

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 558 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 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

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DELWP – Department of Environment, Land, Water and Planning

OSD – On-site detention

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	Taking account of the changes to the topography of properties upstream of 10 Louisa Place since 2009 when the Lidar data was collected, it is recommended to remove the central section of SBO2 from the property and realign the shape to the rear and eastern boundaries of the property. It is also recommended to change the designation of the new shape from SBO2 to SBO3, taking account of modelled flow depths.	Yes. Remove the central section of SBO2 from the property and realign the shape to the rear and eastern boundaries. Change the SBO2 to SBO3.
2.	24 Mullens Road, Warrandyte	Andersons Creek	SBO2	14	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	Withdrew submission	The submission contained no content. Clarification sought by Council. None provided. The submission was subsequently withdrawn.	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. A site visit was undertaken from the street for this property to verify the modelled flood shape against the terrain. Given the	Yes. Remove the SBO2 shape from 49 Dellfield Drive. In addition, remove SBO2

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					size of the catchments involved, each area has been broken up into a grid with 3m x 3m cells. This approach is considered to generally 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's in accordance with industry guidelines. The outcome of the review is that the exhibited flood shape be removed.	shape from 45 and 47 Dellfield Drive and remove part of the SBO2 shape from 43 Dellfield.
5.	55-57 Ennismore Crescent, Park Orchards	Mullum Mullum Creek	SBO1	4, 5	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
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	No

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					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.	
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. A recent meeting involving the submitter and Council officers did not highlight any further issues to be addressed in addition to the points raised in the original submission. Due to the percentage of SBO coverage on the subject property and the modelled depth of flow, it is not recommended to remove the SBO2 area from the property.	No
8.	12 Olympus Drive, Templestowe Lower	Ruffey Creek	SBO3	14	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

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10.	3 Anton Court, Doncaster	Ruffey Creek	SBO2	2	The submitter is correct in stating 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 (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. The flood 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.	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 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.	No
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	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					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.	
13.	74 St Clems Road, Doncaster East	Koonung Creek	SBO2	1, 3, 7, 8	The submitter is correct in stating 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 (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. The flood 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.	No
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	No

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					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.	
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
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,	No

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					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.	
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 are 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. The submission states that there have been "some 1% events" experienced at this location. The review has confirmed the surrounding topography and drainage assets. The review has however found that the depths of flow in the vicinity of the carport as modelled were less than 30mm in depth and as such, it is recommended that the SBO2 area near the carport be trimmed and removed.	Yes. Remove part of the eastern section of the SBO2 shape.
19.	32 Fairbank Crescent, Templestowe Lower	Ruffey Creek	SBO3	2, 5, 7, 9, 11	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	Yes. Remove SBO3 incursion from the property.

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					<p>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>	
20.	3 Daws Road, Doncaster East	Ruffey Creek	SBO3	1, 11	<p>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</p>	<p>Yes. Remove SBO3 ponding from the property.</p> <p>In addition, remove SBO3 from 2 and 3 Apricot Lane and 14 & 15/1 Daws Road</p>

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					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.	
21.	74 Thompsons Road, Bulleen	Koonung Creek	SBO3	7, 8	A site inspection and desktop review lead to the view that flooding will not reach sufficient depths to allow water to flow over the kerb between 74 and 76 Thompsons Road. An issue has been identified with the modelling in Thompsons Road which has resulted in a low point in the nature strip in Thompsons Road which permits modelled flows to enter 74 Thompsons Road. In reality it is likely that flows in a 1 in 100 year event will continue west along Thompsons Road to Allen Street. It is recommended that the SBO be removed from this property.	Yes. Remove SBO3 from property.
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 experience runoff in the	No

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					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 describes historical flooding in this area. There was a drainage upgrade in the vicinity of the submission property in 1998 and this was included in the modelling. The subject property is not downstream of the upgrade so it would not impact the flood extent. The review has confirmed the surrounding drainage assets. For the 25 minute duration which is the critical duration for this property, the event on the 29th of December 2016 was estimated as the equivalent of the 1 in 25 year rainfall event. This is much lower than the 1 in 100 year event that was used as a basis for the SBOs. The model is indicating that flood water is overtopping the gutter in Ironbark Drive and flowing into the subject property. Based on the depths of water on Ironbark Drive, it is not likely that they will be deep enough to do this. This has likely been caused by the resolution of the model picking up a low point in the gutter and another low point after the nature strip. This would lead to the low point being formed in the modelled surface due to the tinning process. Considering the depths in the subject properties are only just above the filtering parameter, this reduction in flow is likely to reduce them enough to remove them	Yes Remove SBO3 from property. In addition remove SBO3 from 35 Scarlet Ash Drive.

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					from the SBO. Therefore, it is recommended that the SBO be removed from, 37 Scarlet Ash Drive. The flood extent should be trimmed to the property boundary now that there is no other flooding in the property.	
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 future. It is considered that the Lidar data adequately represents the ground conditions and that the SBO2 should be retained in this case.	No
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. Following a further review, the experiences of the submitter of property flooding are consistent with the modelled SBO2 shape	No

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					impacting the property. It is recommended that the SBO2 shape be retained accordingly.	
26.	39 Scarlet Ash Drive, Templestowe Lower	Ruffey Creek	SBO3	3	The submitter describes historical flooding in this area. There was a drainage upgrade in the vicinity of the submission property in 1998 and this was included in the modelling. The subject property would however not benefit from this upgrade. For the 25 minute critical duration event for this property, the event on the 29th of December 2016 was estimated as the equivalent of the 1 in 25 year rainfall event. This is much lower than the 1 in 100 year event that was used as a basis of the SBOs. The review has confirmed the surrounding topography and drainage assets, with the exception of the area behind kerb in Ironbark Drive. The model is indicating that flood water is overtopping the gutter in Ironbark Drive and flowing into the subject property. Based on the depths of water on Ironbark Drive, it is not likely that they will be deep enough to do this. This has likely been caused by the resolution of the model picking up a low point in the gutter and another low point after the nature strip. This would lead to the low point being formed in the modelled surface due to the tinning process. Considering that the depths in the subject properties are only just above the filtering parameter, this reduction in flow is likely to reduce them enough to remove the SBO. Therefore, it is recommended that the SBO	Yes. Remove SBO3 from property.

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					be removed from 39 Scarlet Ash Drive. The flood extent should be trimmed to the property boundary now that there is no other flooding in the property and it is within 5m of the roadway.	
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. 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.	No
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	No

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					flood shape should remain as exhibited at this location.	
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 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. The submission takes issue with the extent of the southern flood shape running through the property compared to neighbouring properties. A review of the Lidar data at this location has found issues which warrant review of the southern flood shape. The review has generally confirmed the surrounding topography in other areas and the existing drainage assets. The SBO2 shape in the gully at the rear of the property is confirmed. The SBO2 shape to the south is recommended to be removed accordingly.	Yes. Retain the SBO2 shape at the rear of the property but delete the SBO2 shape leading to the gully.
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	No

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					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.	
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 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.	No

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34.	11 Gairlock Court, Doncaster	Ruffey Creek	SBO3	2	This was modelled as water flowing in from the street, but it has been analysed and determined that the property should be removed from SBO3.	Yes. SBO3 to be removed from property.
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 exhibited flood shape is recommended to be deleted accordingly.	Yes. Remove SBO2 incursion from the property.
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	No

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					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.	
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

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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 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 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. Due to the modelling being undertaken on the assumption that the drainage network is operating at capacity, drainage maintenance is an issue separate to the extent of the flood shape. Based on the investigation undertaken and further review following a recent meeting with the submitter, it is	No

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					recommended that 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. It has been determined that incursions are mainly due to the rounding of the flood shape and are unlikely to affect continuity of the flood shape, therefore it is recommended that the overlay shapes be removed from this property.	Yes. Remove SBO3 shape.
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 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 the capacity of the existing 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. Following the meeting with the submitter in 2017, Cardno were requested to review the submission.	No

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					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. The pipe system within the property to divert overland run off is considered private drainage and not relevant to the SBO. A site visit confirmed the fall of the property as stated by the resident in submission and following addendums. Owing to issues with the Lidar data due to heavy tree cover, removal of the SBO2 is recommended.	Yes. Delete SBO2 from property.
44.	6 Marshall Avenue, Doncaster East	Koonung Creek	SBO2	N/A	The submission contained no objection to the proposed amendment but asked to be kept informed of the process. The submission property experiences runoff from the north east and the flood shape is consistent with topographical contours.	No
45.	20 Sinclair Avenue, Templestowe Lower	Ruffey Creek	SBO3	2	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. The existing Council drainage in the area surrounding the submission property does not provide complete protection for 1 in 100 year ARI rainfall events accordingly. The SBO3 is based on flood prone land, not specifically where dwellings are flooded above floor level. Due to issues with the LiDAR data near the house and in	Yes. Remove SBO3 shape.

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					Teresa Court, it is recommended that the SBO3 shape be deleted.	
46.	112-126 Old Warrandyte Road, Donvale	Mullum Mullum Creek	LSIO & SBO2	12, 14 Object to the amendment 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	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 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	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. Further, it is proposed to delete the flood shape from Stages 1 and 2 of the subdivision and 7 Yileen Court.

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				permit adequately dealt with flooding concerns on the subject land.	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.	
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	SBO3	2, 5, 7, 8	"The submission states that flooding has been experienced on the property but not in the way shown by the SBO." Council's underground drainage system design standard is typically for a 5	No

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					<p>year ARI event, with flows in excess of the pipe system travelling overland, as compared with the 1 in 100 year event modelled to establish the SBO. The submission also refers to historical issues with blockages or maintenance of drains in the area. Whilst an important issue, it is not relevant to the SBO as the flood shape is modelled assuming no blockages exist in the system. The review has confirmed the surrounding drainage assets. The LiDAR and surface contour data were analysed along with site photos and it was found that in the 1 in 100 year flood event, the overland flows in the road will be deep enough to overtop and flow from Margaret Court into the property. The surface data seems to corroborate this occurrence as well as the subsequent flow path into the property and then out through the driveway. Therefore, it is recommended that there be no change to the SBO on this property.</p>	
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.	No

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					The outcome of the review is that the exhibited flood shape be retained at this location.	
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. See Assessment of Submission Report dated 1 September 2017, pages 224 and 225. The outcome of the review is that the exhibited flood shape be removed at this location.	Yes. Remove SBO1 shapes from 12 Alder Court.
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. No substantive issues over and above the original submission have been raised by the submitter for consideration. 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	No

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					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 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 it is recommended that the SBO2 overlay be retained.	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.

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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. In response to changes to ground levels at the rear of the property, it is proposed that SBO2 be trimmed and limited to the area of the easement at the rear of the property.	Yes. Remove eastern area of SBO2 beyond the western easement.
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 . The review has confirmed the	Yes. Delete both SBO2 areas.

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					surrounding topography and drainage assets. However, the incursions into the property are within the margin of model error and were not addressed as part of the automated shape smoothing process. The SBO2 shapes should be deleted from this property.	
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 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.	No

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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 re-developed 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 controls retrospectively. The use of the term flooding is incorrect and misleading.	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 future drainage works across the municipality. The site investigation confirmed 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 but the designation be changed from SBO2 to SBO3.	Yes. Change SBO2 to SBO3.
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 has been undertaken to	Yes. SBO2 shape to be reduced.

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					quantify the impact of the upgrade on the flood shape. Cardno have rerun the model with the inclusion of the 1,050 mmd dia drain and the amended SBO shape is reduced from the SBO shape previously exhibited. The SBO shape is recommended to be amended and reduced in accordance with these results.	
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 including the sloping land surface has been correctly represented in the model and therefore, the analysis which has resulted in the application of SBO2. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

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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. However, inspection of the back of the property has revealed that there are some inconsistencies between the Lidar data and actual levels. The flood shape is recommended to be removed accordingly.	Yes. Remove SBO2 shape from property.
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 submitter also requests 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. The	No

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					recent mapping will be utilised to prioritise future Council drainage upgrade works, on an as needs basis to protect habitable floor areas.	
65.	20 Montpellier Crescent, Templestowe Lower	Ruffey Creek	LSIO	3	The majority of the overland flow across the parcel is from the south, not from Ruffey Creek. The overlay designation has been reviewed and given that the overland flows impacting this property are from the local catchment to the south, it is proposed to change the overlay designation from LSIO to SBO2.	Yes. Overlay designation to be changed from LSIO to SBO2. Designations for 16 and 18 Montpellier to be changed from LSIO to SBO2.
66.	3 Laloma Court, Templestowe Lower	Ruffey Creek	SBO2	2, 7, 8, 12	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. 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	No

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					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.	
67.	26 Jocelyn Court, Doncaster East	Ruffey Creek	SBO3	1, 2	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 location. For the storm event on the 29th December 2016, the 15 minute storm was the storm associated with the greatest ARI from the event, which was 1 in 20 years. The impacts identified by the SBO are based on a 1 in 100 year storm event, so it is expected that the storm from the 29th December 2016 would have been significantly smaller. The drainage system implemented in the immediate area was designed for a 1 in 5 year event, with flows in excess of the pipe capacity travelling overland. Review of the model indicates that there are issues with the surface contour data and model resolution, leading to the creation of a low point in the modelled surface. It therefore is recommended to remove the SBO from this property.	Yes. Partial removal of the SBO shape on 26 Jocelyn Cr on the west side only.
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	Yes

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					drainage upgrade along Balmoral Ave should be included in the modelling. A review has found that these upgraded drains (2012) were included in the model, however the submission property is on a different flowpath and does not directly benefit from the upgrade. The modelling results indicate that this section of the flood shape is due to high velocities on the driveway of the property caused by water entering from 8 Hotham Street. Due to the presence of walls along the boundary of the property, it is unlikely that this transfer of water will occur. Therefore, it is recommended that the SBO on this property be removed.	Remove SBO3 from property.
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. The flood shape should remain as exhibited at this location.	No
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	No

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					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.	
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 during that time, although the road has flooded in a few occasions in very intense rainfall events in the past. It is acknowledged that it is not appropriate to designate the flood shape on this property as LSIO as the flooding represents runoff from the north east as a result of the Council drains overflowing in high intensity rainstorm events larger than the 1 in 5 ARI. Council and Melbourne Water officers 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 storm event. Following the attendance of the submitter at the one-on-one interviews, Cardno were engaged to review the submission. It was confirmed that the property is located in the low point in Chaim Court and that the flood shape is considered to be appropriate. It is recommended that the overlay	Yes. It is recommended that the overlay be reclassified to SBO 3, however, that the overlay is not removed from this property. These changes also impact 3 and 5 Chaim Court and 59 Beckett Road.

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					be reclassified to SBO3 and the overlay not be 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 are not relevant. The review has found the SBO shape is consistent with the topography and Council drainage assets. Given the lower modelled flow depths however, it is recommended that the overlay designation be downgraded from SBO2 to SBO3.	Yes. Amend the overlay from SBO2 to SBO3.
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 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 once the capacity of these drains is exceeded in the 1 in 100 year ARI event. The site visit confirmed that the drainage infrastructure is consistent with that modelled. The LiDAR and surface contour data was analysed along with the results of the modelling and site photos. It was found that the	Yes. Remove the SBO3 from the property.

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					flooding of the subject property is originating from the neighbouring property of 9 Tennyson Court. However, site photos indicate that water is not likely to enter the property at this location due to a high point has likely not been fully picked up in the resolution of the model. Therefore, it is recommended to remove the SBO from the entire property.	
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 overlay shape has been reviewed and reconfirmed as being appropriate based on the	Yes, SBO1 to be converted to SBO2.

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					anticipated flood depth and direction of flow, however, the overlay is associated primarily with overland flows from the local catchment and as such, it is proposed that the overlay be changed from SBO1 to SBO2.	Remove SBO1 shape from front of 65 Denhart. Remove SBO1 shape from north-western corner of 116 George.
76.	99 The Grange, Templestowe	Ruffey Lake	SBO2	2, 3, 7, 8, 12	The submission and addendum references the higher level of the land and associated retaining walls of the property with respect to the neighbouring properties. In general, the area is located in the middle of a floodway connecting Serpells Community Reserve and The Grange Reserve. 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 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. However, given the depth of flows reflected in modelling for the northern and eastern areas of	Yes. Amend SBO2 to SBO3 at the northern property boundary and the eastern overlay area. SBO2 is to be retained over the driveway area.

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					the property, it is recommended that the overlay designation be changed from SBO2 to SBO3 in these areas.	
77.	8 Lalani Terrace, Templestowe	Mullum Mullum Creek	SBO3	3, 12	The submission refers to recent drainage upgrades in addition to observed overland flow along the easement running along the eastern boundary. 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.	No
78.	7 Myers Court, Doncaster	Koonung Creek	SBO2	2, 3	The submission refers to drainage upgrades along the valley from Arthur St to Frank St. These have been checked and found to be modelled consistently in the flood mapping. The comparison with the other properties on Frank St 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 SBO means during the	Yes. SBO shape to be reduced at its eastern extent.

