends to be obscured against these considerations. This is particularly so, in a competitive auction process, where the SBO is relegated as a genuine price determinant.

Against the many numerous factors affecting property values, the worst case scenario associated with the SBO – i.e. potentially having to construct above a minimum floor levels, is a negligible obligation which in any case, only applies where certain buildings and works are proposed.

For the reasons outlined, it is Charter's opinion that the SBO will not negatively impact property values in the City of Manningham.

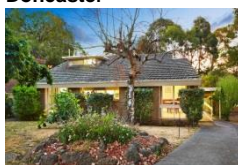


10. Appendices

34 Golf Hill Avenue, Doncaster



- Improved with a two storey brick veneer residence, presenting in a well maintained although dated condition. Accommodation comprises four bedrooms.
- Rectangular shaped allotment of 681 sq.m., zoned *General Residential Zone (GRZ1)*, abutting the former Eastern Golf Course to the rear boundary (proposed Mirvac development).
- 75% of the land is subject to a Special Building Overlay (SBO).
- Transacted February 2013 for a consideration of \$747,088.

Comparable Sales




Sales Schedule – Residential Dwellings/ Development Sites				
Address	Description/ Comments	Zoning	Land Area (sq.m.)	Sale Price/ Date
18 Burgundy Drive Doncaster 	Irregular shaped allotment, improved with a part two storey residence presenting in well maintained, although dated condition. Property abuts the former Eastern Golf Course to the rear boundary (proposed Mirvac development). Comparable size allotment, superior location within walking distance to Westfield Shopping Centre. The property is not subject to a Special Building Overlay. Improvements present in dated condition. Considered comparable overall as a sum of money.	<i>General Residential Zone (GRZ1)</i>	659	\$750,000 3/13
7 Prunella Close Doncaster 	Irregular shaped allotment, located at the bowl of a cul-de-sac. Improved with a single storey brick veneer dwelling presenting in dated condition. Larger allotment, comparable zoning and not subject to a Special Building Overlay. Superior location within walking distance to Westfield Shopping Centre. Inferior improvements. Sale considered superior overall due to location.	<i>General Residential Zone (GRZ1)</i>	701	\$789,000 3/13
25 Burgundy Drive Doncaster 	Rectangular shaped allotment, located opposite Burgundy Drive Reserve. Improved with a single storey residential dwelling presenting in dated condition. Site suits redevelopment and since the date of sale the property has been redeveloped with two dwellings. Smaller allotment, located directly opposite Burgundy Drive Reserve. Improvements considered to be of nominal added value. Higher land/building value rate adopted for the subject property.	<i>General Residential Zone (GRZ1)</i>	656	\$640,000 2/13

3 Hillcroft Drive, Templestowe



- Established brick veneer dwelling presenting in a well maintained, renovated condition providing for three bedroom accommodation.
- Sited on a generally rectangular shaped allotment of 664 sq.m., zoned *General Residential Zone (GRZ3)*.
- 80% of the land is subject to a Special Building Overlay (SBO).
- Transacted June 2014 for a consideration of \$865,000.

Comparable Sales




Sales Schedule - Residential Dwellings				
Address	Description/ Comments	Zoning	Land Area (sq.m.)	Sale Price/ Date
42 Hillcroft Drive Templestowe 	Rectangular shaped allotment, improved with a brick dwelling which at the date of sale presented in a well maintained condition. The dwelling provides for three bedroom accommodation. The land abuts Ruffey Creek, with 30% of the land subject to a Significant Landscape Overlay. The land is not subject to a Special Building Overlay. Similar sized allotment, located within the subject thoroughfare. The dwelling provides for a comparable level of accommodation, presenting to a comparable quality. The land is not subject to a Special Building Overlay, although we note that approximately 30% of the land is subject to a Significant Landscape Overlay.	<i>General Residential Zone (GRZ3)</i>	662	\$885,000 5/14
18 Mintaro Court Templestowe 	Rectangular shaped allotment with a gentle cross-fall, improved with a residential dwelling presenting in a dated condition. The dwelling provides for four bedroom accommodation. The land is not subject to any overlays. Similar sized allotment, nearby location. The dwelling provides for a superior level of accommodation, although presenting in a far inferior quality. The land is not subject to any overlays.	<i>General Residential Zone (GRZ3)</i>	653	\$830,000 10/14
70 Beecroft Crescent Templestowe 	Generally rectangular shaped allotment improved with a brick dwelling presenting in a renovated condition. The dwelling provides for four bedroom, two bathroom accommodation. The property abuts The Grange Reserve and is not subject to any overlays. Similar sized allotment, located 600 metres east of the subject property, abutting The Grange Reserve and within close proximity to Serpell Primary School. The dwelling provides for a superior level of accommodation, at a slightly superior quality. The land is not subject to any overlays. Lower purchase price evidenced in the subject property due to accommodation, quality and location.	<i>General Residential Zone (GRZ3)</i>	655	\$920,000 9/14

50 Mincha Avenue, Templestowe Lower



- Established dwelling providing for three bedroom, two bathroom accommodation. Internal photographs of the dwelling are not available; therefore the condition of the property cannot be ascertained.
- Sited on a rectangular shaped allotment of 653 sq.m., zoned *General Residential Zone (GRZ1)*.
- Approximately 80% of the land is subject to a Special Building Overlay (SBO).
- Transacted March 2015 for a consideration of \$790,000.