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>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 downstream. When the natural surface is developed to a constructed surface, the runoff will be increased. 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 SBO shape in this area has been reviewed based on the topographical survey information supplied and the SBO shape is proposed to be reduced accordingly.</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</p>	No

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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 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 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</p>	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					topography. The outcome of the review is that the exhibited flood shape be retained at this location.	
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 gully. A review and site visit has found there is 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 SBO shape at this location is recommended to be removed from the house footprint, however, the flood shape is recommended to be retained in the gully running through the property. This action was confirmed at a recent meeting with the submitter.	Yes. The flood shape at this location is to be amended to remove the SBO from the house footprint, however, the flood shape is recommended to be retained in the gully running through the property.
82.	9 Bayles Court, Donvale	Mullum Mullum Creek	SBO1	2, 12 Withdrawn	The property is located adjacent to the Melbourne Water Hunt Street Main Drain. The SBO1 overlay has been reviewed and the outcome of the review is that the exhibited flood shapes be removed from 9 Bayles Court.	Yes. SBO1 shapes to be removed.
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. The outcome of the review is to recommend that the flood shape be deleted from the property.	Yes. Remove the SBO2 incursion from property.

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84.	51 Larne Avenue, Donvale	Mullum Mullum Creek	SBO3	2, 7, 14 Waste of Council revenue	The flood shape does not represent a recently increased risk of flooding and does not aim to prevent development, but rather aims to ensure that development is undertaken in a manner which considers overland runoff. The modelling results were analysed and it was found that there is no overland flow connection between water on Park Road and this property. The catchment contributing to this flood extent is generated from 107 Park Road, 23 White Lodge Court and 53 Larne Street as well as 51 Larne Avenue itself. It is therefore not likely that the kerb and channel on Park Road will reduce flooding on 51 Larne Avenue. As such, no change to the SBO is recommended.	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 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, although the incursion represents a small percentage of the property size, the property may be subdivided in the future. The incursion is over 30 m 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	No

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					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 overlay designation has been reviewed and owing to discrepancies with the Lidar data, it is recommended to remove the SBO1 flood extent. The outcome of the review is that the exhibited SBO1 shape is to be removed.	Yes. SBO1 flood extent is to be removed.
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 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.	No
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." Council drainage systems are typically designed to cater for a 1 in 5 year ARI event. It is	Yes. Remove SBO3 from property.

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					possible the submitter has not experienced a 1 in 100 year ARI storm event of critical duration at this location. The property slopes down from road level and there is an easement drain along the rear boundary. The review confirmed that the existing drainage infrastructure is consistent with that modelled. The LiDAR and surface contour data were analysed and it is unlikely that water will flow into the properties on Eucalypt Avenue from the Council drain running along the rear of the properties. This has likely been caused by the model resolution picking up a low point in the backyard of 43 Eucalypt Avenue. It is therefore recommended to remove the SBO from 43 Eucalypt Avenue.	Also remove the SBO from 41, 45 and 47 Eucalypt Avenue.
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 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	No

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					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 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.	No
92.	20 Bullen Street, Doncaster East	Koonung Creek	SBO2	1, 14 Flood overlay	The submission describes flooding along the easement at the rear, however, questions the extent of the proposed overlay. Although the	No

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				should be reduced in size.	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 the flood shape is consistent with the topography and drainage assets at this location. Cardno have also reviewed the submission and the SBO is recommended to be retained.	
93.	43 Botanic Drive, Doncaster	Ruffey Creek	SBO1	1, 2	The property is located adjacent to the Melbourne Water Roseland Grove Main Drain. The overlay designation has been reviewed and owing to discrepancies with the Lidar data, it is recommended to remove the SBO1 flood extent.	Yes. Remove SBO1 shape.
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 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.	No

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95.	17 Thea Grove, Doncaster East	Koonung Creek	SBO1	2, 3, 5, 12	Property is located adjacent to a Melbourne Water Main Drain (Leeds Road MD). The applicable flood level is 76.17 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. Based on a desktop analysis it was found that the flooding at the front of the property should continue along Thea Grove instead of entering the property. As such, it is recommended that this be removed from the flood overlay. The outcome of the review is that the exhibited flood shape be retained, with the exception of the SBO1 shape at the front of the property which is recommended to be deleted.	Yes. Delete SBO1 flood shape at front of property but retain remainder of SBO1 shape.
96.	6 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 2	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	Yes, It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3.

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					changed from SBO1 to SBO3. This recommendation has been agreed with Melbourne Water.	
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.	<p>The submission requests for the flood shape to be trimmed due to the minimal incursions into the property.</p> <p>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.</p> <p>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 point under <i>Clause 1.0 Permit requirement</i> as follows;</p>	<p>Yes.</p> <p>Remove SBO3 incursion from the property.</p> <p>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;</p> <p><i>“New fencing with at least 25% openings <u>or</u> with a plinth at least 400mm above the natural surface level”.</i></p>

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					<i>"New fencing with at least 25% openings <u>or</u> with a plinth at least 400mm above 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 should be reviewed. A desktop review and site visits have found that there have been changes to the terrain since the capture of the LiDAR survey	Yes. Trim the SBO shape and change the designation of the remaining

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					data used in the modelling. These changes warrant trimming of the SBO shape. In addition, a review of the modelled overland flow characteristics supports review of the SBO designation from SBO2 to SBO3.	shape from SBO2 to SBO3
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 Australian Height datum (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 capacity and the balance of the storm event follows overland flow paths. 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	Yes. Reduce eastern SBO1 extent within property.

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					Melbourne Water infrastructure and the relative locations of abutting SBO extents. However, field survey has found that there is a discrepancy with the Lidar data which warrants reduction of the extent of the eastern side of the SBO1 shape. The outcome of the review is that the exhibited SBO1 shape be reduced but otherwise retained at this location.	
103.	41 Chippewa Avenue, Donvale	Mullum Mullum Creek	SBO2	1, 2	The submission describes living at the address for some time and never having experienced any flooding. 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.	No
104.	33 Balmoral Avenue, Templestowe Lower	Bulleen North	SBO3	1, 7, 8, 11	The submitter is correct in identifying that the area affected by the SBO3 is less than 2m ² and entirely within the easement at the rear of the property. 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	Yes. Remove the SBO3 incursion on property.

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					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 submitter's 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

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					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.	
107.	14 Habitat Park Drive, Doncaster East	Mullum Mullum Creek	SBO2	14	The submitter's property is not affected by the SBO, although the surrounding body corporate land (the Canowinda Owners Corporation) is affected. No objection at this stage. Requested further information. Information provided. No further response received 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

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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. The area shown on page 226 over the building is to be removed from the LSIO overlay.	Yes. It is recommended to remove part of the LSIO.
109.	33 Thiele Street, Doncaster	Ruffey Creek	SBO3	1, 2, 7, 8	Thiele Street is a major flowpath for stormwater runoff. The submission questions what information has led to this area marked as being flood prone where it was not before. This 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	Yes. Remove the SBO3 shape.

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					have flooded are not subject to the overlay. There has been significant drainage upgrades undertaken at the intersection of Thiele and Ambrose Streets around 1993. This has resulted in the excess floodwater on Thiele St during storm events being accommodated by the numerous grated pits at this intersection rather than flowing through the properties to the north. This upgrade will not appreciably benefit upstream properties such as 33 Thiele Street. However, LiDAR and surface contour data as well as site photos were analysed and it was found that it is unlikely that water will pool enough in the areas shown in the SBO within the property. The resolution of the model has not picked up certain features adequately for these reasons. Therefore, it is recommended that the SBO be removed from this property.	
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 MW SBO1. Recommend that the exhibited flood shape is deleted so the property is not included in the overlay, as agreed with Melbourne Water.	Yes. SBO1 incursions are recommended to be removed from the property.
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	No

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					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.	
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 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	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					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.
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 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.	Yes. Remove SBO2 incursion on property.

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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 there is no experience of flooding at the subject property. It is possible 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 site visit confirmed surrounding topography and that overland runoff in excess of the pre 1970's drainage infrastructure could reasonably be expected to occur in the manner indicated by the	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					SBO. The review and recent meeting with the submitter have 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	Following the recent meeting with the submitter, Cardno were engaged to review the submission and SBO at this property, including undertaking a site inspection. Due to the absence of some drainage from the model, inadequate application of the outlet pipes under the Eastern Freeway and significant changes to the surface made since the	Yes Delete SBOs from the site.

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					modelling was undertaken, it is recommended that all SBOs be removed from the subject area.	
119.	15 Kersey Place, Doncaster	Ruffey Creek	SBO3	2	The submitter does not consider that flooding is a risk at this property. It is possible the submitter has not experienced a 1 in 100 year ARI event of critical duration at this location. The SBO identifies flood prone land which may not impact existing buildings. The purpose of the proposed overlays is to ensure that future development is protected from flooding. The review has confirmed the flood shape is consistent with the drainage assets at this location. Site photos and a review of the model indicate that there are issues with the model resolution at the property boundary and it is recommended that the SBO be removed from the property on this basis.	Yes. Remove SBO3 from property.
120.	8 Tiffany Court, Doncaster	Ruffey Creek	SBO3	2, 12	The submission references garden landscaping as a basis for contesting the flood shape. Private infrastructure such as retaining walls, structures and buildings are not individually modelled as it is not feasible on a catchment wide scale to do so. 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 taking account of land use for individual sub catchment areas. A site visit has confirmed the local Council drainage infrastructure. From site	Yes. Remove the SBO3 from the property.

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					conditions, it is unlikely that flood water will flow as shown in the model results. The site is built up above the roadway significantly with the driveway allowing any excess flood water to be conveyed out of the property. This has likely resulted from thinning issues impacting the LiDAR data due to the dense vegetation and steep nature of the front of the property. Therefore, it is recommended that the SBO be removed from the property.	
121.	14 Kelly Street, Doncaster	Ruffey Creek	SBO3	1, 2, 12	The submission key theme 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 submitter stating that the underfloor area has remained dry over the past 35 years. A site visit has confirmed the local Council drainage infrastructure as modelled. Modelled depths of flooding were checked on the roadway outside 12 Kelly Street in the modelling results and it was found that they were not deep enough to overtop the gutter at this location. The 3 meter grid cell dimension has picked up a low point within the gutter and then another low point further down the slope of the footpath. This essentially has meant that the top of the gutter has been ignored in this section of the model and so water was able to freely flow into 14 Kelly Street. Flooding at the rear of the property was found to be caused by the presence of a swimming pool	Yes. Remove SBO3 shape. In addition remove SBO3 from 12 & 16 Kelly. Remove part of shape from 2 Tully Crt.

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					leading to an unconnected flood extent. Based on these factors, it is recommended that the SBO3 shape be deleted from the property.	
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 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 exhibited flood shape, which is modelled on a 1 in 100 year ARI event, is generally consistent with the terrain on the submission property. A review of the mapped flows to the southern and eastern areas of the property has found that the flow depths are shallow and deletion of these shapes will not significantly impact the management of flood risk. However, the SBO2 shape running from the property entry to the west should be retained. The designation of this extent can be changed from SBO2 to SBO3.	Yes. Southern and eastern SBO2 areas to be removed. Remaining SBO area designation 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 the SBO shape is consistent with the	No

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					topography and drainage assets at this location and the SBO is recommended to be retained.	
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.
125.	2 Roslyn Court, Donvale	Mullum Mullum Creek	SBO2	5	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. Officers will inspect the property and assess the need for drainage improvement works. The flood shape should remain as exhibited at this location. This recommendation is supported by a further review undertaken by Cardno.	No
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	Yes. It is recommended that the flood shape be retained but the overlay designation be

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					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.	changed from SBO1 to SBO3.
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 represents 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 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. 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 SB02 and SBO3 based on a flow depth limit of 100mm. The majority of the flood shape in the northern section	Yes. Delete part of the SBO2 shape from the property but retain the shape at the western boundary.

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					of the property experience modelled depths in excess of 100 mm. The SBO2 designation in this area is considered to be appropriate. In this case, a review of the modelled depths has found the designation of SBO2 to be appropriate for the rear SBO incursions on the submission property. Issues with the model resolution as well as thinning issues caused by the dense vegetation at the south-eastern boundary of the property warrant review and removal of the SBO2 shape over the driveway. Minor incursions on the southern and eastern boundaries are also proposed to be removed.	
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

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130.	2/62 Rathmullen Quad, Doncaster	Koonung Creek	SBO3	2, 7, 8, 12	The former Eastern Golf Course site has not been set up in the model as a hard boundary as suggested. Council is requiring drainage and overland flow measures on the former Eastern Golf Course (EGC) site to be designed to ensure that there are no adverse impacts on neighbouring properties. 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, they are just not shown for the EGC area. 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. 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. It is recommended that the SBO3 shape impacting this property be retained.	No
131.	20 Springwood Close, Donvale	Mullum Mullum Creek	SBO3	1, 5, 7, 14 Council subsidy	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	No

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				<p>required to allow implementation of additional on-site drainage</p>	<p>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 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>	

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132.	3 Peter Budge Avenue, Templestowe	Ruffey Creek	SBO2	1, 2, 3, 12	The submission refers to topographical features including a retaining wall that are not reflected in the exhibited flood shape. The submission also refers to recent drainage improvement works in The Grange Reserve. A desktop review has found that the improvements were largely related to pit enlargement and no upgrade to the 975 mm drainage pipe in the reserve was undertaken. The drainage pipes in this area are the limiting factor in the drainage system capacity in 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 walk way from inside the property at depths less than 150 mm 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. The proposed SBOs have been developed using the theoretical 1 in 100 year rainfall event. It is likely that an event of this size has not been experienced at the property in the last 17 years. The flood depths within the easement are significant and should remain as SBO2 but the modelled depths of water within the subject property are predominately less than 0.1m. As such, it is recommended that this area be changed from SBO2 to SBO3.	Yes. Change overlay designation from SBO2 to SBO3 within the property.

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133.	8 Eumeralla Avenue, Templestowe Lower	Ruffey Creek	SBO2	1, 2 Withdrawn	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 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.	No
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	Yes. The SBO3 flood shape to better reflect the mapped flood extent.

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					mapped flood extent, which will result in a reduction of the size of the exhibited flood shape. This assessment has been reviewed following a recent meeting with the submitter and has been reconfirmed.	
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. 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 has been undertaken to quantify the impact of the upgrade on the flood shape. Cardno have rerun the model with the inclusion of the 1,050 mm diameter drain. The SBO shape is recommended to be amended and reduced in accordance with these results.	Yes. Amend flood shape in accordance with revised modelling. In addition remove SBO2 from 4 Camelot. Reduce SBO2 at 36 Hertford, 22 and 24 Taunton.
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.

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137.	5 Cerberus Street, Donvale	Koonung Creek	SBO2	14	Lodged as a submission with no content. Clarification sought by Council. None provided. 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
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	No

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					and drainage assets. The flood shape should remain as exhibited at this location.	
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 more shallow runoff as a result of overflow from the dam uphill. The purpose of the overlays is not to prevent development but to ensure it is undertaken in a way that considers the overland flow path. The review has confirmed the surrounding topography and drainage assets. The review has found that the flow depth in the SBO3 area is shallow and given the steep terrain, it is proposed to delete the SBO3 shape.	Yes. Delete the SBO3 shape but retain the SBO2 shape.
141.	5 Whistlewood Close, Doncaster East	Mullum Mullum Creek	SBO2	2	A meeting was recently conducted involving Council officers and the submitter and no substantive additional issues were. The SBO2 overlay on the property is accurate and consistent with the contour map used for modelling. The topography was confirmed during 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 shape. The review has confirmed the surrounding topography	No

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					and drainage assets. The flood shape should remain as exhibited at this location.	
142.	61 Oakland Drive, Warrandyte	Mullum Mullum Creek	SBO3	2, 12	The submission states that the topographical data used in the modelling is outdated and the fact that 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	No

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					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. The flood shape should remain as exhibited at this location.	
143.	16 Nottingwood Street, Doncaster East	Ruffey Creek	SBO1	2, 5, 7	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 on site and taking account of the locations of drainage infrastructure at the rear of the property, the flood shape is proposed to be removed from the eastern side of the property. Given that the flows impacting the property primarily emanate from surcharge from the Council drainage system at the rear of the property, it is proposed that the remaining section of SBO1 be changed to SBO3.	Yes. The eastern section of the SBO1 shape is recommended to be deleted. The remaining section of the flood shape is recommended to be converted from SBO1 to SBO3. The overlays associated with 18 and 20 Nottingwood are also recommended to be converted from SBO1 to SBO3.