Comparable Sales





Sales Schedule - Residential Dwelling				
Address	Description/ Comments	Zoning	Land Area (sq.m.)	Sale Price/ Date
3 Wattle Court Templestowe Lower 	Rectangular shaped allotment, improved with a residential dwelling presenting in a dated condition. The dwelling provides for four bedroom accommodation. The land is not subject to any overlays. Similar size allotment located within a cul-de-sac position, 350 metres north-east of the subject property. The dwelling provides for a superior level of accommodation. The land is not subject to any overlays.	<i>General Residential Zone (GRZ1)</i>	645	\$780,000 12/14
125 Swanston Street Templestowe Lower 	Rectangular shaped allotment, improved with a residential dwelling presenting in a well maintained albeit, dated condition. The dwelling provides for three bedroom accommodation. The land is not subject to any overlays. Slightly smaller allotment, within immediate proximity. The dwelling provides for a comparable level of bedroom accommodation. The land is not subject to any overlays.	<i>General Residential Zone (GRZ1)</i>	637	\$790,000 8/14
17 Chatsworth Quadrant Templestowe Lower 	Rectangular shaped allotment, improved with a residential dwelling presenting in a dated condition. The dwelling provides for four bedroom accommodation. The land is not subject to any overlays. Slightly larger allotment, located further south-east. The dwelling provides for a superior level of accommodation, presenting in a dated condition. The land is not subject to any overlays.	<i>General Residential Zone (GRZ1)</i>	686	\$790,000 8/14

7 Dundas Court, Doncaster East



- Established brick veneer dwelling presenting in a well maintained, albeit in parts dated, condition providing for three bedroom plus study accommodation.
- Sited on an allotment of 711 sq.m., zoned *General Residential Zone (GRZ1)*.
- 100% of the land is subject to a Special Building Overlay (SBO).
- Transacted December 2015 for a consideration of \$1,050,000.

Comparable Sales

Sales Schedule – Residential Dwellings/ Development Sites				
Address	Description/ Comments	Zoning	Land Area (sq.m.)	Sale Price/ Date
12 Dundas Court Doncaster 	Irregular shaped corner allotment, improved with a brick dwelling presenting in a well maintained, renovated condition. The dwelling provides for five bedroom plus study accommodation. The land is not subject to the Special Building Overlay. Smaller allotment, superior corner position located within the subject thoroughfare. The property presents to a far superior standard and provides for a superior level of accommodation. The land is not subject to a SBO.	<i>General Residential Zone (GRZ1)</i>	645	\$1,267,500 10/16
16 Rowan Street Doncaster East 	Irregular shaped corner allotment, improved with a brick dwelling presenting in a well maintained, renovated condition. The dwelling provides for three bedroom accommodation plus an external studio/home office. Approximately 5% of the land is subject to a Special Building Overlay. Smaller allotment, superior corner position, located nearby. The property presents to a superior standard and provides for an external studio/home office. Approximately 5% of the land is subject to a Special Building Overlay.	<i>General Residential Zone (GRZ1)</i>	651	\$1,230,000 7/16
3 Skye Place Doncaster East 	Irregular shaped allotment located to the end of a cul-de-sac. The land is improved with a brick dwelling presenting in a well maintained, partially renovated condition, providing for three bedroom, two bathroom accommodation. The land is not subject to a Special Building Overlay. Similar size allotment, also located at the end of cul-de-sac, nearby. Presenting to a generally comparable condition to the subject. The land is not subject to a Special Building Overlay.	<i>General Residential Zone (GRZ1)</i>	697	\$1,080,000 5/16
23 Rowan Street Doncaster East 	Irregular shaped allotment, improved with a dated residential dwelling providing for three bedroom, two bathroom accommodation. The land is not subject to the Special Building Overlay. Smaller allotment, nearby location. Dwelling presents to a similar dated condition. Comparable zoning to the subject property, although the land is not subject to a SBO)	<i>General Residential Zone (GRZ1)</i>	650	\$925,000 9/15




12 Newlyn Close, Templestowe



- Established brick dwelling presenting in a well maintained, albeit dated, condition providing for four bedroom plus study accommodation.
- Sited on a corner allotment of 680 sq.m., zoned *General Residential Zone (GRZ3)*.
- Approximately 80% of the land is subject to a Special Building Overlay (SBO).
- Transacted September 2016 for a consideration of \$985,000.

Comparable Sales

Sales Schedule - Residential Dwellings

Address	Description/ Comments	Zoning	Land Area (sq.m.)	Sale Price/ Date
11 Newlyn Close Templestowe 	Irregular shaped allotment, improved with a brick dwelling presenting in a well maintained, albeit slightly dated condition. The property provides for three bedroom accommodation. The land is subject to a Special Building Overlay, of which approximately 20% is affected. Smaller allotment, located on the subject thoroughfare. The property provides for an inferior level of accommodation to the subject property although presents to a superior quality. The site is approximately 20% affected by a Special Building overlay.	<i>General Residential Zone (GRZ3)</i>	668	\$956,000 5/16
10 Cottswold Rise Templestowe 	Irregular shaped allotment, cul-de-sac location. The site is improved with a brick veneer dwelling presenting in dated condition. The dwelling provides for four bedroom, two bathroom accommodation. The land is not subject to a Special Building Overlay. Larger allotment, located nearby, also within a cul-de-sac position. The property provides for a superior level of accommodation, although presents to an inferior quality. The land is not subject to a Special Building Overlay.	<i>General Residential Zone (GRZ3)</i>	806	\$1,030,000 3/16
25 Lawanna Drive Templestowe 	Rectangular shaped allotment, improved with a brick veneer dwelling presenting in a well maintained, albeit dated condition. The dwelling provides for three bedroom, one bathroom accommodation. The land is not subject to a Special Building Overlay. Larger allotment, inferior position on a sloping site. The property provides for an inferior level of accommodation, presenting in a comparable quality. The land is not subject to a Special Building Overlay.	<i>General Residential Zone (GRZ3)</i>	786	\$907,500 3/16