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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 instantaneously, 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 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.	No
145.	5 Mossy Creek Slope, Warrandyte	Andersons Creek	LSIO	1, 7, 8, 12	The drainage system above and within the property is under Council control and the flooding is a result of run off 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	Yes. SBO shape to be reduced, retaining the shape at the rear of the property

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					amended based on the nature and depth of the flooding in this area. In addition, issues have been identified with the Lidar data at the front of the property. It is recommended to reduce the SBO shape and change the designation at this location to SBO3, as agreed by Council and Melbourne Water representatives. Site Visit required to determine if flows will enter the property. From this site inspection it is evident that the neighbouring driveway (6 Mossy Slope Creek) will experience overland flooding before 5 Mossy Creek Slope will get any inundation. As a result, the flow path has been amended to follow the easement and on site topography. Cardno agrees that the flood shape can be changed to SBO3, as the cause of flooding occurs from overland flow down Mossy Creek Slope.	and changing the designation from SBO1 to SBO3.
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

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					land will, however, already trigger the need for a permit for buildings and works. 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.	
147.	15 Margot Avenue, Doncaster	Ruffey Creek	SBO3	1, 2, 7, 8, 12	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 review has generally confirmed the surrounding topography and drainage assets. The submitter claims to have never seen flooding on the property in 40 years. As the SBOs have been developed using the theoretical 1 in 100 year rainfall event, it is possible that there has not been an event of this magnitude at the property in the last 40 years. LiDAR and surface contour data were analysed along with site photos and it was found that the resolution of the modelled surface has not picked up the mentioned retaining wall on the property. It is therefore recommended to remove the SBO from this property.	Yes The SBO shape can be removed from this property. The SBO can also be removed from 12, 13 and 14 Brinbank Court.
148.	5 Streepton 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	No

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					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 outcome of the review was discussed with the submitter at a recent meeting. The flood shape should remain as exhibited at this location.	
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 the flood shape is consistent with terrain and LiDAR data. The modelling indicates that the property is prone to overland	Yes. Remove SBO shape in the

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					flows in a 1 in 100 year ARI event even though the resident may not have experienced flooding. Following a recent meeting with the submitter, the model was reviewed and it was found that there is a model resolution and data tinning issue arising from the steep slope, presence of thick vegetation, the garage and boat which has led to a low point in the modelled surface at 26 Jocelyn. Taking this into account, the SBO shape on the western side of 24 Jocelyn is proposed to be removed. However, it is not recommended to remove the flood extent on the eastern side of 24 Jocelyn Court. Site photos and the modelling results support retention of this shape. The flood shape should be amended as shown in the attached plan.	western side of the property.
151.	12 Larne Avenue, Donvale	Mullum Mullum Creek	SBO2	1, 3, 7, 8	The drainage system along the easement is not sufficient to convey the runoff from a 100 year ARI event. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location, subject to minor trimming of the shape at three locations.	Yes. Trim and remove 3 small SBO2 areas.
152.	7 Montclair Court, Templestowe	Ruffey Creek	LSIO	2, 3, 5, 7, 8	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	Yes. Change LSIO to SBO3 and also change for adjacent properties at 2, 3, 4, 5, 6 and 8 Montclair Court

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					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 of this property and water would flow over the kerb level across the whole frontage of the property as shallow flow. The request from the submitters to investigate options to divert overland flows by undertaking works at the intersection of Dellfield Drive and Montclair will be investigated and referred for consideration through Councils Capital Works Program. It has been agreed with Melbourne Water that the flood shape designation within the property be amended to SBO 3 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 Dr as suggested by the resident. This area is reasonably considered to be prone to overland runoff in a 1 in 100 year ARI storm event of critical duration. Due to the proximity of the property to the SBO shape and the percentage of overlay coverage, removal of the SBO would compromise the integrity of the SBO flood shape. 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	Property is located adjacent to a Melbourne Water Main Drain (Roseland Grove Drain). The applicable	Yes.

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					<p>flood level is 69.52 metres AHD.</p> <p>Submission suggesting that the flooding is from Ruffey Creek. However the flooding is an overland flow associated with the Main drain.</p> <p>Suggested mitigation works are beyond the scope of the amendment and are a part of a capital works program.</p> <p>The overlay designation has been reviewed and owing to discrepancies with the Lidar data, it is recommended to remove the western flood extent.</p> <p>However, the eastern SBO1 shape is to be retained at this location.</p>	<p>Remove the western flood extent, but the eastern SBO1 shape is to be retained.</p> <p>Also remove SBO2 from 37 and 39 Botanic Drive</p>
155.	23 Wagon Road, Templestowe	Mullum Mullum Creek	SBO1	<p>14</p> <p>Object to amendment.</p> <p>No reasons given.</p>	<p>Property is located adjacent to a Melbourne Water Main Drain (Templestowe East Drain). The applicable flood level is 51.66 metres AHD.</p> <p>No specific issues are raised in the submission, just object to the amendment.</p> <p>Following attendance of the submitter at the one-on-one interviews, Cardno were engaged to review the submission. The overlay designation was again 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

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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 property owner has advised that flooding occurs up to 4 times a year due to an undersized pit. There is a spoon drain entering a 225mm diameter pipe via a small drainage pit that frequently blocks upstream of the site. This then spills water into the site via the north east corner and the flows pass around the house on both sides. The flood shape is not as depicted in the overlay but it is a steep site with known flood issues. The site visit confirmed that a spoon drain is located over the top of a 150mm diameter pipe. These assets discharge to a pit which outlets to a 225mm diameter pipe. The spoon drain and 150mm diameter pipe flows exceed the pit capacity and hence overflow through 2 Pagoda Court. The flood shape will be adjusted to reflect the onsite conditions but a larger concern is the frequency of the overflows from this location. It is recommended that the flood shape be adjusted in line with recommendations and that the drainage infrastructure be reviewed to mitigate frequent nuisance flooding.	Yes. Amend SBO shape in property.
157.	10-12 Curry Road, Park Orchards	Mullum Mullum Creek	SBO2	1, 2, 3, 12	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	No

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					<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. 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. Ridge exists through property and there is only a small catchment discharging from property out to road. Private infrastructure such as retaining walls, structures and buildings are not individually modelled but consideration is given to their impacts through the application of roughness factors to land areas. A site visit has confirmed the drainage infrastructure is consistent with that</p>	<p>Yes. Remove SBO2 shape from property.</p>

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					modelled. There are however some discrepancies with the Lidar data which warrant removal of the SBO2 shape from the property.	
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 30m2 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 overland runoff from uphill being channelled onto the road. A site visit has confirmed that the drainage assets have been consistently modelled. A small amount of water is generated in the model from upstream properties. Onsite investigation showed that water is not likely to pool and flow towards 28 Sheahans Road and instead flow out through the driveway of 30	Yes. Remove SBO3 shape.

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					Sheahans Road. The driveway has been incorrectly modelled in the LiDAR data. Removal of the SBO3 shape from this property is supported.	
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. A site visit has confirmed the drainage assets are consistent with the modelled flood shape. A small amount of water is generated in the model from upstream properties. Onsite investigations showed that water is not likely to pool and flow towards 28 Sheahans Road and instead will flow out through the driveway of 30 Sheahans Road. This feature has not been picked up in the surface topography used by the model likely due to the dense vegetation/trees along the boundary between the two properties as well as the steep drop-off present due to the retaining wall. Removal of the flood shape from this property is recommended on the basis that if the shape is removed on 28 Sheahans Road the rest of the SBO shape would qualify for removal.	Yes. Remove SBO3 shape.
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	No

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					patterns in the area. The flood shape should remain as exhibited at this location.	
164.	2/15 Ashford Street, Templestowe Lower	Bulleen North	SBO3	2, 6, 7, 8	<p>The submission questions the accuracy of the modelling and states that the driveway would channel runoff onto the street. 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, features, landscaping and fences on the mapped flood extents, through the application of roughness factors to land areas. Roughness factors are allocated considering 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 submission claims that the property did not flood on 20 December 2016 rainstorm event. Modelling results on the property indicated that flooding has a critical duration of 15 minutes and for the event on the 29th December 2016, the maximum ARI was 1 in 33 years. The proposed SBOs have been developed using the theoretical 1 in 100 year rainfall event. Therefore, it is expected that flooding at this location would be significantly worse than occurred during the event on the 29th</p>	<p>Yes. Only part of the SBO to be removed. In addition partial removal of SBO3 from 13 Ashford.</p>

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					December 2016. LiDAR and contour data as well as site photos indicate that most of the flooding that occurs at 15 Ashford Street is situated around the driveway and flows down to Ashford Street. The modelled flood depths are shown to be significant over the driveway area. Flows between Units 1 and 2 seem unlikely, as the majority of the flow path is situated over Unit 1. It is recommended that the flood shape be partially removed as shown on the plan.	
165.	314-318 Reynolds Road, Donvale	Mullum Mullum Creek	SBO2	2	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 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.	No
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	No

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					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.	
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 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.	No

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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 SBO was revised again following a recent meeting with the submitter. 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 property is subject to Council flooding however the flooding of downstream 23 Larne Avenue is flooding from Melbourne Waters main drain at the front of the property and from local catchment flows towards the rear of the property. The overlay designation has been reviewed and given the flow depths and local catchment source of the flows, it is proposed to change the overlay designation from SBO1 to SBO3.	Yes. The designation of the overlay is to be changed from SBO1 to SBO3. The SBO1 overlay through 7 and 8 Drummond and the rear of 23

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						Larne is to be changed to SBO3.
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 30 m ² in area. The review has confirmed the surrounding topography and drainage assets. Following a recent meeting with the submitter, the SBO shape has been reviewed and 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 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	No

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					and Melbourne Water in the event of a major storm event. This information was not available at the time of building. 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 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 30 m ² in area. The review has confirmed the surrounding topography and drainage assets.	No

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					Following a recent meeting with the submitter, the SBO shape has been reviewed and should remain as exhibited at this location.	
176.	2-4 Drayton Crescent, Park Orchards	Mullum Mullum Creek	SBO2	5, 7, 8	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. 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 is the highest quality and most up to date data available for flood modelling. 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 for 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. A further site inspection and review conducted by Cardno and completed in August 2017 agreed with the previous Council officer assessment. The flood shape should remain as exhibited at this location.	No

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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 as it has not adequately modelled the St Muir Drive terrain. The review has confirmed the surrounding drainage assets. Further review by Cardno supports removal of the SBO shape.	Yes. Remove SBO3 shape.
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	Yes. Reduce SBO2 shape near house.

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					events. The modelling assumes the drains are operating at capacity. The review has confirmed the surrounding topography, with the exception of a small area near the dwelling. The existing drainage assets have been confirmed and appropriately modelled. Minor trimming of the SBO2 shape is proposed near the house due to issues identified with the Lidar data.	
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 and other properties with similar driveways are not affected. The upstream catchment behind the house results in a small collection of runoff as indicated by the SBO shape. A site visit confirmed that the flood shape is only located at the driveway which is steep. This has been likely caused by the resolution of the model picking up a low point in the gutter and tinning to another erroneous low point in the property. It is therefore recommended to remove the SBO from this property.	Yes. Remove SBO3 shape.
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 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	Yes. Remove the SBO2 incursion from the property.

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					the backyard and within easement. The overlay is recommended to be removed.	
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 has some merit as the filling occurred after the generation of the Lidar data. A site visit has found that the flood shape requires amendment to address the recent filling of 6 Fromhold Drive.	Yes. Remove section of SBO2 shape at the eastern side of the property and connect the 2 SBO2 shapes on the western boundary. Remove SBO2 shape from 6 Fromhold Drive.
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. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

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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 maintenance issue with regard to wood chips has been reported to our Operations and Maintenance team.</p> <p>The property is located in the vicinity to a Melbourne Water main drain (Montpellier Crescent Drain). The LiDAR and contour surface data as well as site photos were analysed which indicate that there have been thinning issues with the removal of the buildings on a steep slope. This has likely created several localised low points which have led to misleading flood modelling results. It is therefore recommended to remove the SBO1 from 35 Lynnwood Parade.</p>	<p>Yes. Remove SBO1 shape from 35 Lynnwood Parade.</p> <p>Remove SBO1 from front of 37 Lynnwood but retain balance of SBO1.</p>
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. The proposed SBO identifies land prone to overland flooding from runoff or overflow from Council drains rather than inundation. Modelling resolution issues and issues with the Lidar data in steep terrain warrant review of the SBO shapes. It is recommended that both SBO extents be deleted accordingly.</p>	<p>Yes. Delete both SBO shapes at this property.</p>
186.	338 Serpells Road, Doncaster East	Mullum Mullum Creek	SBO2	1, 14 Mapping shows incorrect number.	<p>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 drainage infrastructure. The review has found an issue with</p>	<p>Yes. Remove SBO2 shape for property.</p>

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					the Lidar data at this property which has effected the SBO results. The SBO2 shape is recommended to be deleted accordingly.	Remove SBO3 from 340 Serpells. Trim eastern section of SBO2 from 336 Serpells.
187.	43 Flannery Court, Warrandyte	Mullum Mullum Creek	SBO2	1, 8	A meeting was recently conducted involving Council officers and the submitter but no substantive issues were raised during the meeting in addition to those raised in the original submission. 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 flood shape should remain as exhibited at this location as the extent of SBO2 is significant.	No
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.	Yes. Remove the SBO2 incursion from property.

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					The flood shape is recommended to be deleted from the 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 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	No

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					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 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.	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. 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	Yes. Remove the SBO2 incursion from property.

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					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.	
193.	20 Philip Avenue, Doncaster	Koonung Creek	SBO3	2, 5, 7, 8, 12	<p>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.</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, 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 flood shape is recommended to be amended accordingly.</p>	Yes. Remove the SBO3 incursion from property.

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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 flooded as the runoff from the street is safely collected in the roadway and channelled down Monica St. 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 St. No.s 24 and 26 are flatter and the flood shape suggests more of a ponding	No

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					behaviour with a connection to Jocelyn Ct, whereas the flood shape on the submission property represents channelling of shallow runoff onto Tracey St. 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 Ave and Cassinia Rd experiencing large volumes of runoff during storm events. Due to the need to consider overland flow paths when redevelopment occurs it would be 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 represents runoff from the property flowing downhill onto the street. The contours and flood shape have been found to be consistent with the fall of the land evident from the street. Private infrastructure such as retaining walls, structures and buildings are not individually modelled but are	Yes. Remove the SBO3 shape. In addition remove SBO3 from 35 Ennismore.

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					accounted for through the application of roughness factors, which vary with land use allocated by individual sub catchment areas. The model surface and results were analysed and it was found that an abnormality was present in the surface at the area of the flood extent in the middle of the property which has likely been caused by thinning issues. Therefore, it is recommended that this area be removed from the SBO. If the above area is removed, all other SBO areas in this flow path will be below the filtering threshold and should therefore also be removed from the overlay.	
198.	254 Church Road, Templestowe	Ruffey Creek	SBO3	1, 8	The submission states that no flooding has been experienced during 40 years of living at the address. 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 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.	No
199.	12 Viscount Drive, Doncaster	Ruffey Creek	SBO3	2	The submission refers to the source of overland flow to the property.	No

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					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.	
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. Simply because no previous flooding information was available does not mean there was no risk of flooding in a major storm event 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 shared driveway. The review has confirmed the surrounding topography and drainage assets. No substantive issues were raised during the recent meeting with Council officers, in addition to those raised in the original submission. The flood shape should remain as exhibited at this location.	No

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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>Ground levels at the rear of the property have been amended since the Lidar data was collected. The existing Council drainage infrastructure was checked and found to be appropriately modelled. The experiences of flooding are consistent with the application of the SBO at this location. 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 local drainage assets. Given changes to the terrain in the back yard of the property, it is recommended that the SBO shape be trimmed and reduced accordingly.</p>	<p>Yes.</p> <p>Reduce the extent of the SBO2 overlay at the rear of the property</p> <p>In addition trim SBO3 extent at rear of 15-17 and 19-21 McGowans</p>

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203.	7 Pictor Court, Donvale	Ruffey Creek	SBO3	1, 2, 7, 8	The submission states that the property is in an elevated location and no flooding has previously been experienced. The SBO shape indicates shallow runoff from Mitcham Rd flowing into the back yard. The flood shape does not indicate flooding of habitable floor areas. Site investigation showed that the high-point of the footpath on Mitcham Road has unlikely been picked up in the resolution of the model. Due to the small size of the footpath and the fact that the slope of the land drops significantly on the property side of the footpath, it is likely that a low point in the gutter and then another low point in the property in the model have led to an interpolation of a low-point allowing water into the property. Flood depths from the model at Mitcham Road are less than 60mm, which are smaller than the gutter depth at this location. Therefore, it is likely that water will not overtop the footpath and enter the subject properties here. It is recommended that the SBO shape be removed from this property.	Yes. Remove SBO3 shape from property. In addition amend part of the flood shape on the east side of No 8 Pictor Cr and reduce shape at 344 Springvale. Remove from No 5, 1/6 & 2/6 Pictor Court.
204.	48 Treevalley Drive, Doncaster East	Mullum Mullum Creek	SBO2	2, 12	The submitter's property is affected by SBO2. The road falls steeply past this property and the driveway falls to the road. Flows from the road cannot enter the property. It is recommended that the SBO2 area be deleted accordingly.	Yes. Delete SBO2 area.
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	Yes. The flood shape for 72 Olympus