**ATTACHMENT 12 – RECOMMENDED CHANGES TO EXHIBITED AMENDMENT C109
(IN ADDITION TO ATTACHMENT 10)**

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
1.	Macedon Plaza 15/325 Manningham Road TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
2.	33 Amersham Drive WARRANDYTE VIC, 3113	SB02	Minor incursion - Remove SBO2
3.	1 Alfreda Avenue BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
4.	3 Alfreda Avenue BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
5.	5 Alfreda Avenue BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
6.	27 Alfreda Avenue BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
7.	29 Alfreda Avenue BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
8.	37 Alfreda Avenue BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
9.	4 Apex Crescent BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
10.	15 Gympie Street BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
11.	21 Lilian Street BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
12.	12 Lincoln Drive BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
13.	2/12A Lincoln Drive BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
14.	2 Lindsay Street BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
15.	26 Millicent Avenue BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
16.	1/10 Millicent Avenue BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
17.	14 Westwood Drive BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
18.	1/7 Westwood Drive BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
19.	12 White Way BULLEEN VIC, 3105	SB02	Minor incursion - Remove SBO2
20.	13 Ambrose Street DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
21.	2 Anton Court DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
22.	1/114 Ayr Street DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
23.	Applewood Retirement Village 4 Barrington Walk DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
24.	16 Bellara Street DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
25.	1/13 Bellara Street DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
26.	32 Board Street DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
27.	162 Church Road DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
28.	167 Church Road DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
29.	169 Church Road DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
30.	178 Church Road DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
31.	187 Church Road DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
32.	195 Church Road DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
33.	60 Clay Drive DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
34.	15 Coolabah Street DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
35.	11/413 Doncaster Road DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
36.	14/413 Doncaster Road DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
37.	Applewood Retirement Village 13 Eagleview Walk DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
38.	3 Ella Court DONCASTER VIC, 3108	SB02	Convert SBO2 to SBO3
39.	9 Ella Court DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
40.	3 Fromhold Drive DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
41.	17 Golf Hill Avenue DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
42.	12 Golf Links Court DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
43.	29 Hampshire Road DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
44.	33 Hampshire Road DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
45.	29 Harcourt Street DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
46.	26 Koolkuna Avenue DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
47.	38 Koolkuna Avenue DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
48.	26 Lauer Street DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
49.	6A Myers Court DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
50.	38 Park Avenue DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
51.	7 Reddan Court DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
52.	12 Robyn Street DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
53.	7 Roseland Grove DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
54.	22 Roseland Grove DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
55.	5 Roseville Avenue DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
56.	13 Roseville Avenue DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
57.	18 Roseville Avenue DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
58.	24 Roseville Avenue DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
59.	2 Ruffey Lake Court DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
60.	29 The Boulevard DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
61.	33 The Boulevard DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
62.	1/29 Tram Road DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
63.	5 Tully Court DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
64.	31 Westfield Drive DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
65.	20/224 Williamsons Road DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
66.	54 Windella Quadrant DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
67.	1/36 Windella Quadrant DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
68.	69 Winston Drive DONCASTER VIC, 3108	SB02	Minor incursion - Remove SBO2
69.	173 Andersons Creek Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
70.	259 Andersons Creek Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
71.	158-160 Andersons Creek Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
72.	4/148 Andersons Creek Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
73.	8/148 Andersons Creek Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
74.	30 Arawata Drive DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
75.	1/28 Ashton Rise DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
76.	10 Baratta Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
77.	15 Baratta Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
78.	102 Bellevue Avenue DONCASTER EAST VIC, 3109	SBO2	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
79.	218 Blackburn Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
80.	15/213 Blackburn Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
81.	2/219 Blackburn Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
82.	4 Camelot Court DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
83.	5 Daphne Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
84.	8 Daphne Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
85.	1/3 Daphne Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
86.	12 Daws Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
87.	29 Devon Drive DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
88.	11 Dianne Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
89.	3/1 Dianne Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
90.	3/3 Dianne Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
91.	873 Doncaster Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
92.	2/871 Doncaster Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
93.	5/27 Dryden Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
94.	35 Fernlea Crescent DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
95.	6 Finch Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
96.	8 Finch Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
97.	3 Habitat Park Drive DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
98.	12 Habitat Park Drive DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
99.	7 Harry Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
100.	9 Harry Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
101.	15 Harry Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
102.	17 Harry Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
103.	5A Harry Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
104.	Roseville Retirement Village 93/110 King Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
105.	10 Longstaff Court DONCASTER EAST VIC, 3109	SB02 and SBO3	Remove SBO2 and SBO3
106.	11 Longstaff Court DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
107.	12 Longstaff Court DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
108.	13 Longstaff Court DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
109.	6 Lyons Place DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
110.	2A Minaki Avenue DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
111.	25 Morinda Crescent DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
112.	27 Morinda Crescent DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
113.	21 Morna Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
114.	2 Mullum Place DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
115.	14 Murphy Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
116.	2 Paltarra Court DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
117.	3A Paula Crescent DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
118.	17 Renshaw Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
119.	16 Ridley Court DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
120.	69 Rosella Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
121.	39 Ross Street DONCASTER EAST VIC, 3109	SB02	Remove SBO2. Property still impacted by SBO3.
122.	21 Rowan Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
123.	2 Silverdale Court DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
124.	72 St Clems Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
125.	78 St Clems Road DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
126.	3 Stafford Court DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
127.	19 Thomas Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
128.	4 Tidcombe Crescent DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
129.	5 Toinette Court DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
130.	39 Tracey Street DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
131.	31 Treevalley Drive DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
132.	33 Treevalley Drive DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
133.	35 Treevalley Drive DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
134.	37 Treevalley Drive DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
135.	39 Treevalley Drive DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
136.	41 Treevalley Drive DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
137.	44 Treevalley Drive DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
138.	3/5 Vicki Court DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
139.	7 Wimbledon Court DONCASTER EAST VIC, 3109	SB02	Minor incursion - Remove SBO2
140.	30-32 Beckett Road DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
141.	4 Bernarra Court DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
142.	12 Chippewa Avenue DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
143.	5/30 Chippewa Avenue DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
144.	1/47 Chippewa Avenue DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
145.	2/10 Chippewa Avenue DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
146.	45 Craig Road DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
147.	5A Jilpanger Road DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
148.	16 Langford Crescent DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
149.	29 Lisbeth Avenue DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
150.	22 Murrndal Drive DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
151.	46-48 Old Warrandyte Road DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
152.	27 Lisbeth Avenue DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
153.	433 Serpells Terrace DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
154.	42 Valepark Drive DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
155.	6 Wallace Avenue DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
156.	6 Whitefriars Way DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
157.	23 Wooddale Grove DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
158.	65 Woodhouse Road DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
159.	80 Woodhouse Road DONVALE VIC, 3111	SB02	Minor incursion - Remove SBO2
160.	65-67 Berringa Road PARK ORCHARDS VIC, 3114	SB02	Minor incursion - Remove SBO2
161.	10-12 Daintree Avenue PARK ORCHARDS VIC, 3114	SB02	Minor incursion - Remove SBO2
162.	22-24 Drayton Crescent PARK ORCHARDS VIC, 3114	SB02	Minor incursion - Remove SBO2
163.	26-28 Drayton Crescent PARK ORCHARDS VIC, 3114	SB02	Minor incursion - Remove SBO2
164.	5 Enfield Avenue PARK ORCHARDS VIC, 3114	SB02	Minor incursion - Remove SBO2
165.	7 Joseph Court PARK ORCHARDS VIC, 3114	SB02	Minor incursion - Remove SBO2
166.	33 Knees Road PARK ORCHARDS VIC, 3114	SB02	Minor incursion - Remove SBO2
167.	1 Minter Court PARK ORCHARDS VIC, 3114	SB02	Minor incursion - Remove SBO2
168.	31-35 North Valley Road PARK ORCHARDS VIC, 3114	SB02	Minor incursion - Remove SBO2
169.	18 Tacoma Street PARK ORCHARDS VIC, 3114	SB02	Minor incursion - Remove SBO2
170.	16 Villanova Court PARK ORCHARDS VIC, 3114	SB02	Minor incursion - Remove SBO2
171.	10 Apple Blossom Court TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
172.	22 Bali Hi Boulevard TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
173.	6 Castlewood Place TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
174.	7 Castlewood Place TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
175.	1 Chelmsford Avenue TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
176.	27 Chippendale Court TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
177.	304 Church Road TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
178.	18 Colonsay Street TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
179.	2 Cottswold Rise TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
180.	6 Forest Place TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
181.	1 Glen Court TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
182.	22 Glendarragh Road TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
183.	8 Gum Ridge Close TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
184.	8 Hathaway Close TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
185.	8 Hillhouse Road TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
186.	8A Hillhouse Road TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
187.	55 Lawanna Drive TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
188.	7 McLachlan Street TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
189.	15 Milne Street TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
190.	12 Moonbria Way TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
191.	13 Moonbria Way TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
192.	12 Nambour Road TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
193.	6 Orama Court TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
194.	13/131 Parker Street TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
195.	3/123 Parker Street TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
196.	343 Porter Street TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
197.	4 Shelley Court TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
198.	15 Taparoo Road TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
199.	26 The Grange TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
200.	32 The Grange TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
201.	109 The Grange TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
202.	1/82 Wood Street TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
203.	2/92 Wood Street TEMPLESTOWE VIC, 3106	SB02	Minor incursion - Remove SBO2
204.	44 Chalon Avenue TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
205.	3 David Road TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
206.	1 Esther Street TEMPLESTOWE LOWER VIC, 3107	SB02 and SBO3	Remove SBO2 and SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
207.	21 Fyfe Drive TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
208.	28 Fyfe Drive TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
209.	34 Fyfe Drive TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
210.	10 Gertrude Street TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
211.	24 Hazel Drive TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
212.	51 Hazel Drive TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
213.	17 Hodgson Street TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
214.	1/10 Hodgson Street TEMPLESTOWE LOWER VIC, 3107	SB02	Remove SBO2. Property still subject to SBO3.
215.	6 Jacana Avenue TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
216.	13 Janet Street TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
217.	11 Montpellier Crescent TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
218.	12 Montpellier Crescent TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
219.	20 Oak Crescent TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
220.	24 Riverwood Lane TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
221.	26 Riverwood Lane TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
222.	1 Roma Court TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