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					associated with the unfiltered flood shape data confirms the impact 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. This outcome was discussed with the submitter at a recent meeting.	Drive is proposed to be modified.
206.	4-6 Yarra Street, Warrandyte	Andersons Creek	SBO2	3, 4	The submission refers to a previous drainage upgrade at this location following reported 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.	No
207.	82 Deep Creek Drive, Doncaster East	Mullum Mullum Creek	SBO3	2, 5, 6	Overall, the flood shape is consistent with the site condition. The SBO shape is considered to be consistent with the local topography and existing drainage assets, for a 1 in 100 year ARI storm event of critical duration. The SBO shape should be retained accordingly.	No

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208.	1 Cottesloe Court, Doncaster East	Mullum Mullum Creek	SBO3	1, 2, 5, 7, 8	<p>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 typically do not cater for 1 in 100 year ARI events. The gully like feature across the property as seen from the Nedlands Ct and Cottesloe Ct is responsible 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. These works are prioritised based on frequency of flooding of habitable floor areas. There remains a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. LiDAR and surface contour data were analysed along with site photography and it was found that it is very likely that water running down Cottesloe Court will enter this property from the driveway. In the modelling 1 in 100 year rainfall event, the modelling results suggest that there will be a significant amount of overland flow running down Cottesloe Court. As the driveway of 1 Cottesloe court is virtually at the level of the road, this is likely to be the preferential flow path for</p>	No

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					water to take. Site photos show that the Cottlesloe Court is sloped to side of the street that the subject property is on. Furthermore, the driveway of 1 Cottlesloe court is virtually at the road level and so it would not take much depth of water to overtop it and flow into the property. The modelling is suggesting that in the 1 in 100 year rainfall event, there will be enough depth of water in the roadway to do so. Therefore, it is recommended that there be no change to the SBO in this property.	
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.</p> <p>The submission also states that Council should install more stormwater infrastructure on King Street and undertake more frequent maintenance. 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.</p>	No

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					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
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	No

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					topography and drainage infrastructure. The flood shape should be retained at this location.	
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. Consideration will be given to means to reduce the risk of culvert inlet blockage. A site visit has confirmed the topography is consistent with the flood shape. The overlays will assist in helping to identify areas to prioritise drainage upgrades throughout the municipality, in addition to ensuring future development is 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 immediately. In the interim, there is a need to	No

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					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.	
215.	30 Anthony Avenue, Doncaster, and 30A Anthony Avenue, Doncaster	Ruffey Creek	SBO3	2, 7, 8, 9, 11, 12	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.	Yes. The SBO3 incursion is proposed to be removed from the property.

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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</p>	<p>Yes. SBO flood shape is proposed to be deleted from the property.</p>

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					recommended to remove the SBO3 from the property.	
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	No

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					flood shape should remain as exhibited at this location.	
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 events. 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.	Yes. Delete the SBO2 flood shapes from 22 Council Street.

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					<p>The 2011 storm event is known to have exhibited a large degree of spatial variability. The modelled storm event applies 1% AEP rainfall with 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, 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. 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 drainage assets. However, owing to issues with the model</p>	

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					resolution and minor discrepancies between the fall of the land within the road reservation abutting the property, it is recommended that both SBO shapes be deleted from 22 Council Street.	
221.	67-69 Ennismore Crescent, Park Orchards	Mullum Mullum Creek	SBO2	1, 2	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. A desktop review and site visit has confirmed the earthworks are reflected in the LiDAR data and has been modelled adequately. The site visit confirmed that runoff from the north down Ennismore Cres would still cut through the front of the submission property and make its way to Curry Rd due to the roadway of Ennismore Cres being slightly higher than the front yard of the property which is indicated in the photos. The extent of the SBO2 is significant and the depths of overland flow are also greater than 500 mm at the pond areas. The review has confirmed the surrounding topography and drainage assets. In response to the recent follow-up meeting with the submitter, Cardno reviewed the submission. The recommendation is that the flood shape should remain as exhibited at this location.	No
222.	16 Murndal Drive, Donvale	Mullum Mullum Creek	SBO2	2, 12	The submission refers to changes of topography caused by excavation of neighbour's property and therefore overland flow should be passing through that area.	No

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					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 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	No

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					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 considers the risk of overland runoff. The review has confirmed the surrounding topography and drainage assets. It is confirmed that the existing dwelling is not encumbered by the proposed SBO. Following a recent meeting with the submitter the SBO has once again been reviewed and it is recommended that the SBO should remain as exhibited at this location.	
225.	9 Myers Court, Doncaster	Koonung Creek	SBO2	2,3	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, there remain residual overland flows in a major storm event. The area is a defined gully with a significant upstream catchment. The submission also questions why there are lower lying properties on Frank St are 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	No

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					pipes of 1500 mm and 750 mm in diameter at that location. The review has confirmed the surrounding topography and drainage assets. In response to the follow-up meeting with the submitter, Cardno were requested to review the submission. Based on the foregoing, changes to the SBO2 shape are not supported.	
226.	1 Niobe Court, Templestowe Lower	Ruffey Creek	SBO3	1	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. The SBO is based on a 1 in 1-- year ARI event is industry practice and has been adopted in 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 and further review following a recent meeting with the submitter has confirmed the flood shape is consistent with site conditions and it is recommended to be retained at this location.	No
227.	3 Millwood Court, Templestowe	Ruffey Creek	SBO2	1, 2, 8	The catchment to the north west contributes to the runoff. The natural topography controls the overland flow. The drainage infrastructure has been correctly represented in the model. The	Yes. Delete SBO2 shape from property.

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					review has however identified issues with the Lidar data and modelling resolution which require review of the SBO. It is recommended that the SBO2 shape as exhibited be deleted at this location.	Delete SBO2 extent from 2 and 5 Millwood Court. Trim part of SBO2 extent from 1 Millwood.
228.	55 Caringal Avenue, Doncaster	Koonung Creek	SBO2	1, 2, 7, 8	The submission states that flooding is not seen as a risk to 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 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.	Yes. Remove the SBO2 incursion from the property.
229.	17 Janet Street, Templestowe Lower	Bulleen North	SBO2	1, 7, 8, 11	The submission and addendum states that the ground levels have been changed in the backyard in the 1970's. 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. The proposed overlays identify flood prone land. Structures and buildings have not been modelled individually but,	No

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					consideration has been given to the impact of structures through the 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. Following the meeting held with the submitters in 2017, Cardno was requested to further review the submissions. 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 is designed to minor storm event standards for runoff from the subject property, not flows from the broader catchment. 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. Although there has been a drainage upgrade in neighbouring Anthony Reserve, the submission property does not directly benefit due to its relative position in the catchment. The maximum modelled flows through the property are approximately 50mm	Yes. Remove the SBO3 overlay. In addition the SBO3 overlay can be removed from 23 Marianne Way.

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					deep. These would not overtop the kerb and channel in Irene Court, and flows would be conveyed down Irene Court and out to Marianne Way. This has likely been caused by the resolution of the model not properly picking up the high point within the nature strip. Therefore, it is recommended that the SBO overlay shape be removed from this property. Furthermore, if this is removed the remaining SBO on the property can also be removed as it is within 5 meters of the road.	
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 for a 1 in 5 year event, with flows in excess of the pipe system travelling overland. The modelled SBO overlay on the property is based on a 100 year ARI storm event. The surrounding terrain includes a gully along the north boundary. A site visit confirmed that the overland flow would be unlikely as there are inconsistencies with the LiDAR data near structures. It is recommended that the SBO3 shape be removed.	Yes. Remove the SBO3 overlay.
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 Ave contains significant surface water in a 1 in 100 year ARI storm which	No change to 59 Beecroft Crescent, however, delete part of SBO2 at

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					causes overland runoff through the submission property to concentrate in the manner indicated by the SBO. in response to a meeting with the submitter in 2017, Cardno were requested to review the submission and SBO. Following the recent meeting with the submitter, Cardno were engaged to review the SBO. The review has confirmed the surrounding topography, drainage assets and the SBO shape. The flood shape should remain as exhibited at this location.	front of 61 Beecroft
233.	8 Lynnwood Parade, Templestowe Lower	Ruffey Creek	SBO2 & SBO3	2	The site visit confirmed the drainage infrastructure in this vicinity. The overlay is representative of overland runoff in a 1 in 100 year ARI event. LiDAR and surface contour data were analysed along with site and aerial photography. It was found that an erroneous low point seems to have been created in this area due to tinning and model resolution issues. It is therefore recommended to remove this SBO from the property. The flooding in the south of the property can be removed as there is not a complete flooded grid cell inside the property which is well within the error bounds of the model. Furthermore, this has been exacerbated by the automatic smoothing process. The flood extent in the north of the property can also be removed as it is within 5m of the roadway and it is the only flood extent on the property if the others are removed. Therefore, it is recommended to remove all SBOs from this property.	Yes. Remove all SBO3 areas from property.

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234.	5 Reddan Court, Doncaster	Ruffey Creek	SBO2	2, 4, 5, 6, 12	<p>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.</p> <p>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 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</p>	No

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					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 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	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. Further, it is proposed to delete the flood shape from Stages 1 and 2 of the subdivision and 7 Yileen Court.

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					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.	
236.	4 Gum Ridge Close, Templestowe	Ruffey Creek	SBO2	1, 2, 5	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 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.	No

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237.	15 Murndal Drive, Donvale	Mullum Mullum Creek	SBO2	1	The submission references the current drainage infrastructure and suggests that it is adequate to prevent flooding. Such 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 overlay on the property is based on a 100 year ARI. Although the resident may not have experienced this magnitude of flooding, the model indicates that the capacity of the underground drain will be exceeded in a 1 in 100 year event and overland flows will result. Due to the defined valley which runs through the property, it is reasonably expected that this area of the property is flood prone 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.	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.
239.	7/48 Leslie Street, Donvale	Mullum Mullum Creek	SBO2	2	The submission states that because the house was built in the 1980s, it should have adequate drainage. 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	No

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					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.	
240.	6 Linton Avenue, Templestowe Lower	Ruffey Creek	SBO3	2	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 planning or risk mitigation benefits and is therefore recommended to be deleted from the property.	Yes. Remove SBO3 incursion from property.
241.	18 Philip Avenue, Doncaster	Koonung Creek	SBO3	2, 4, 12	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	Yes Remove the SBO3 from the property.

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					2009 by DELWP and is the best available data for this type of modelling. Structures and buildings have not been modelled individually but consideration has been given to the impact of structures the application of surface roughness factors in accordance with industry guidelines. LiDAR and contour data were analysed along with site photography and it was found that it is unlikely to flood the property from the road due to the presence of the kerb and channel and the ability of the overland flows to be diverted along Ernst Street. The SBO in the rear of the property is therefore unlikely to occur as it originates from water entering from the front. Therefore, it is recommended to remove the SBO on this property.	
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	No

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					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 the 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. 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. The review has confirmed the surrounding topography and drainage assets. Cardno have also undertaken a further review of the submission following the recent meeting with the submitter. 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.	No

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					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 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	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 overlay is caused by a small overland flow path on the western boundary of the site which is covered by an easement layer. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Development in close proximity to property boundaries or within easements may be permitted subject to conditions. The flood modelling that underpins the SBO was based on a 1 in 100 year ARI storm event in accordance with industry practices. Modelled results were analysed and it was found that the majority of flood depths were less than 50mm. The only catchment supplying	Yes. Remove SBO3 overlay

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					runoff to this location is a neighbouring house and the local property itself. There have also been significant modifications to the neighbouring property so any flows being supplied from that site are no longer entering this area. Given the low flow depth and changes to topography in the neighbouring property, it is recommended that the overlay be removed.	
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 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 serving 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. Cardno have also reviewed the submission and concur with Council officers. The flood shape should remain as exhibited at this location.	No

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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. Furthermore, implications of landscaping and alterations of the land within the property are largely irrelevant to the overall SBO shape in this area because runoff is occurring from Old Orchard Cl. 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 experienced. 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. The review has confirmed the surrounding topography and drainage assets. However, a review of the modelled flow characteristics supports the downgrading of the proposed SBO from SBO2 to SBO3.	Yes. Designation of overlay to be changed from SBO2 to SBO3.
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	No

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					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. 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. Following the recent meeting with the submitter, Cardno were engaged to review the SBO and submission. The properties to the east are in a low point along Blackburn Rd and excess runoff flows in a westerly direction following the contours of the land. A site visit has confirmed the Council drainage assets. However as the Lidar data does not adequately reflect levels around the pool, it is recommended to amend the SBO2 shape at this location. In addition, it is recommended that the SBO2 area near the driveway be deleted to address issues associated with the model resolution. It is recommended to retain but modify the SBO2 shape at 12 Saxonwood.	Yes. Delete SBO2 area at front of property. Modify SBO2 shape at rear of property.
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	Yes

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					proposed overlay. The property is located at the intersection of Ross St and Hislop St. 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 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 LiDAR and surface contour data were analysed along with site photography and it was found that there has been an unrepresentative low point in the nature strip model caused by the thinning of the large tree from the tin. Therefore, it is recommended that the SBO be removed from this property.	Remove SBO3 from property.
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	Yes.

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					<p>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 of this property and water would flow over the kerb level across the whole frontage of the property as shallow flow. The request from the submitters to investigate options to divert overland flows by undertaking works at the intersection of Dellfield Drive and Montclair will be investigated and referred for consideration through Councils Capital Works Program. 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.</p>	<p>It is recommended that the LSIO be modified to a SBO 3 and the flood shape extent be retained.</p>
254.	8 Cypress Avenue, Templestowe Lower	Ruffey Creek	SBO3	1, 2, 5, 7, 8	<p>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</p>	No

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					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.	
255.	21 Alexander Road, Warrandyte	Mullum Mullum Creek	SBO2	2	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. The associated catchment area is approximately 42 hectares in area. Runoff occurs onto the roadway mainly through the neighbouring property but also cuts the corner of the submission property. Alexander Rd serves as a 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 given the direction of flow through the southern boundary and onto the road. The waterway mentioned by the submitter contains underground Council drainage typically designed	Yes. Convert the SBO2 overlay to SBO3.

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					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. The review has confirmed the surrounding topography and drainage assets. Due to the surrounding terrain the property is reasonably expected to experience runoff in the manner indicated by the SBO. Following the recent meeting involving the submitter and Council officers, Cardno were requested to review the submission. A review of the overland flow depths associated with the SBO has found that the SBO as it relates to 21 Alexander Road should be downgraded from SBO2 to SBO3.	
256.	9 and 9A Valepark Drive, Donvale	Mullum Mullum Creek	SBO2	12, 14 Existing properties under 500sqm therefore already require a permit for development	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 less than 500m2 in size each, the west boundary of both is located within a defined valley 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. The purpose of the private retention system referred to in the submission is detain run off produced by the property itself and will not mitigate flooding from the upstream catchment. The review has confirmed the surrounding topography and public	No

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					drainage assets. No substantive matters warranting review of determination on the original submission were raised during a recent meeting with the submitter. The flood shape should remain as exhibited at this location.	
257.	559-561 Doncaster Road, Doncaster, and 563 Doncaster Road, Doncaster	Koonung Creek	SBO3	1, 2, 3, 5, 6, 7, 8	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 flooding. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No

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258.	33 The Grange, Templestowe	Ruffey Creek	SBO2	2, 12	<p>The overlay is a representation of overland runoff flowing over the property generally in a south westerly direction. The submitter correctly states that there is a significant decline in the terrain west of the property in addition to the decline of Chippendale Ct from The Grange intersection and 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 are not individually modelled as they are not protected and can be subject to change in the event of property redevelopment.</p> <p>The review has confirmed the surrounding topography and discrepancies with the Lidar data in the property to the rear and the nature strip in front of the property. The review has confirmed the drainage assets. The SBO2 shape is recommended to be amended to delete the shape at the front of the property and amend the shape on the western boundary but retain the SBO2 along the rear property boundary.</p>	<p>Yes.</p> <p>Amend SBO2 by deleting shape at the front of the property and the eastern SBO2 area, but retaining the SBO2 area at the rear of the property.</p> <p>Delete the SBO2 shape at the front of 35 The Grange and on the western boundary but retain balance of SBO2.</p>
259.	97 The Grange, Templestowe	Ruffey Creek	SBO2	1, 7, 8, 10	<p>The submission states that no flooding has been experienced since buying the property in 2004. 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</p>	No

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					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. In response to the follow-up meeting with the submitter, the submission was referred to Cardno for review. 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
261.	107-115 Andersons Creek Road, Doncaster East	Mullum Mullum Creek	SBO2	2, 12	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	No

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					<p>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 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</p>	

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					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.
263.	27 Marcus Road, Templestowe Lower	Bulleen North	SBO2	4, 5, 6, 7, 8	The submission acknowledges that the property is prone to flooding and states that Council should upgrade the drains in the area.	No

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					<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>	

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					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 submission states that work carried out by Council 13 years ago in 2003, have stopped flooding in the area. 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. The flood extent was modelled on a 1 in 100 year ARI or 1% AEP rainfall event in accordance with industry practices. It is unlikely that the drainage upgrade will cope with the flood modelled as part of the SBO development. None of the recent rainfall events reported were close to the theoretical 1 in 100 year ARI flood that the SBO has been based on. As such, it is expected that no flooding would have been observed in the area around 96 Golden Way for the above events, as council drainage will have adequately conveyed these minor flows. It is recommended that the SBO3 be retained as modelled.	No

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265.	23 Murndal Drive, Donvale	Mullum Mullum Creek	SBO2	1, 2, 7, 8	Following the recent meeting with the submitter, Cardno were engaged to review the submission and SBO. Based on the field survey plan provided, the SBO shape has been reviewed and trimmed at its eastern extent. It is recommended that the revised SBO2 shape be adopted.	Yes. Trim the eastern side of the SBO2 shape.
266.	21 Monaco Street, Doncaster & 14 Alison Avenue, Bulleen	Koonung Creek	SBO3 (21 Monaco St) SBO1 (14 Alison Ave)	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 extents have been reviewed and are recommended for removal.</p>	<p>No for 21 Monaco Street.</p> <p>Yes for 14 Alison Avenue - remove the SBO1 from this property.</p>
267.	14-16 Stanley Drive, Doncaster	Ruffey Creek	SBO3	2	Previous analysis was undertaken for this property in response to previous submissions. It was found that the modelling indicated that in a 1 in 100 year flood event, water is deep enough within Stanley	No

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					Drive to overtop a low point within the nature strip which then flows into the driveway of the subject property. This additional analysis has not identified any additional evidence to negate the findings of the previous analysis and therefore it is recommended that no change be made to the SBO at this location.	
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 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</p>	Yes. Remove the SBO3 incursion from the property.