223.	10 Rooney Street TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
224.	12 Rooney Street TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
225.	7 Sassafras Drive TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
226.	28 Scarlet Ash Drive TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
227.	5 Totara Court TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
228.	10 Totara Court TEMPLESTOWE LOWER VIC, 3107	SB02	Minor incursion - Remove SBO2
229.	119 Brackenbury Street WARRANDYTE VIC, 3113	SB02	Minor incursion - Remove SBO2
230.	127-133 and 2/127-133 Harris Gully Road WARRANDYTE VIC, 3113	SB02	Minor incursion - Remove SBO2
231.	287-301 Jumping Creek Road WARRANDYTE VIC, 3113	SB02	Remove SBO2. Property still impacted by SBO3.
232.	6 Mahoneys Court WARRANDYTE VIC, 3113	SB02 and SBO3	Remove SBO2 and SBO3
233.	49 Oakland Drive WARRANDYTE VIC, 3113	SB02	Minor incursion - Remove SBO2
234.	6 Russell Road WARRANDYTE VIC, 3113	SB02	Minor incursion - Remove SBO2
235.	23 West End Road WARRANDYTE VIC, 3113	SB02	Minor incursion - Remove SBO2
236.	1 Green Ridge WARRANDYTE SOUTH VIC, 3134	SB02	Minor incursion - Remove SBO2
237.	46 Bordeaux Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
238.	95 Pound Road WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
239.	88-154 Park Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
240.	4/115-117 James Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
241.	47 Herlihys Road TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
242.	25 Alison Avenue BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
243.	77 Bourke Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
244.	Grant Olson Reserve 32-34 Bourke Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
245.	28 Calderwood Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
246.	2/22 Carrathool Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
247.	34 Cuthbert Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
248.	38 Cuthbert Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
249.	39 Cuthbert Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
250.	22 Doyle Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
251.	24 Doyle Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
252.	26 Doyle Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
253.	5 Eama Court BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
254.	69 Furneaux Grove BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
255.	15 Gympie Street BULLEEN VIC, 3105	SBO2 and SBO3	Remove SBO2 and SBO3
256.	21 Gympie Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
257.	10 Latrobe Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
258.	40 Lincoln Drive BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
259.	136 Manningham Road BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
260.	29 Nirvana Crescent BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
261.	35 Nirvana Crescent BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
262.	5 Panorama Court BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
263.	7 Panorama Court BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
264.	15 Panorama Court BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
265.	6 Penderel Way BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
266.	13 Pleasant Road BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
267.	14 Ralph Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
268.	35 Robinson Grove BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
269.	19 Ronald Avenue BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
270.	21 Ronald Avenue BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
271.	58 Sheahans Road BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
272.	60 Sheahans Road BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
273.	2 Spring Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
274.	5 Virginia Court BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
275.	11 Virginia Court BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
276.	24 Warringal Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
277.	40 Warringal Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
278.	41 Warringal Street BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
279.	14 Yarraleen Place BULLEEN VIC, 3105	SBO3	Minor incursion - Remove SBO3
280.	22 Anthony Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
281.	1/28 Anthony Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
282.	12 Arnold Grove DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
283.	2 Attunga Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
284.	1/57 Baird Street South DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
285.	30 Ballamore Crescent DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
286.	8 Bembooka Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
287.	1 Benton Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
288.	2 Benton Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
289.	7 Bernice Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
290.	2 Birbank Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
291.	3 Birbank Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
292.	54 Board Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
293.	16 Brentvale Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
294.	21 Burgundy Drive DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
295.	9 Cantala Drive DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
296.	22 Cantala Drive DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
297.	2 Capri Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
298.	3 Capri Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
299.	13 Caringal Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
300.	20 Caringal Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
301.	2 Christine Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
302.	17 Clancys Lane DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
303.	20 Clancys Lane DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
304.	32 Clancys Lane DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
305.	19 Corella Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
306.	21 Corella Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
307.	72 Council Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
308.	76 Council Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
309.	1/10 Curlew Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
310.	3 Curnola Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
311.	3 Dianella Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
312.	20 Dion Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
313.	3/728 Doncaster Road DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
314.	2 Ernst Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
315.	20 Ernst Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
316.	3 Esta Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
317.	7 Fairway Road DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
318.	31 Finlayson Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
319.	4/32 Firth Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
320.	3/3 Firth Street DONCASTER VIC 3108	SBO3	Minor incursion - Remove SBO3
321.	2 Gairlock Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
322.	316 George Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
323.	1/157 George Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
324.	15 Grange Park Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
325.	24 Grange Park Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
326.	2/11 Grange Park Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
327.	6 Gregory Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
328.	13 Hanke Road DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
329.	10 Harvell Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
330.	7 Hender Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
331.	42 Henry Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
332.	48 Henry Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
333.	181 High Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
334.	1 Howard Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
335.	2/27 Katrina Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
336.	23 Kiewa Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
337.	26 Lauer Street DONCASTER VIC, 3108	SBO2 and SBO3	Remove SBO2 and SBO3
338.	19 Lawford Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
339.	22 Log School Road DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
340.	5/2 Malcolm Crescent DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
341.	394 Manningham Road DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
342.	2 Margot Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
343.	9 Margot Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
344.	43 Margot Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
345.	15 Marianne Way DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
346.	21 Marilyn Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
347.	4 Maverick Close DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
348.	12 Menarra Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
349.	4 Monaco Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
350.	12 Monaco Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
351.	13 Monaco Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
352.	24 Outlook Drive DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
353.	5 Park Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
354.	7 Park Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
355.	2/49 Queens Avenue DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
356.	3 Ralund Road DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
357.	60 Rathmullen Quadrant DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
358.	7 Robyn Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
359.	46 Roseland Grove DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
360.	4 Saxon Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
361.	15 Somerville Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
362.	24 Stanley Drive DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
363.	26 Stanley Drive DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
364.	30 Stanley Drive DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
365.	Studley Reserve Pre-School 18 Studley Street DONCASTER VIC, 3108 – 2 properties	SBO3	Minor incursion - Remove SBO3
366.	36 Studley Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
367.	38 Studley Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
368.	6 Terence Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
369.	75 The Boulevard DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
370.	26 Thiele Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
371.	1, 2, 3, 4, 5, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310 /6 Thiele Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
372.	5 Tiffany Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
373.	3/73 Tram Road DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
374.	1/79 Tram Road DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
375.	4 Tully Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
376.	33 Turana Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
377.	39 Turana Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
378.	67 Turana Street DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
379.	7 Viscount Drive DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
380.	11/224 Williamsons Road DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
381.	15/224 Williamsons Road DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
382.	51 Wilsons Road DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
383.	18 Winbrook Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
384.	25 Winston Drive DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
385.	18 Winters Way DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
386.	32 Winters Way DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
387.	2 Zander Court DONCASTER VIC, 3108	SBO3	Minor incursion - Remove SBO3
388.	1 Aida Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
389.	2/13 Amelia Crescent DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
390.	1/6 Amelia Crescent DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
391.	2 Apple Green Lane DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
392.	3 Apricot Lane DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
393.	3 Banool Quadrant DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
394.	5 Banool Quadrant DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
395.	10 Banool Quadrant DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
396.	11 Banool Quadrant DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
397.	10 Belvedere Avenue DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
398.	11 Belvedere Avenue DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
399.	5 Belvoir Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
400.	1/27 Beverley Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
401.	160 Blackburn Road DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
402.	172 Blackburn Road DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
403.	176 Blackburn Road DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
404.	1, 2, 3, 4, 5 & 6 /221-223 Blackburn Road DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
405.	3/225 Blackburn Road DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
406.	7/34 Bowen Road DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
407.	1/10 Bullen Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
408.	12 Catherine Avenue DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
409.	15 Catherine Avenue DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
410.	10 Cavalier Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
411.	32 Champion Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
412.	30 Churchill Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
413.	2/7 Churchill Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
414.	2/21 Churchill Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
415.	3/21 Churchill Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
416.	2/11 Colchester Drive DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
417.	19 Corsican Avenue DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
418.	14 Craiglea Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
419.	15/1 Daws Road DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
420.	40 Deep Creek Drive DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
421.	66 Deep Creek Drive DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
422.	56 Dehnert Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
423.	10 Dryden Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
424.	16 Dryden Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
425.	20 Gainsborough Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
426.	8 Gedye Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
427.	102 George Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
428.	9 Glendora Lane DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
429.	6 Halsbury Close DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
430.	1 Happy Valley Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
431.	Jackson Court Shopping Centre 20 Jackson Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
432.	1/6 Kara Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
433.	2 Kiandra Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
434.	Roseville Retirement Village Community Facility and Medical Centre 110 King Street DONCASTER EAST VIC, 3109 – 2 properties	SBO3	Minor incursion - Remove SBO3
435.	Roseville Retirement Village 57/110 King Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
436.	51 Larnoo Drive DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
437.	10 Longstaff Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
438.	4 Maude Avenue DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
439.	1/4 May Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
440.	11 Morello Circle DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
441.	15 Morello Circle DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
442.	8 Morinda Crescent DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
443.	10 Morinda Crescent DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
444.	53 Morna Road DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
445.	4 Mowbray Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
446.	2 Oran Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
447.	59 Owens Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
448.	19 Paula Crescent DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
449.	6 Peachwood Rise DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
450.	16 Peter Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
451.	2/2 Pine Way DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
452.	72 Polaris Drive DONCASTER EAST VIC, 3109	SBO3	Remove SBO3. Property still impacted by SBO2.
453.	4 Pushkin Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