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					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.	
269.	22 Koolkuna Avenue, Doncaster	Koonung Creek	SBO2	1, 2	The submission describes having lived at the property for 38 years and not experienced flooding. 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. 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.	No
270.	25 Berrima Road, Donvale	Mullum Mullum Creek	SBO3	2, 5, 8	The submitter's experiences of drainage patterns from One Tree Hill Reserve and properties to the	No

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					rear 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 likely that the modelled flood depths are not significant enough to define the flood shape that far upstream. A site visit confirmed the general topography and drainage infrastructure in One Tree Hill Reserve and surrounds, 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 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. 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. There is a need to ensure	No

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					that future development is designed to set habitable floor levels above the major storm flood level through the application of SBO's. The review has confirmed the surrounding topography and drainage assets. The observed flooding of this property is consistent with the application of the SBO at this location. The flood shape should remain as exhibited at this location	
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 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</p>	No

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					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 of critical duration. The overlay has been reviewed and based on the flow depths and extent of the shape, it is recommended that the exhibited SBO2 shape be deleted.	Yes. Delete SBO2 from property. In addition realign SBO2 impacting the frontages of 62 and 64 Roseland Grove into road reserve and convert to SBO3.
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	Yes. Remove the SBO3 incursion from the property.

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					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.	
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 not due to overland flow from Corella Street. The submitter states that properties down the hill on Thiele St do not have as significant an encroachment as the submitter's property. A site visit has confirmed the drainage assets in the area were modelled correctly. 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 aspect of risk management as it will enable the setting of future floor levels above modelled flood levels and the identification and prioritisation of future	Yes. Remove the SBO3 shape.

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					drainage upgrade works. LiDAR and surface contour data as well as site photos were analysed and it was found that it is unlikely that water will pool enough in the areas shown in the SBO within the property. The resolution of the model has not adequately picked up certain features. Therefore, it is recommended that the SBO be removed from this property.	
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</p>	No

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					<p>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 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.</p>	
277.	3 White Lodge Court, Donvale	Andersons Creek	SBO3	2, 5, 11	<p>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 overlay is caused by a small overland flow path</p>	<p>Yes Remove SBO3 overlay</p>

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					on the western boundary of the site which is covered by an easement layer. The purpose of the proposed overlays is to ensure that future development is protected from flooding. Development in close proximity to property boundaries or within easements may be permitted subject to conditions. The flood modelling that underpins the SBO was based on a 1 in 100 year ARI storm event in accordance with industry practices. Modelled results were analysed and it was found that the majority of flood depths were less than 50mm. The only catchment supplying runoff to this location is a neighbouring house and the local property itself. There have also been significant modifications to the property. Given the low flow depth and changes to topography, it is recommended that the overlay be removed.	
278.	19 Illawong Drive, Donvale	Mullum Mullum Creek	SBO2	3, 12	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. 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 the 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	No

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					depths than the filled area. 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. The flood 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. A meeting was recently conducted involving Council officers and the submitter but none of the matters discussed warranted further review of the SBO shape. The SBO 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. Private	Yes.

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					<p>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 on the mapped flood extents, through the application of roughness factors to land areas. The flood 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 drainage assets. Site visit confirmed that flows are unlikely to occur as indicated by the modelling results due to the steepness of the driveway and unencumbered flow into the roadway.</p>	<p>Remove SBO2 shape from property.</p> <p>In addition, remove SBO2 from 178 Church Road.</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 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</p>	No

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					<p>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 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</p>	

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					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.	
282.	14 Old Orchard Way, Doncaster	Ruffey Creek	SBO2	2, 11	The submission states that the flood shape is inconsistent with the retaining walls at the front of the property. 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 take consideration of land use and type and density of development for individual sub catchment areas. A site visit has confirmed the	Yes. Delete SBO2 shape from property. Delete SBO2 shape from 16 Old Orchard Way.

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					topography and drainage infrastructure are consistent with that modelled. However, issues have been identified with the Lidar data, which warrant the removal of the SBO shape from the property.	
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 water detention system to alleviate pressures on Council's drainage system.	Yes. Remove the SBO3 from the subject property.
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	Yes. Remove the SBO3.

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					<p>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 Manning's 'n' value (roughness factor). 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.</p> <p>General findings -LiDAR and surface contour data were analysed along with site photos and it was found that there were some slight abnormalities in the modelled terrain. This was likely caused by model resolution and tinning issues on steep terrain with the presence of vegetation creating some erroneous low points. As such, it is recommended that the SBO be removed from 5 Amberwood Court.</p>	<p>In addition the SBO be removed from 4 and 6 Amberwood Court.</p>

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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 being 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. 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. There is also a need to ensure that future development is designed to set habitable floor areas above the major storm flood level. Following a recent meeting with the submitter, a further review has confirmed the surrounding topography, drainage assets and the results of the previous investigations. The flood shape should remain as exhibited at this location.	No
286.	53 Lawanna Drive, Templestowe	Ruffey Creek	SBO2	1, 2, 4, 5, 7, 12, 14 Safety issues with having a	The model indicates flows from private property to the street at this location. The submission states that there has never been any flooding concerns with the property while the submitter has been at	Yes. Remove the SBO2 shape from the property.

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				400mm gap between a fence and the ground.	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. There are however some discrepancies with the Lidar data which warrant removal of the SBO2 shape.	Remove SBO2 shape from 51 Lawanna.
287.	1 Eama Court, Bulleen	Koonung Creek	SBO3	5, 12	<p>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 drainage infrastructure.</p> <p>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.</p> <p>Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate</p>	No

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					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.	
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 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	No

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					<p>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 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>	
289.	9 Woodhouse Road, Doncaster East	Koonung Creek	SBO3	1, 2	<p>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</p>	No

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					the north east travelling in a westerly direction. Based on a review, the SBO extent is recommended to be retained at this location.	
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 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

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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. 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>	
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 St area are under capacity and, due to development further upstream in the catchment, additional loads have been placed on the drainage network. The submission also states that Council should prioritise upgrading the drains in the area. Council allocates approximately \$2</p>	<p>Yes. Partial trimming of the SBO shape required.</p>

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					million annually to upgrading its underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. There is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. The modelled flows impacting 43 Corella emanate from Schramms Reserve. The review has confirmed the surrounding topography and drainage assets. The modelling results indicate that the automatic smoothing process has inadvertently joined the flood extent on 45 Corella Court to that of 43 Corella Court at the rear of the property. It is recommended that this be separated and trimmed accordingly.	
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	No

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					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 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	No

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					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.	
295.	15 Bamfield Close, Templestowe	Ruffey Creek	SBO2	2, 4, 5	<p>The submission supports the purpose of the SBO and acknowledges the exhibited flood shape along the west side of the property; however takes issue 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</p>	No

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					incursion of the flood shape onto this property is recommended to be retained accordingly.	
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 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.</p> <p>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</p>	No

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					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 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	No

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					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.	
298.	5 Lomond Court, Warrandyte	Mullum Mullum Creek	SBO3	1, 2, 7, 8, 12	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 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.	No
299.	2 Mahoneys Court, Warrandyte	Mullum Mullum Creek	SBO3	1, 2, 7, 8, 12	The submitter 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 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	Yes. Remove SBO3 from property.

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					walls in the garden supply shop on the neighbouring property have not been modelled. LiDAR and surface contour data was analysed along with site photos and the results of the modelling have been reviewed. It was found that the surface used in the model did not pick up the mentioned wall due to the model resolution. Therefore, it is recommended that the SBO be removed from this area of the property. As there are no other flood extents now on the property and the second incursion is within 5m of the roadway, it is recommended to also remove this extent from the property.	
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	No

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

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					30m2) 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.	
302.	12 Thiele Street, Doncaster East	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</p>	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					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.	
303.	27 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	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. 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	No

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AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY 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. 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>	
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	Yes. Remove the SBO3 shape.

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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. 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. 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. 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. LiDAR data is considered to be the most suitable and fit-for-purpose elevation data available for this purpose. 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</p>	<p>In addition remove SBO shape from 21 Thiele St, 31 Thiele St, 37 Thiele St.</p>

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

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					downstream of the improvements and thus are protected from overland runoff during a major storm event. However, LiDAR and surface contour data as well as site photos were analysed and it was found that it is unlikely that water will pool enough in the areas shown in the SBO within the property. The resolution of the model has not picked up certain features adequately for these reasons. Therefore, it is recommended that the SBO be removed from this property.	
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 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. 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	Yes. Remove the SBO3 shape.

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

Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					underground drainage network. These works are prioritised based on frequency of flooding of habitable floor areas. 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. LiDAR data is considered to be the most suitable and fit-for-purpose elevation data available for this purpose. 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. However, LiDAR and surface contour data as well as site photos were analysed and it was found that it is unlikely that water will pool enough in the areas shown in the SBO within the property. The resolution of the model has not picked up certain features adequately for these reasons. Therefore, it is recommended that the SBO be removed from this property.	
306.	23 Corella 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, 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.	No

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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</p>	

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AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY 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.	
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.</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>	No

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AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY 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 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.	
308.	32 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	No

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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. 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	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	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>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</p>	

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AMENDMENT C109 – REVIEW OF THE LAND SUBJECT TO INUNDATION OVERLAY 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.	
310.	45 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	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 (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. Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas in major storm events. 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. There is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level. However, LiDAR and surface contour data as well as site photos were analysed and it was found that it is unlikely that water will pool enough in the areas shown in the SBO within the property. the resolution of the model has not picked up certain	Yes. Remove the SBO3 shape.

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					features adequately for these reasons. Therefore, it is recommended that the SBO be removed from this property.	
311.	25 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

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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.	
312.	17 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 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	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>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	<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</p>	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>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>	

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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</p>	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					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.	
315.	23 Thiele Street, Doncaster	Ruffey Creek	SBO3	2, 5, 6, 7, 8, 10	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 submission also states that Council should prioritise upgrading the drains in the area. 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. There is a need to ensure that future development is designed to set habitable floor levels above the major storm flood level which is the objective of the proposed Amendment. The outcome of the review is that the	Yes SBO3 incursion to be removed

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					flood shape represents a minor incursion onto the property and the flood shape is recommended to be removed accordingly.	
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 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

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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 flood shape should remain as exhibited at this location.	
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 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 (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. 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. There is a need to ensure that future development is designed to set habitable floor levels above the	Yes. Remove the SBO3 shape.

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					major storm flood level. LiDAR and surface contour data as well as site photos were analysed and it was found that it is unlikely that water will pool enough in the areas shown in the SBO within the property. The resolution of the model has not picked up certain features adequately for these reasons. Therefore, it is recommended that the SBO be removed from this property.	
318.	40 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	No

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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>	
319.	6 St Muir Drive, Warrandyte	Mullum Mullum Creek	SBO3	1, 2, 12	<p>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 would contribute to shallow overland runoff 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. The entire overlay through these properties is a series of</p>	<p>Yes. Remove the SBO3 overlay.</p> <p>In addition remove SBO3 from 8 and 10 St. Muir Drive.</p>

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					connected low points over houses. Since St Muir Drive has been developed, flows are redirected to the road. It is recommended that the SBO3 shape be deleted accordingly. Desktop assessment shows that flood shape occurs where a pond is located on the property . A site inspection revealed that the entire valley has been filled and the site visit confirmed this. The entire flood shape is to be removed.	
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 benefits. The flood shape is recommended to be deleted from the property.	Yes. Remove the SBO3 from property.
321.	4 Tulip Court, Doncaster East	Mullum Mullum Creek	SBO3	1, 2, 5, 7, 8, 13	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. 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. 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.	No

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					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. There is also 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	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 (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 convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are	No

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					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 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 in a short timeframe. 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.	
323.	7 Ambrose Street, Doncaster	Ruffey Creek	SBO2 & SBO3	2, 5, 6, 7, 8, 10	It is recommended that based on the minor incursion criteria, that the SBO2 overlay be removed from the property. LiDAR and surface contour data were investigated and it was found that due to the model resolution, tinning of the modelled surface was inadequately represented at the front of the property. Therefore, it is recommended that the SBO3 flood shape at the front of the property be removed as well.	Yes. SBO2 and SBO3 incursions to be removed.

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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 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</p>	No

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					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.	
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</p>	No

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					<p>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>	
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</p>	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>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>	
327.	27 Corella 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	No

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					<p>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. 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>	

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					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.	
328.	31 Corella 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 typically 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. The modelled storm is a 1 in 100 year ARI 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. 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</p>	<p>Yes. Remove SBO3 shape.</p> <p>In addition that the SBO shape at 29 and 33 Corella St, be removed.</p>

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					prioritised based on frequency of flooding of habitable floor areas. 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, aside from the modelling of the spoon drain within Schramms Reserve. The spoon drain and path divert overland flows away from this property. It is recommended that the SBO shape be removed.	
329.	129-131 Gosford Crescent, Park Orchards	Mullum Mullum Creek	SBO2	2, 12, 14 SBO2 should be changed to SBO3.	A review of modelled overland flow characteristics in respect of the north-south flow path through 129-131 Gosford Crescent has found that the flow depths are generally less than 100mm in depth. On this basis, the review supports a change to the designation of the north-south SBO extent from SBO2 to SBO3.	Yes Change the SBO2 to SBO3 for the north – south flow path.
330.	92 Canopus Drive, Doncaster East	Mullum Mullum Creek	SBO3	1, 2, 7, 8, 12	A review of the area indicates that the likely cause of the modelled 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.	Yes. It is proposed to remove the SBO3 from the property.
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	No

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					<p>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 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>	

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					<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 topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	
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. It is recommended to delete the flood shape on this property and neighbouring properties 243 Thompsons Rd, and no's 16-18 Sylvia St to the rear.
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	<p>A contour map from the Land department of state government with 1 metre contours has been provided in the submission with the contention that there is no land depression to form the ponding and flood inside the property. 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</p>	Yes. Trim and modify the SBO shape for this property.

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				<p>permeability is irrelevant in the LDRZ. Once drains have been upgraded, overlay should be removed. 400mm above ground level requirement - question applicability to a concrete slab construction. Issue with applying 400mm requirement where there has been 'cut and fill'.</p>	<p>nuanced surface characteristics which govern water flow on the property. A site visit has 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 Council drainage infrastructure in the area including the Kyrenia Ct and Tindals Rd are all represented in the model correctly. The site inspection indicated that the flood extent shown was potentially due to a combination of steeper catchment (greater than 30%), higher velocity flow rates and shallow flows. The property is not likely to be inundated in the south-western area as exhibited. However, the modelled flow along the easement on the northern boundary is confirmed. It is recommended that the SBO shape for this property be trimmed and modified as shown in the attached plan.</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	Yes Remove the SBO2 from this property

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					depths, the SBO is recommended to be deleted from the property.	
335.	50 Dehnert Street, Doncaster East	Ruffey Creek	SBO3	1, 2	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. The review has confirmed the surrounding drainage assets. LiDAR and surface contour data were analysed and it was found that there have possibly been some tinning issues in this area which have resulted in an unlikely low point within the backyard of the subject property. It is therefore recommended that the SBO be removed from 50 Dehnert Street.	Yes. Remove SBO3 from property.
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	Yes Remove the SBO3 incursion from property

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					criteria and the flood shape is recommended to be deleted from the property.	
338.	48-50 Lynnwood Parade, Templestowe Lower	Ruffey Creek	SBO3	1, 2, 3, 12	<p>The submission states that the SBO is not consistent with the experiences of flooding at this location and the property is elevated from the 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>	No
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. The property is already extensively encumbered by an existing LSIO. The specific rainfall on the property is only a small part of the runoff through the property in a 1 in 100 year event and the broader catchment is taken into account for the purpose of the modelling.</p> <p>Following the recent meeting with the submitter, Melbourne Water, Council and Cardno officers have again reviewed the overlay and submission.</p>	Yes. Convert small section of LSIO as exhibited to match existing LSIO overlay.