454.	6A Pushkin Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
455.	1/33 Renshaw Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
456.	Apt's 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 212, 213, 214, 215, 216, 217, 218, 219, 220, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311/ 187 Reynolds Road DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
457.	55 Rosella Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
458.	24 Rowan Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
459.	68 Russell Crescent DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
460.	355 Serpells Road DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
461.	5 Sherbrooke Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
462.	6 Sherbrooke Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
463.	8 Stafford Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
464.	3 Steorra Mews DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
465.	8 Streeton Lane DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
466.	4 Supreme Place DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
467.	1/39 Talford Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
468.	28A Tidcombe Crescent DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
469.	11 Toinette Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
470.	Tolstoy Reserve 4 Tolstoy Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
471.	11 Towong Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
472.	12 Tracey Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
473.	22 Treevalley Drive DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
474.	9 Tyrol Court DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
475.	Woodlea Reserve 14-22 Woodlea Street DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
476.	9 Worthing Avenue DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
477.	17 Worthing Avenue DONCASTER EAST VIC, 3109	SBO3	Minor incursion - Remove SBO3
478.	1 Anglemere Crescent DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
479.	7 Barwon Court DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
480.	62 Carbine Street DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
481.	11 Chaim Court DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
482.	15 Chaim Court DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
483.	25 Craig Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
484.	4A Florence Avenue DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
485.	3 Glenwood Close DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
486.	8A Hamal Street DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
487.	40A Harris Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
488.	4 Honybun Court DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
489.	54 Lisbeth Avenue DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
490.	4 Martha Street DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
491.	76-78 McGowans Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
492.	132 Mitcham Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
493.	27 Murndal Drive DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
494.	313 Oban Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
495.	113 Old Warrandyte Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
496.	98-102 Old Warrandyte Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
497.	13 Oregon Drive DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
498.	17 Oregon Drive DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
499.	9 Park Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
500.	5 Pictor Court DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
501.	67 Roy Street DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
502.	277-279 Springvale Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
503.	Pinetree Retirement Village 61/330 Springvale Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
504.	Pinetree Retirement Village 62/330 Springvale Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
505.	Pinetree Retirement Village 8/330 Springvale Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
506.	Pinetree Retirement Village 9/330 Springvale Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
507.	9 The Elms DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
508.	78 Tunstall Road DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
509.	1 Underwood Drive DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
510.	8 Vasey Grove DONVALE VIC, 3111	SBO3	Minor incursion - Remove SBO3
511.	69-71 Arundel Road PARK ORCHARDS VIC, 3114	SBO3	Minor incursion - Remove SBO3
512.	72-74 Arundel Road PARK ORCHARDS VIC, 3114	SBO3	Minor incursion - Remove SBO3
513.	Park Orchards Primary School 1-3 Bowmore Avenue PARK ORCHARDS VIC, 3114	SBO3	Minor incursion - Remove SBO3
514.	2-4 Brympton Avenue PARK ORCHARDS VIC, 3114	SBO3	Minor incursion - Remove SBO3
515.	13-14 Dirlton Crescent PARK ORCHARDS VIC, 3114	SBO3	Minor incursion - Remove SBO3
516.	67-69 Enfield Avenue PARK ORCHARDS VIC, 3114	SBO3	Minor incursion - Remove SBO3
517.	29 Falconer Road PARK ORCHARDS VIC, 3114	SBO3	Minor incursion - Remove SBO3
518.	30 McEwan Road PARK ORCHARDS VIC, 3114	SBO3	Minor incursion - Remove SBO3
519.	18 Milne Road PARK ORCHARDS VIC, 3114	SBO3	Minor incursion - Remove SBO3
520.	20 Milne Road PARK ORCHARDS VIC, 3114	SBO3	Minor incursion - Remove SBO3
521.	27-31 Tacoma Street PARK ORCHARDS VIC, 3114	SBO3	Minor incursion - Remove SBO3
522.	3 Yeoman Court PARK ORCHARDS VIC, 3114	SBO3	Minor incursion - Remove SBO3
523.	293 Old Warrandyte Road RINGWOOD NORTH VIC, 3134	SBO3	Minor incursion - Remove SBO3
524.	637 Ringwood-Warrandyte Road RINGWOOD NORTH VIC, 3134	SBO3	Minor incursion - Remove SBO3
525.	Memorial Hall 11-13 Anderson Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
526.	8 Ashcroft Avenue TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
527.	19 Aumann Drive TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
528.	23 Bamfield Close TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
529.	277 Church Road TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
530.	292 Church Road TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
531.	10 Cliveden Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
532.	3 Donhaven Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
533.	2 Ferndell Crescent TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
534.	14 Ferndell Crescent TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
535.	9A Gardenview Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
536.	9 Gloucester Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
537.	10 Gloucester Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
538.	85 Greenridge Avenue TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
539.	90 Greenridge Avenue TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
540.	10 Hathaway Close TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
541.	11 Hathaway Close TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
542.	67 James Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
543.	85 James Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
544.	4/119 James Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
545.	5/111 James Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
546.	16 Kelvinside Drive TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
547.	7 Lalani Terrace TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
548.	9 Lalani Terrace TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
549.	2 Lankester Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
550.	12 Lawanna Drive TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
551.	1 Lawsons Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
552.	30 Mahoney Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
553.	47 Matisse Drive TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
554.	59 Matisse Drive TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
555.	1/12 McLachlan Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
556.	1 Mintaro Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
557.	16 Mintaro Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
558.	3 Nambour Road TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
559.	9 Noorilim Close TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
560.	2 Norwich Place TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
561.	3 Oliver Road TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
562.	142 Parker Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
563.	1/138 Parker Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