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					Responses to queries raised are included on page 106 of the Assessment of Submission Report dated 1 September 2017. 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 LSIO extents.	
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 submitter's 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	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.

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					recommendation has been agreed with Melbourne Water.	
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. The modelled flow is discharging onto the street rather than rising up from the street. A site visit has confirmed that the modelled drainage infrastructure is consistent with the actual drains in the area. The flood extents in the property are in the vicinity of the garage and down the driveway. The garage extent is isolated and has likely been caused by the resolution of the model combined with issues of thinning of the LiDAR on a steep slope. It is therefore recommended that this area be removed from the SBO. The flood extent on the driveway is also deemed unlikely due to the slope and unobstructed connection to the roadway. As above, this has likely been caused by issues with thinning of the tin as well as the model resolution. Therefore, it is also recommended to remove this section from the SBO.	Yes. Remove SBO3 from property.
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	No

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					<p>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 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.</p>	
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</p>	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>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 and drainage infrastructure and should be retained.</p>	
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). 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 Special Building Overlay(SBO).</p>	<p>Yes. Delete SBO1 extents from southern and western boundaries. Retain SBO at eastern</p>

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					The SBO is based upon the extent of overland flows that would result from a 1 in 100 year Storm Event. The overlay designation has been reviewed due to issues with the Lidar data at this location, it is proposed to delete the SBO1 shapes at the southern and western property boundaries. The flows effecting the eastern boundary are associated with the local catchment, rather than flows from Hillcroft Drive. The SBO on the eastern boundary is recommended to be retained but given the relativeley shallow flow depths, the designation is proposed to be changed from SBO1 to SBO3.	boundary. Designation of eastern extent to be changed from SBO1 to SBO3. Extents for 15, 17 and 19 Hillcroft Drive with the exception of the section at the front boundaries to be changed from SBO1 to SBO3.
345.	24 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 6, 13	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 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	Yes. It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3.

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					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.	
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 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</p>	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					<p>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 expected to experience flooding in the manner indicated by the SBO. The review has confirmed the surrounding topography and drainage assets.</p>	

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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.	
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 the topography and drainage infrastructure and should be retained.</p>	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
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'. 'Stormwater	The submission property is located in the bottom of a valley immediately upstream of Greendale Reserve which is a floodway running the south west to Koonung Creek. This location is expected to experience large amounts of runoff during major storm events and has significant Council drainage infrastructure which is indicative of drainage	No

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				runoff' would be better.	patterns in this area. It is recommended that the SBO2 shape be retained as exhibited.	
350.	2/19 Churchill Street, Doncaster East	Ruffey Creek	SBO3	7, 8, 10, 12, 14 Use of term flooding is misleading.	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 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.	No
351.	50 Lawanna Drive, Templestowe	Ruffey Creek	SBO2	2, 3, 5, 7, 8, 10, 12, 13, 14 Application of retrospective regulations is inappropriate. 400mm gap below fences is a safety issue.	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 convey major flows through residential areas in a 1 in 100 year ARI/1% AEP rainfall event. Councils are	Yes. 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.

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					<p>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. Based on a review of the modelled flood depths</p>	

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					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 largely over an easement. The purpose of the	No

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					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). Melbourne Water agrees the building is not subject to flooding, only inundation at the front of the property. The overlay and levels at the front of the property have been reviewed and it is agreed that flooding of the area at the front of the property between the driveways in a 1 in 100 year event is unlikely. It is proposed to reduce the area of the SBO1 shape at the front of 441 Serpells Road accordingly.	Yes. Reduce the area of the SBO1 incursion into the property at the front boundary.
355.	18 Rhonda Street, Doncaster	Koonung Creek	SBO3	5, 7, 8, 14 Does not apply to Eastern Golf course.	The submission states that the Council should upgrade the drainage system rather than imposing the SBO. Council allocates approximately \$2 million annually to the upgrade of its underground stormwater	No

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				Inconsistent.	<p>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 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</p>	

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					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 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.
357.	13 Pamela Street, Warrandyte	Mullum Mullum Creek	SBO2	1, 2, 8	The submission states that the property slopes down hill significantly from the house and that flooding is not an issue. The SBO shape 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. 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	No

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					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 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	Yes. Change SBO2 overlay to SBO3 Change overlay for 106 McGowans to SBO3.

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					confirmed the flood shape is consistent with site conditions, however based on modelled depths in the area, it is recommended the local extent of the SBO2 affecting 106-108 McGowan's Rd be changed to the designation of 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. A meeting was recently conducted involving Council officers and the submitter but no substantive additional issues were raised for resolution. 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, which is recommended to be removed.	Yes. SBO3 incursion proposed to be removed. SBO2 shape is proposed to be trimmed along the eastern boundary.

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362.	48 Lawanna Drive, Templestowe	Ruffey Creek	SBO2	2, 3, 5, 7, 8, 10, 12, 13, 14 Retrospective regulations. Allowing a 400mm gap below fences will create safety issues.	<p>The submission states that Manningham City Council should have been aware of the flood risk at the time of subdivision.</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</p>	<p>No with respect to the exhibited overlay.</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>

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					<p>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 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.</p> <p>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>	

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					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: <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	The submission states that the property has experienced several 1 in 100 year storms and 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 actually of 1 in 100 year ARI events of critical duration. Manningham experienced significant flood events in 1991, 1992, 2003 and more recently 2011 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. Drainage upgrades are typically designed to protect habitable floor areas in major storm events 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	No

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					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.	
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	No

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					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.	
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	No

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					drainage assets. The flood shape should remain as exhibited at this location.	
368.	5 Dilkara Court, Doncaster East	Mullum Mullum Creek	LSIO	1, 2, 5	The property is adjacent to Mullum Mullum Creek. Regarding the submission that there “is no evidence for the past 100years 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 Land Subject to Inundation Overlay (LSIO). The overlay is based upon the extent of overland flows forecast as resulting from a 1 in 100 year Storm event. The depths of flooding at the rear of the property are approximately 4cms to 9cms deep, and if the floor levels of the dwelling are 3000mm (as advised by the submitter) above natural surface, the floor level of the house will be above the modelled flood level. The overlay designation has been reviewed and given that the flows emanate from the local catchment to the west rather than overflow from Mullum Mullum Creek, it is recommended that the overlay designation be changed from LSIO to SBO3.	Yes. Overlay designation to be changed from LSIO to SBO3. In addition flood shapes for 4 Dilkara and 58-60 Larnoo Drive to be changed to SBO3.
369.	22 Russell Street, Bulleen	Bulleen North	SBO1	1, 3, 12	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	No

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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.	
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 ground movement has been reported to Melbourne Water's maintenance team. 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. This result has been confirmed through a further review undertaken by Cardno.	No

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372.	5 Hampden Court, Templestowe	Ruffey Creek	SBO2	2, 4, 12	<p>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 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</p>	No

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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.	
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 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>	No
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

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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. A site visit has confirmed the topography and drainage assets. It is recommended the flood shape be retained at this location.</p>	No
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</p>	No

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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.	
377.	27 Ferndell Crescent, Templestowe	Ruffey Creek	SBO2	1, 3, 7, 8	The submission states that no flooding has been recorded in the area or on the property. 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 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.	No
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	Yes. The overlay should remain but should be changed to SBO3.

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					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.	
379.	183-191 Tindals Road, Donvale	Mullum Mullum Creek	SBO3	2, 4, 7, 8	The main points of the submission relate to the adequacy of drainage maintenance in the area. 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. Due to the modelling being undertaken on the assumption that the drainage network is operating at capacity, this is a separate issue to the extent of the flood shape. The results of the flood mapping have been used to identify potential drainage upgrades. Council is working through a process to prioritise future capital improvement works. The review has confirmed the surrounding topography and drainage assets. Analysis of the modelling results was undertaken and it was found that the majority of flood waters in the subject property are generated from the property itself and that directly to the north. There is a small catchment from the road as well. However, site photos show that the water will still enter the properties through driveways and low points of the kerb and channel.	No

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					The flood shape should remain as exhibited at this location.	
380.	3 Moresby Avenue, Bulleen	Koonung Creek	SBO3	2	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.	No
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.	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

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					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.	from LSIO to SBO2.
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 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 the SBO2 from the property.
383.	327 Tindals Road, Warrandyte	Mullum Mullum Creek	SBO3	1, 2	The submission claims the flood modelling has given no consideration to existing contours and at no point has runoff occurred in the way indicated by the SBO. 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 generally confirmed the current terrain, with the property located below	Yes. Parts of the overlay will be removed within this property.

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					<p>the level of the road and falling quite steeply. 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 Rd and the fact that the property is located below road level suggest runoff during major storm events could reasonably be expected to occur. The review has confirmed the surrounding topography and drainage assets. The driveway has a 300 mm diameter pipe under the entrance. The catch drain flowing to this point is represented within the hydraulic model but the 300 mm diameter pipe under the driveway has not been included. As a result the catch drain flows into the site within the model whereas in reality it would continue to the easement to the east. In addition, an issue with the LiDAR data over the tennis court, together with consideration of the effects of the driveway culvert warrant removal of the SBO shape over the tennis court. The flows will not come down the driveway of the property, or across the tennis court. The flood shape will however remain along the property boundary to the south, in accordance with the attached plan.</p>	
384.	5 Sturdee Road, Donvale	Mullum Mullum Creek	SBO2	5, 6, 8	<p>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</p>	No

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					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.	
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, 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	No

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					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. The previous drainage upgrade undertaken in 2008/2009 involved the installation of a 1200mm dia underground drain to the rear of 1 Alfreda Avenue but did not continue up to 13 Alfreda Avenue. As a result, the previous drainage upgrade does not appreciably affect the SBO2 shape at the rear of 13 Alfreda Avenue. Although drainage upgrade has been modelled, it is not feasible to eliminate the overland flow impacting 13 Alfreda Avenue. The SBO is consistent with the	No

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					topography, size of upstream catchment and drainage infrastructure and is recommended to be retained.	
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.

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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 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.	No
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 generally be consistent with the topographical features of the land. The model has used LiDAR data to create the ground surface. This data as well as contour data and site photos were analysed against the	Yes. Trim and remove part of the SBO3 extent from the property.

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					proposed flood extent. It was found that the modelled surface generally seems to match well with the surface and results. The main overland flow path is through the rear of the property as expected. However, a small tinning issue has been picked up in the centre of the property near the house, and it is recommended that this area be trimmed out of the extent.	In addition remove SBO3 from 269, 271, 275 and 277 Church Rd.
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 overlays is not intended to prohibit future development, but to ensure that any new development is referred so that drainage, floodplain Management and environmental issues can be addressed early in the planning process. Following the interview with the Submitter in March 2017, Cardno were engaged to further review the overlay impacting the property. Based on the foregoing, it is recommended that a small section of the southern flow path be removed from the overlay as indicated in the attached plan.</p> <p>The northern flow path follows the low points of the terrain as confirmed by the site visit and thus it</p>	Yes. Remove a section of the southern SBO shape. Change the southern SBO shape to SBO2 and the northern SBO shape to SBO3.

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					<p>is recommended that this shape remain unchanged. As the flooding on this property is caused by flow from upstream catchments and not from backwaters from Ruffey Creek, it is recommended that the overlays be changed from LSIO to SBO.</p> <p>It is recommended that the northern flow path be changed to SBO3 and the southern flow path be changed to SBO2.</p>	
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. 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 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.</p>	No
394.	14 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1, 2	The property is located adjacent to a Melbourne Water main drain (Greenridge Avenue Drain).	Yes.

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					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.	It is recommended that the flood shape be retained but the overlay designation be changed from SBO1 to SBO3.
395.	33 Lynnwood Parade, Templestowe Lower	Ruffey Creek	SBO1	2, 8	The property is located in the vicinity to a Melbourne Water main drain (Montpellier Crescent Drain). The LiDAR and contour surface data as well as site photos were analysed which indicate that there have been thinning issues with the removal of the buildings on a steep slope. This has likely created several localised low points	Yes. Remove SBO1 from property.

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					which have led to misleading flood modelling results. It is therefore recommended to remove the SBO on 33 Lynnwood Parade.	
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	The submission states that no flooding has been experienced at this location. Although the resident may not have experienced flooding, it cannot be certain that the property is not flood prone during	Yes Remove SBO3 from the property.

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					a 1 in 100 year ARI event of critical duration. A site visit confirmed site conditions are consistent with the flood shape and it is recommended to retain the flood shape at this location. CARDNO Consultants site visit showed the presence of a catch drain in the footpath that had not been picked-up in the resolution of the model. As flooding on the footpath is only approximately 0.02m, the catch drain should be adequate to convey this nuisance flooding down Glenda Street instead of entering the subject properties. Due to the shallow flood depths along the road, it is also recommended to remove this flood extent as well. Council officers agree with this assessment, the SBO shape can be removed from this property.	
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. Due to the size of the upstream catchment it is considered the width of the SBO is an appropriate representation of the critical duration 1 in 100 year ARI storm event. Altering the SBO would compromise the integrity of the SBO and removal would result in discontinuity of	Yes. Change the designation of the SBO from SBO2 to SBO3. Change designation from SBO2 to SBO3 for 6 Larne, 6 Selsdon, and 9 Murndal. Delete southern section of SBO3 from 5

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					the flood extent. The review has confirmed the surrounding topography and drainage assets. However, a review of the modelled overland flow characteristics supports review of the SBO designation from SBO2 to SBO3.	Selsdon. Amend part of SBO2 to SBO3 at 11 Murndal
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. 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.	No
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	No

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					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.	
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. Under certain conditions, development in close proximity to property boundaries, 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. The submission also states that Council should upgrade drains on Tindals Road. 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 'bump' in the flood shape toward the front boundary has been caused by issues with thinning of the tin. Similarly, the flow path defined by the model grid at the rear of the property is larger than the area expected to be flooded during the 1 in 100 AEP event, based on the on ground site inspection and measured width of the easement low point. It is recommended that the SBO3 shape	Yes. Trim and reduce the SBO3 shape.

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					for this property be reduced as shown on the attached plan.	
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 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.</p>	No
403.	29 Montpellier Crescent, Templestowe Lower	Ruffey Creek	SBO2	1, 2	<p>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.</p> <p>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,</p>	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					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.	
404.	4 Wonuka Court, Doncaster East	Ruffey Creek	SBO3	1, 2, 5, 8	The submission queries the modelling undertaken which underpins the SBO. This 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 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 in the past, it is possible that the submitter has not been at the property during a 1 in 100 year ARI storm event of critical duration. 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. A further	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					review following a recent meeting with the submitter has confirmed the surrounding topography and drainage assets and the previous investigation findings. The SBO shape should remain as exhibited at this location.	
405.	18 Speers Court, Warrandyte	Mullum Mullum Creek	SBO3	2, 3, 12	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 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.	No
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

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
						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, the property may not have experienced a 100 year ARI storm event of critical duration. The review has confirmed the surrounding drainage assets. The modelling results were analysed along with the LiDAR and surface contour data. The results are indicating that water is surcharging from the Council drain which runs along the back of the property when it's capacity has been exceeded. It is noted that the flooding here does not seem to follow the likely path and has been caused by some tinning issues with the LiDAR due to the heavy vegetation. It is unlikely that water will pool in the locations identified and as such it is recommended that the extent be removed from 288 Church Road.	Yes. Delete SBO2 from the property. In addition delete SBO2 from 3, 5 and 7 The Grange.
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 St is when Council fails to maintain the drains outside the property. The description of previous runoff patterns are consistent with the application of the SBO at this location. The property is subdivided with 7 units. The SBO shape affects the common property and follows Everard Drive which has a low point at this location and is below the level of Yarra St. Due to	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					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 SBO 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 additional issues affecting the proposed SBO were raised during the meeting.	
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 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. 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 amendment as, under conditions, redevelopment may occur in areas currently encumbered with an easement. No issues warranting further review of the SBO2 overlay	No

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					affecting this property were raised at a recent meeting with the submitter. It is recommended that the SBO2 overlay be adopted as exhibited.	
410.	66 Beecroft Crescent, Templestowe	Ruffey Creek	SBO2	2, 3, 11, 12	The submitter questions the title boundary and states that the topographical data does not reflect the retaining wall on the property. 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.	Yes. Remove the SBO2 incursion from the property.
411.	62 Old Warrandyte Road, Donvale	Mullum Mullum Creek	SBO2	2, 7, 8	The sewerage upgrades mentioned in the submission are not related to the stormwater drainage network and have no effect on the SBO. 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. It is recommended that the SBO2 shape remain as exhibited at this location.	No
412.	49 Ashford Street, Templestowe Lower	Ruffey Creek	SBO3	1, 2	The SBO extent fulfils the minor incursion criteria of less than 30m2 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.	No

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					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.	
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 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	No

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					capital works. Following the meeting held with the submitter in 2017, Cardno were engaged to review the SBO and submission. 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	The submission states that no damage to the property has been experienced during heavy rainfall events in the past. 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. 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 flood extent. Site photos show that the property is located significantly lower than Reynolds Road and Kyreli Close. The flood extent shows that the garage would be inundated in the 1 in 100 year event but not the house itself. This seems like a relatively accurate representation of the flood event. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.	No change to 5 Kyreli Close, however, convert SBO2 shapes at 6 Kyreli Close and 233 Tindals Road from SBO2 to SBO3

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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 local topography and Council drainage infrastructure. As the incursion meets the minor incursion criteria, it is recommended that the SBO shape be removed.	Yes. Delete SBO3 shape.
417.	19 Glenda Street, Doncaster	Koonung Creek	SBO3	1, 2, 7, 8, 12	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. 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 St between Menarra St and Ayr St. 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. 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 site visit however found a catch drain in the footpath that had not been picked-up in the resolution of the model. As flooding on the footpath is only approximately 20mm in depth, the catch drain should be adequate to convey this nuisance flooding down Glenda Street instead of entering the subject properties. It is recommended that the	Yes. Remove the SBO3 shape.