564.	147-151 Parker Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
565.	12 Rasmussen Drive TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
566.	6 Renoir Avenue TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
567.	8 Renoir Avenue TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
568.	10 Renoir Avenue TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
569.	8 Selwyn Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
570.	46 Serpells Road TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
571.	248 Serpells Road TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
572.	29 Shakespeare Drive TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
573.	9 Sunny Rise TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
574.	65 Taparoo Road TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
575.	2 Tatterson Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
576.	3A Veda Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
577.	137 Victoria Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
578.	9 Wallmah Close TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
579.	22 Whitehall Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
580.	4 Willowbank Court TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
581.	46 Wood Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
582.	3/55 Wood Street TEMPLESTOWE VIC, 3106	SBO3	Minor incursion - Remove SBO3
583.	14-16 Airdrie Court TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
584.	6 Alburnum Crescent TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
585.	10 Alburnum Crescent TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
586.	12 Andromeda Way TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
587.	40 Ashford Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
588.	2/12 Ashford Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
589.	3 Balmoral Avenue TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
590.	7 Balmoral Avenue TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
591.	2 Beacon Court TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
592.	6 Cambridge Wynd TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
593.	15 Cambridge Wynd TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
594.	2 Conifer Place TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
595.	5 Conifer Place TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
596.	20 Crawford Road TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
597.	18 Dellfield Drive TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
598.	19 Dellfield Drive TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
599.	29 Dellfield Drive TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
600.	38 Dellfield Drive TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
601.	44 Dellfield Drive TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
602.	1 Esther Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
603.	2 Esther Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
604.	41 Eucalypt Avenue TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
605.	6 Exeter Close TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
606.	7 Exeter Close TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
607.	1 Eyre Court TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
608.	1A Eyre Court TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
609.	26 Fairbank Crescent TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
610.	10/50-54 Foote Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
611.	12/50-54 Foote Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
612.	3/50-54 Foote Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
613.	13A Gertrude Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
614.	5/9 Herlihys Road TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
615.	3/376 High Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
616.	12 Hodgson Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
617.	54 Hodgson Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
618.	64 Hodgson Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
619.	3 Jacaranda Court TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
620.	3 Lorna Court TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
621.	7 Lynnwood Parade TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
622.	14 Lynnwood Parade TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
623.	70 Lynnwood Parade TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
624.	46 Macedon Road TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
625.	53 Macedon Road TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
626.	59-61 Macedon Road TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
627.	289 Manningham Road TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
628.	1/25 Marcus Road TEMPLESTOWE LOWER VIC, 3107	SBO3	Remove SBO3. Property still impacted by SBO2.
629.	12 Michael Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Remove SBO3. Property still impacted by SBO2.
630.	18 Olympus Drive TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
631.	19/60 Parker Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
632.	8 Riverwood Lane TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
633.	1 Rooney Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
634.	2/9 Rosemary Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
635.	9 Scarlet Ash Drive TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
636.	20 Sheahans Road TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
637.	9 Sinclair Avenue TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
638.	31 Sinclair Avenue TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
639.	33 Sinclair Avenue TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
640.	14 Sophora Court TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
641.	18 Sylvia Street TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
642.	279 Thompsons Road TEMPLESTOWE LOWER VIC, 3107	SBO3	Minor incursion - Remove SBO3
643.	23 Amersham Drive WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
644.	12 Antigoni Court WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
645.	2 Flannery Court WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
646.	147 Flannery Court WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
647.	266A Heidelberg-Warrandyte Road WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
648.	7-11 Hutchinson Avenue WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
649.	28 Lynette Avenue WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
650.	6 Mahoneys Court WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
651.	10 Mahoneys Court WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
652.	4 Mirabella Court WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
653.	6-8 Naughton Avenue WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
654.	7-9 Orchard Grove WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
655.	8 Poppys Court WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
656.	103 Pound Road WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
657.	5 Swansfield Court WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
658.	16 Valley Way WARRANDYTE VIC, 3113	SBO3	Minor incursion - Remove SBO3
659.	13 Fadaro Crescent WARRANDYTE SOUTH VIC, 3134	SBO3	Minor incursion - Remove SBO3
660.	84 Hall Road WARRANDYTE SOUTH VIC, 3134	SBO3	Minor incursion - Remove SBO3
661.	6 Homan Court WARRANDYTE SOUTH VIC, 3134	SBO3	Remove SBO3. Property still impacted by SBO2.
662.	2 Carrathool Street, BULLEEN VIC, 3105	SBO3	Remove SBO3. – Boundary issue with modelling.
663.	4 Carrathool Street, BULLEEN VIC, 3105	SBO3	Remove SBO3. – Boundary issue with modelling.
664.	4A Carrathool Street, BULLEEN VIC, 3105	SBO3	Remove SBO3. – Boundary issue with modelling.
665.	2 Hillcroft Drive, TEMPLESTOWE VIC, 3106	SBO1	Convert SBO1 to SBO3
666.	8 Hillcroft Drive, TEMPLESTOWE VIC, 3106	SBO1	Convert SBO1 to SBO3

NO.	PROPERTY ADDRESS	EXHIBITED OVERLAY	RECOMMENDED CHANGE TO EXHIBITED AMENDMENT
667.	18 Hillcroft Drive, TEMPLESTOWE VIC, 3106	SBO1	Convert SBO1 to SBO3
668.	20 Hillcroft Drive, TEMPLESTOWE VIC, 3106	SBO1	Convert SBO1 to SBO3
669.	22 Hillcroft Drive, TEMPLESTOWE VIC, 3106	SBO1	Convert SBO1 to SBO3
670.	28 Hillcroft Drive, TEMPLESTOWE VIC, 3106	SBO1	Convert SBO1 to SBO3
671.	32 Hillcroft Drive, TEMPLESTOWE VIC, 3106	SBO1	Convert SBO1 to SBO3
672.	34 Hillcroft Drive, TEMPLESTOWE VIC, 3106	SBO1	Convert SBO1 to SBO3
673.	36 Ardgower Court TEMPLESTOWE LOWER VIC, 3107	LSIO	Convert LSIO to SBO2
674.	13, 15 ,19,20,25 Carbine Street DONVALE VIC, 3111	UFZ	Rezone to General Residential Zone 3