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					SBO be removed accordingly. Council officers agree, the shallow flows can be handled by the drain and the SBO shape can be removed from these properties.	
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 St between Menarra St and Ayr St. A site visit confirmed that the flood extent is consistent with site conditions. The review has confirmed the surrounding drainage assets. The site visit showed the presence of a catch drain in the footpath that had not been picked-up in the resolution of the model. As flooding on the footpath is only approximately 20mm in depth, the catch drain should be adequate to convey this nuisance flooding down Glenda Street instead of entering the subject properties. Due to the shallow flood depths along the road, it is also recommended to remove this flood extent as well.	Yes. Remove the SBO3 shape.
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 St. It must be noted that the SBO is based on a 100 year ARI event of critical duration. 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	The SBO shape is recommended to be retained but the designation is recommended to be changed from SBO2 to SBO3.

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					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 SBO shape is consistent with the topography of the area and the fact the property is within a valley in the terrain. The SBO shape is recommended to be retained but the designation is recommended to be changed from SBO2 to SBO3.	The SBO designation is recommended to be changed from SBO2 to SBO3 for 4, 8 and 10 Dale Street.
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 30m2 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	No

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					<p>excess runoff.</p> <p>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 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>	

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
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 is made regarding the shape of the overlay. The review has confirmed the surrounding topography and drainage assets. At a recent meeting with the submitter, a query was raised as to whether the kerb and channel and underground drainage located in the upstream north-south leg of The Pines Outlook would divert flows away from the submitter's property in a 1 in 100 year ARI event. The modelled SBO extent does indicate that some flows will travel north, then along the east-west leg of The Pines Outlook, however, part of these overland flows will also travel through the submitter's property in a major storm event according to the model. 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 metres Australian Height Datum(AHD) for a 1 in 100 year storm event. 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	No

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					<p>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.</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>	
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 experience. 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 coincides with the low point in Sowter Court and the valley which passes from this point through the subject property. A site visit 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, they may not have been present during a 1 in 100 year ARI storm event of critical duration. The review has confirmed the surrounding topography and drainage assets. The</p>	No

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					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, 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. Cardnos further review found that the SBO3 shape at the rear of the property requires adjustment as the Lidar data	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 Ennismore Crescent. Change SBO1 to SBO3 in the gully between the two properties (Dirlton Reserve). Reduce the SBO3 extent at 54-56 Ennismore at the

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					<p>does not adequately reflect the ground conditions at this location. The overlay is recommended to be realigned and trimmed in this area. The SBO3 extent within 13 Dirlton Crescent is also to be removed and the SBO3 extent impacting 15 Dirlton Creacent is also to be reduced. The reduced extent SBO impacting 50-52 Ennismore Cres is to be SBO3 and the SBO1 incursion abutting the roadway in front of 54-56 Ennismore Cres is to be retained.</p>	<p>rear of the property and reduce the SBO3 extent within 15 Dirlton Crescent. Delete the SBO3 extent from 13 Dirlton Crescent. Reduce the SBO3 extent within 15 Dirlton Crescent. 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</p>

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						and 28, 1 and 2/30, 32 and 32A Greenridge Avenue. It is recommended to remove the SBO3 from properties 11 Gairlock Court, 2/10, 9 & 9A Brentvale Court.
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 (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. The SBO information will be used by Council to prioritise future drainage improvement works. Drainage improvement works are prioritised to protect habitable floors at risk of flooding. A site visit has confirmed the topography of the 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.	No

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429.	3 Cassinia Road, Templestowe Lower	Ruffey Creek	SBO2	1, 3, 7, 8	<p>The submission refers to previous upgrades in this location.</p> <p>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.</p>	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'.	<p>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 infrastructure and it is recommended to retain the flood shape at this location.</p> <p>The reference to Council wasting money on such things as 'rubbish bin police' is not a relevant issue to the Amendment.</p>	No

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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 flood shape forms within the property boundary and flows to the dam to the north of the property. The SBO shape at this location does not represent pooling or inundation, and while the flows are fast moving, they are of low depth. A small portion of the property is affected (approximately 1% of the property area). The review has confirmed the surrounding topography and drainage assets. Given that the depths are very shallow and that the property is only slightly impacted by the extent, it is recommended that this property be removed from the proposed SBO2.	Yes. Delete SBO2 areas.
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 neighbouring properties. Due to the proximity of the subject property to the flood extent it is reasonably expected to be flood prone as characterised by the LiDAR data used and existing site conditions. Therefore the flood shape is to be retained at this location.	No
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.	Yes. Remove the SBO2 incursion

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					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.	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
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	No

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					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 and recent meeting with the submitter is that the flood shape be retained.	
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. The review has confirmed the surrounding drainage assets. The general fall of the land is to the east. The submitter requests removal of the overlay. The LiDAR and	Yes. Remove the SBO from the property.

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					surface contour data were analysed for the site together with the aerial photography and it was found that there is an issue with the model resolution at this location. This has likely arisen from tinning issues with regards to the steep terrain and presence of thick vegetation impacting the LiDAR data. As such, it is recommended to remove the SBO extent on this property.	In addition partially remove SBO shape from 39 Winston Drive.
438.	10 Myers Court, Doncaster	Koonung Creek	SBO2	1, 3	The submission states the previous drainage upgrade works have addressed the issue of flooding at this location. A review has found that the upgraded pipes have been modelled however, the model indicates that there are still residual overland flows in a major storm event. The drainage infrastructure mentioned in the submission with regard to drainage pits along Myers Ct is consistently represented in the model and has been confirmed on site. The current estimate of the 1 in 100 AEP flood exceeds the capacity of the pipe upgrade works. The overland flow paths convey the excess water in major storm events. Issues with the Lidar data allowed flooding to be mapped over the location of the house and pool. The review has confirmed the surrounding topography, with the exception of the Lidar data issues previously referenced. It is recommended that the SBO shape be trimmed back and amended in recognition of the Lidar data issues over the house and pool area.	Yes. Reduce overlay on property.

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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 road reservation which impact less than 10% of the total property area. The flood shape is recommended to be deleted from the property.	Yes. Remove SBO2 incursion from the property.
440.	2 Wren Court, Templestowe & 35 Fyfe Drive, Templestowe	Ruffey Creek	SBO3	2, 5, 7, 8	The submission states that the Council should upgrade the drainage network 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 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. 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	No

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					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.	
441.	37 McGowans Road, Donvale	Mullum Mullum Creek	SBO3	4, 5	The incursion to the rear represents runoff from uphill flowing onto Roslyn Crt. The submission states no flooding has been experienced at this location. The flood shape is consistent with the tennis/basketball court cut into the slope at the rear of the property. 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 underpins the SBO. In the model it has been assumed the drainage network is operating at full capacity and that no blockages are present. The review has generally confirmed the surrounding topography and drainage assets. However, given the issues with the Lidar data over the tennis court, it is considered that the SBO3 shape shown is not consistent with the fall of the land in this area. It is recommended that the SBO3 shape be deleted at this location.	Yes. Delete SBO3 shape at rear of property.
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 submission confirms the existence of a natural gully originating in the adjacent property to the north and flowing through 26-28 Ennismore Cres. The exhibited SBO is consistent with this	Yes. SBO designation to be changed from SBO2 to SBO3.

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					topographical feature. 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 no building would occur in the area designated by the flood shape. This is not considered a valid basis to remove the flood shape as future development may occur in areas not currently permitted. Removing the SBO would also compromise the integrity of the SBO shape at this location. The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited but it is recommended that the designation be changed from SBO2 to SBO3.	Change designation of SBO from SBO2 to SBO3 at 22-24 Brucedale.
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. 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 drainage assets. LiDAR and surface contour data as well as site and aerial photos were analysed and it was found that there are tinning and model resolution issues on the steep terrain which warrant deletion of the SBO2 shape.	Yes. Delete SBO2 shape.

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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 its 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 submission argues that the property has a history of flooding and that Council has been negligent in its 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 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 reduced 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. Modelling of the theoretical 1 in 100 year flood event (which is what the overlay is based on) shows that water does indeed pool in the roadway outside these properties. Typically, Council drainage systems are design to cater for the 1 in 5 year ARI approximately. As such, overland flow will	No

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					<p>always be present in overland flow paths such as in this area. It does show that water enters several of these properties but not over the depth of 0.05m which is what the overlays have been filtered to. A site visit from the street and desktop review has found the flood shape is indicative of the conditions, The modelling results indicate that flooding of this property is predominately caused by water pooling within Hotham Street and entering the property through the driveway and then flowing into the garage. They also indicate that in the theoretical 1 in 100 year flood event, water surcharges from the Council drainage network at the back of the property when the capacity of the pipes are exceeded. This corroborates well with the LiDAR and surface contour data as well as from observations from the owner of the property. It is therefore recommended that no changes be made to the overlay in this location.</p>	
445.	13 Ardgower Court, Templestowe Lower	Ruffey Creek	SBO3	2	<p>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</p>	No

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					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.	
446.	302 George Street, Doncaster	Ruffey Creek	SBO1	7, 14 Flooding is linked to the development of Westfield Shopping Town.	<p>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 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</p>	No

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					<p>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 control of storm water runoff will be considered as part of this process.</p>	
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</p>	No

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					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.	
448.	17 Heads Road, Donvale	Mullum Mullum Creek	SBO3	2, 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 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 incursion from the property.

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449.	10 Campbell Court, Warrandyte	Mullum Mullum Creek	SBO2	2, 4, 5, 6	The submission argues that the maps provided in the technical report do not match the topography of the developed site. 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 are reflective of the developed conditions and reflect the dwelling and tennis court on the property. 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 will be 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 capital improvement works. The flood shape is consistent with the topography of the land and the fact that the submission property contains a defined gully. A review of the flow characteristics has however found that the SBO designation should be changed from SBO2 to SBO3.	Yes. Change SBO2 to SBO3 and retain SBO shape. Convert SBO2 areas in 9 and 11 Campbell Court and 15 Pound Road to SBO3.
450.	8 Cliveden Court, Templestowe	Mullum Mullum Creek	SBO3	14 Object. No	The flood shape is considered reasonable in this instance. The review has confirmed the surrounding topography and drainage assets. The	No

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				reasons given.	flood shape should remain as exhibited at this location.	
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 modelled rainfall event is a 1 in 100 year ARI storm of critical duration which is in line with industry modelling practices. 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. The results of the flood mapping will be used to identify potential drainage upgrades. Council are working through a process to prioritise these capital works. A site visit has confirmed the topography and drainage infrastructure in the area. LiDAR and surface contour data indicate that there has been some erroneous tinning in this area due to the steep slope and thick vegetation. Therefore, it is recommended that this SBO3 area be removed from the property.	Yes Remove the SBO3 from the property. In addition remove SBO3 from 16, 17, and 19 Montclair. Trim and reduce SBO3 at 14 and 15 Montclair.
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	Yes. Change the proposed LSIO to SBO3, for 26 Harris Gully Road without changing

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					<p>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.</p> <p>The submission addendum states that the proposed flood shape does not correlate to the contour data of the First Street and West End 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</p>	<p>the shape of the overlay.</p> <p>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.</p> <p>No change is recommended for 4 First Street and 10 West End Road.</p>

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					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.	
453.	11 Cliveden Court, Templestowe	Mullum Mullum Creek	SBO3	1, 2, 4, 5, 7, 8, 10	The submitter previously raised concerns regarding the modelling. Responses were previously prepared by Cardno and provided to the submitter. The submitter queried previous rainfall records. The 25th 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. 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. 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. The submitter confirmed that runoff has been witnessed into the	No

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					property particularly from the neighbouring property in previous years. It is recommended that the SBO shape be retained as exhibited.	
454.	28 Harris Gully Road, Warrandyte	Andersons Creek	LSIO	2, 12	The modelling of the overland flow path is based on the whole catchment area, not just 26 Harris Gully Road. The overlay designation has been reviewed and based on the anticipated flood depth, direction of flow, the location of the flood extent relative to Council and Melbourne Water infrastructure, it is recommended that the overlay designation be downgraded from LSIO to SBO3.	Yes. Change overlay designation from LSIO to SBO3.
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	Yes.

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					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 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.	It is recommended to delete the flood shape from Lot 1, 122-124 Old Warrandyte Road.
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	No

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					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 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. Under certain conditions, development within an easement may be permitted. Existing properties are expected to be redeveloped in the future and the draft overlay will assist in the assessment of any impacts. Owing to the issue identified with the LiDAR data over the incursion, It is recommended that the SBO shape be removed from this property.	Yes. Remove SBO3 shape.
459.	44-54 Alexander Road, Warrandyte	Mullum Mullum Creek	SBO3	2, 14 Fencing exemptions (25% permeability and 400mm plinth	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 submission also	No with respect to the exhibited flood shape. In Schedule 3 to the Special Building Overlay,

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				height) are absurd for this area.	<p>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 have to be constructed in a manner that allowed passage of runoff. 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. At a recent meeting with the submitter, he advised that there is a private 225mm diameter drain at the outlet to the dam. It was confirmed that this drain was not included in the model as it is private infrastructure of which Council has no record. Private infrastructure is generally not included in the model as Council has no control over it. The flood shape should remain as exhibited at this location.</p> <p>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 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</p>	<p>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>

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					<p>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>	
460.	30 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	14 Requested to attend an information session. No further	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 property is currently subject to an SBO along the property frontage and under the proposed mapping, the mapped extent will be	Yes. It is recommended that the flood shape be retained but the

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
				submission made.	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.	overlay designation be changed from SBO1 to SBO3.
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 the submitter questions whether Council has 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 properties on this side of Marcus Rd. The review has confirmed the surrounding topography and	No

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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.	
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 Rd toward Thompsons Rd 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 Rd. 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. No additional substantive issues have been raised by the submitter which would warrant further review of this submission. 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	Yes. Remove the SBO3 incursion from the property.

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					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.	
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	Yes. Remove SBO3 incursion from the property.

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					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. 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 located adjacent to Ruffey Creek. The mapping at this location is an update of the LSIO. LiDAR and surface contour data were analysed and it was found that the thick vegetation around the channel has led to some tinning issues which has not adequately picked up the top of the bank of the creek. It is also considered unlikely that overland flows would enter the property from the street in a 1 in 100 year storm. It is	Yes. Delete LSIO from property. Also delete LSIO from 26 and 28 Airdrie and amend SBO2 at 82 Dellfield Dve.

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					recommended that the LSIO shape on this property be deleted accordingly.	
467.	41 Lookover Road, Donvale	Mullum Mullum Creek	SBO2	1, 12	<p>The submission describes having lived at the property for 20 years and not experienced flooding.</p> <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>	No
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.</p> <p>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</p>	Yes. Remove the SBO2 incursion from the property.

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					recommended the flood shape be deleted 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 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.</p> <p>The review has confirmed the surrounding topography and drainage assets. The flood shape should remain as exhibited at this location.</p>	No
470.	86-90 Webb Street, Warrandyte	Andersons Creek	SBO2	2, 8, 10, 12	<p>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 from the local catchment toward the Yarra River rather than rising waters from the river. The flood shapes are 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, as a result of the shallow depth of the eastern incursion, it is</p>	<p>Yes. The eastern SBO2 shape be deleted. The western SBO shape be changed from SBO2 to SBO3.</p> <p>Convert SBO2 to SBO3 at 92 Webb St and 80-84 Webb St.</p>

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Sub. No.	Property Address	Catchment	Proposed Overlay	Issues related to submissions	Officer response to submission	Recommended change to the Amendment
					recommended that the SBO shape be deleted. Given the depths of flows in the western valley, it is recommended that the SBO designation be changed from SBO2 to SBO3.	
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 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.	Yes. Change LSIO to SBO2 at southern boundary of property. Similarly, convert 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.

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472.	13 Tandarook Crescent, Donvale	Mullum Mullum Creek	SBO2	1, 2, 4	The main points of the submission relate to having resided on the property for over 40 years and never experienced flooding and the adequacy of drain maintenance. While important, maintenance is an issue which is separate to the extent of the flood shape. The submitter also describes their experiences of runoff during storm events as less extensive than that indicated by the SBO. The review has confirmed the surrounding topography and drainage assets. However, the review has also identified modelling resolution issues which result in a recommendation to delete the SBO2 shape from the property.	Yes. Remove the SBO2 shape from the property.
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 review has confirmed the local drainage assets. It was found that there were some tinning and model resolution issues around the building due to it being on a steep slope. Therefore, it is expected that the flood extent will not occur as shown in the SBO. It is recommended that the SBO2 be deleted from this property.	Yes. Delete SBO2 shape.
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.	No

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					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 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	No

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					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. A further review following a recent meeting with the submitter has confirmed the surrounding topography and drainage assets and the findings of the previous investigation. The SBO shape should remain as exhibited at this location.	
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
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 Australian Height datum (AHD). This submission is an objection without any specific issues listed. The overlay designation has been reviewed on site and taking account of the locations of drainage infrastructure at the rear of the property, the flood shape is proposed to be removed from the property.	Yes. SBO1 to be removed.
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.	Yes. Remove SBO3 incursion from the property.

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					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.	
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 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.	Yes. Remove SBO3 incursion proposed from the property. 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	Yes. Remove SBO3 shape.

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					ARI event of critical duration at this location. The actual drainage infrastructure in this area has been appropriately modelled, with a drainage pit outside the adjacent property. The front yard of the submission property is cut in below the level of the road. The SBO shape is limited to the front of the property and is located in a depressed area, however a site inspection by CARDNO indicates that there is sufficient elevation along the footpath to stop storm water running into this property, therefore the SBO shape can be removed.	
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, 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.	Yes The LSIO overlay should be changed to SBO3 and the flood extent should be retained. These changes also affect 3 and 5 Chaim Court and 59 Beckett Road.

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483.	Applewood Residents' Assoc, 5 Grand Boulevard, Doncaster	Koonung Creek	SBO2	2, 12	Following the recent meeting with the submitter, Cardno were engaged to review the submission and SBO at this property, including undertaking a site inspection. Due to the absence of some drainage from the model, inadequate application of the outlet pipes under the Eastern Freeway and significant changes to the surface made since the modelling was undertaken, it is recommended that all SBOs be removed from the subject area.	Yes. Delete all SBOs from the site.
484.	1 Narcissus Court, Doncaster East	Mullum Mullum Creek	N/A	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	No

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					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 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 does not contain an objection to the proposed amendment but 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 (Average Recurrence Interval) rainfall event, with overland flow occurring once the capacity of the underground drainage network is exceeded. Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. These works are prioritised based on frequency of flooding of habitable floor areas. During the site visit and meeting with the submitter, previous overland flow events were discussed. In response to these concerns, Council officers intervened with the neighbouring property and required internal drainage improvement works which have since been completed. These flows have largely abated since these works have been	No

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					completed. 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. Drainage plans were checked and it was found that the correct pipes were included in the model. 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. In response to the recent meeting with the submitter, Cardno were requested to review the SBO at this location. The flood shape should remain as exhibited at this location.	No to 42 Cantala Drive, however, convert SBO1 to SBO2 at 305 George Street.
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	No

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					<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>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</p>	

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					the topography and Council drainage infrastructure 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 lay of the land with 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. Based on the previous investigation and review following a	No

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					recent meeting with the submitter, it is recommended that the flood shape remain as exhibited at this location.	
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. 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 lay of the land with the overlay representation of the topography. 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 submitter has not experienced the impacts of a 1 in 100 year ARI rainfall event on the property. The SBO 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
491.	17 Banool Quadrant, Doncaster East	Ruffey Creek	SBO3	2, 14 Dispensation s for heights,	Consideration has been given to the LiDAR topographical data as well as the existing drainage infrastructure as part of the modelling.	Yes. Remove the SBO3 shape.

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				setbacks and site coverage restrictions for planning permits should be 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	Consideration has been given to the impacts of structures such as buildings, features, landscaping and fences on the mapped SBO extents, through the application of roughness factors to land areas. Roughness factors are allocated based on land use for individual sub catchment areas. The intent of the proposed overlays is not to prevent development but ensure it is undertaken in a manner which considers flood risk. As a result of the recent development works, the site characteristics have changed and the flood risk has been managed effectively. Some flooding is expected to remain at this north west corner of the site from an open grate pit, however as it is no longer connected to the flows within Banool Quadrant, this area becomes an 'isolated island'. In the filtering process any isolated island below 200 m2 has been removed to ensure a consistent flood shape associated with the SBO3 layer. There is now little need for the SBO3 layer to remain. It is our opinion that the site previously had some associated flood risk but due to changes to the site associated with the current development works and the associated flood result filters, this area can now be removed from the SBO3 layer.	In addition remove SBO3 from 2/232-234 Blackburn, 15 & 21 Banool. Reduce SBO3 at 19 Banool
492.	11 Owens Street, Doncaster East	Ruffey Creek	SBO3	7, 8, 11	The submitter is correct in identifying that the area affected by the SBO3 at the rear of the property is	Yes.

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					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 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 SBO3 incursion from the property.
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 their 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	No

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					the surrounding topography and drainage assets. The SBO2 shape should remain as exhibited at this location.	
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 location. In addition, the flood shape represents collective runoff from uphill (to the east) which is channelled down the driveway and onto Totara Crt. 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.	No
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	The submission states that the modelled flow paths are unlikely to occur. Specifically in relation to the submission property, no flooding has been	No

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				<p>alternatives to providing solutions for managing or redirecting overland flow should be provided as part of the planning application process.</p>	<p>experienced by the submitter in the manner indicated by the SBO.</p> <p>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 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</p>	

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					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. Developments are encouraged to provide onsite solutions for managing overland flow as part of the planning permit process.	
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. 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.	No
498.	3 Kelly Street, Doncaster	Ruffey Creek	SBO3	2	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. 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.	Yes. Remove SBO3 from 3 Kelly Street In addition remove SBO3 from 1 and 5 Kelly Street
499.	Applewood Residents' Assoc, No. 5 Grand Boulevard, Doncaster	Koonung Creek	SBO2	7, 12,	Following the recent meeting with the submitter, Cardno were engaged to review the submission and SBO at this property, including undertaking a site inspection. Due to the absence of some	Yes. Delete all SBOs from the site.

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					drainage from the model, inadequate application of the outlet pipes under the Eastern Freeway and significant changes to the surface made since the modelling was undertaken, it is recommended that all SBOs be removed from the subject area.	
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. When collecting the data, DELWP employed numerous methods for ensuring accuracy. This data represents the most complete	No

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					and up-to-date data available for this kind of flood mapping and the use of this data represents industry practice. Due to the position of the property relative to the catchment in addition 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. Following the follow-up meeting with the submitter, Cardno were requested to review the submission. The results of the further review are that 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 submission does not specifically object to the shape of the overlay. 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 but that the designation of the SBO be changed from SBO2 to SBO3.	Yes. Change overlay from SBO2 to SBO3. In addition change 25 Heads from SBO2 to SBO3. Change southern section of SBO2 at 29 Heads to SBO3.
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.	No

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					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 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. Unfortunately, the incursion exceeds the minor incursion criteria for trimming. The flood shape is consistent with the Council drainage assets in the easement to the rear. The review has confirmed the surrounding topography and drainage assets. LiDAR and contour surface data were analysed along with aerial photography and it was found that some tinning issues have likely occurred in these properties. Some low points have been picked up in the pool which has created some erroneous local depressions and it is therefore recommended to remove the SBO from 21 Ada Street.	Yes. Remove SBO3 from property. In addition remove the SBO from 19 Ada Street and 18 Carungal Avenue.

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505.	23-31 Tills Drive, Warrandyte	Andersons Creek	LSIO	2, 12	Further flood shape amendments were also 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.	Yes. 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

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						proposed to modify the 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. Following a recent meeting with the submitter, Melbourne Water have reviewed the submission and recommend that the existing LSIO shape remain at this property.	No
507.	280 Yarra Street, Warrandyte	Andersons Creek	LSIO	2, 12	The front of this property is encumbered by the existing LSIO. Following a recent meeting with the submitter, Melbourne Water have reviewed the submission and recommend that the existing LSIO shape remain at this 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	No

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					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 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 900 mm drain on site was not included in the modelling and that the flood shape needs to be reviewed. A desktop review has found that the 900 mm drain which discharges under Eastlink was not included in the flood model. The model was updated with the additional of this pipe as well as changing the alignments of the pipes in the area to match the results of the survey undertaken in the Stormy Water Solutions report. As expected, the 1 in 100 year flood extent on the subject property is greatly	Change flood extent to be consistent with the new modelling. Change from SBO2 to SBO3.

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					reduced with the introduction of the 900mm diameter outlet pipe as well as changing the pipe alignments. It is recommended to change the flood extent in this area to be consistent with the new modelling results. Furthermore, the depths of flooding in this area have been reduced to be predominately below 0.1m and hence it is recommended that it be changed from SBO2 to SBO3.	
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 rainfall gauge data for sites located at the Eastern Golf Course and 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. The submitter's observations are consistent with this assessment. The review has confirmed the surrounding drainage assets are as modelled. LiDAR and surface contour data were analysed along with site and aerial photography and it was found that when the buildings and vegetation have been tinned out of the modelled topography, it has created some erroneous low points which water is being trapped in. Hence, it is recommended that the SBO be removed from 6 Birbank Court.	Yes. Remove SBO3 from property. In addition remove SBO3 from 7 Birbank.
512.	76 St Clems Road, Doncaster East	Koonung Creek	SBO2	1, 2, 3, 7, 8	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	No

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					<p>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 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, it is also located in a valley of a medium sized sub- catchment which contributes flows in a major storm event. A low point exists upstream of the submitters property at 62 Oeens Street and the model indicates that overland flows in a major storm event will be directed through 62 Owens Street, then through the front of 35 Rowan</p>	No

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					Street. The modelling results indicate that depths of flooding within Owens Street will be large enough to overtop the gutter and flow into 62 Owens Street. The topography at this location is consistent with the Lidar data and with the modelled flood extent. There is opportunity to consider this location for inclusion in a future drainage upgrade works program, subject to an assessment of modelled flood damage within the catchment and project prioritisation. The flood shape is consistent with the expected flow of water from the catchment area upstream of the property in a 1 in 100 year ARI event. It is recommended that the proposed SBO3 overlay remain unchanged.	
514.	13 Marianne Way, Doncaster	Koonung Creek	SBO3	1, 2	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	No

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					<p>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 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	Yes.

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					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 exhibited flood shape is recommended to be amended accordingly.	Remove property from SBO2
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

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518.	7 Aminga Avenue, Doncaster	Mullum Mullum Creek	SBO3	Submission withdrawn.	Submission withdrawn.	No
519.	25 Baradine Terrace, Donvale	Mullum Mullum Creek	LSIO to be removed	14 Support proposed removal of LSIO. No objection to amendment.	Submission wanted to confirm that LSIO was still proposed to be removed under Amendment C109. No objection to amendment.	No
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. Following the recent meeting involving Council officers and the submitter, Cardno were requested to review the SBO affecting this property. The existing drainage system was appropriately modelled. The flood shape is modelled on a 1 in 100 year ARI rainfall event in accordance with industry standards. LiDAR and surface contour data was analysed along with aerial and site photos. It was found that the modelled surface is likely not completely representative of the actual surface. This has been caused by tin thinning issues due to buildings and thick tree cover on steep slopes which has led to some unrealistic low points in the modelled terrain in this area. It is recommended to delete the SBO2 shape from 103 James Street accordingly.	Yes Delete SBO2 shape from 103 James Street. On addition remove SBO2 shapes from 105 and 107 James Street as well as 15 Milne Street and 94 Wood Street. Also delete SBO3 extents from 105 and 107 James Street.

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521.	36 Henry Street, Doncaster	Mullum Mullum Creek	SBO2	7, 14 Concerned about impact of Amendment on growth in Manningham	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. The amendment will not prohibit redevelopment in Manningham. Rather, it seeks to have in place controls regarding siting and design.	No
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 of up to 1 metre placed on this land and the flood shape is likely to be impacted. Assessment has been made of the impacts of the filling on the SBO2 shape. It is recommended that the SBO2 shape be deleted from this property.	Yes. Delete SBO2 from property.
523.	3 Bernarro Court, Donvale	Mullum Mullum Creek	SBO2	2, 11, 14 There is a restrictive covenant on the property	Contours and LiDAR surface data show that there is a valley located at the incursion which follows the flood extent shown in the SBO. There is a slope on the property, but there is also a slope in the adjacent property in the opposite direction which causes the valley in this location. Easements and development restrictions could be changed in the future and therefore cannot be given as a reason to remove the SBO. Maximum depth of water	Yes. Change overlay from SBO2 to SBO3. In addition, the SBO2 overlay impacting 2 Knight Court is

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					within the flood shape on the property is less than 0.1. Therefore, it is recommended that shape changed to SBO3. In addition, the SBO2 overlay impacting 2 Knight Court is also to be changed to SBO3.	also to be changed to SBO3.
524.	9 Gloucester Court, Templestowe	Ruffey Creek	SBO3	1, 7, 8	The submitter states that she has lived at the property for 42 years and the property has never been subject to flooding. The flood shape affecting the property represents less than 6% of the property area. The flood shape for this site is less than 6% of the property area, is less than 30sm in area and it is recommended that the flood shape be removed under the minor incursion criteria.	Yes. Remove SBO3 flood shape.
525.	1 Murndal Drive, Donvale	Mullum Mullum	SBO3	2	A low point exists in Murndal Drive abutting numbers 1 and 3. The modelled flood shape is consistent with the site conditions in a 1 in 100 year ARI storm event. There is good agreement between the actual drainage infrastructure and the modelled drainage system. The flood shape is greater than 30sm in area and as such, is not considered to be a minor incursion. It is recommended that the flood shape in respect of this property be retained.	No
526.	1/62 Furneaux Grove, Bulleen	Koonung Creek	SBO2	1,2,4	The property is located downstream of a low point in Furneaux Grove. 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. The flood	No

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					<p>shape modelled in respect of a 1 in 100 year ARI storm event is considered to be consistent with the topography and existing underground drainage system capacity. 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. 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. 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 future drainage upgrades in critical areas. There remains a need for the proposed overlays, to control development and minimise future flood risk. Based on the foregoing, it is recommended that the exhibited flood shape remain unaltered.</p>	
527.	15 Whitefriars Way, Donvale		SBO3	1,2	House never flooded in last 17 years, even on 29 December 2016. Submitter also claims that the previous owners similarly never witnessed flooding of the property in the previous 11 years. Land to	

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					the west of the property falls toward 15 Whitefriars Way. Council has no record of any Council easement drains serving properties upstream of 15 Whitefriars Way. It is highly likely that there has been no flooding experienced at the property. It is considered that the flood shape for this property is consistent with the site conditions and it is recommended that the flood shape be retained.	
528.	4 Eleanor Court, Donvale	Mullum Mullum	SBO2	2,14	Submitter requests that flood overlay be deleted from 4 Eleanor Court, as he claims that the associated flooding is due to inadequate Council drainage. The existing drain in this vicinity is a 375mm diameter underground drain constructed as part of the subdivision in the late 1960's. The underground drainage was not designed to convey runoff from the 1 in 100 year ARI storm event which is the event in respect of which the flood modelling has been undertaken. Given the foregoing, there appears to be good correlation between the modelled flood shape and previous flood events and it is recommended that the flood shape be retained for this property.	No
529.	110 McGowans Road, Donvale	Mullum Mullum	LSIO	12	Council records indicate the existence of an underground drain between 225mm and 525mm diameter along the northern boundary of 106 McGowans Road. It is noted that the flow path along this low point is caused by local catchment flooding and not from the creek. In the modelled 1	Yes. Change part of LSIO to SBO2.

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					in 100 year rainfall event, this pipe is shown as not having adequate capacity to deal with flows at this location. Furthermore, the modelling results show in excess of 100mm depth of flooding. Therefore, it is recommended that the overlay be changed from LSIO to SBO2 up to the point where it connects with the watercourse LSIO.	
530.	58-62 Stintons Road, Park Orchards	Andersons Creek	SBO2	2	There is a defined valley which runs east to west across the rear of the property which is consistent with the mapped flood shape. The Special Building Overlay designation has however been reviewed based on the modelled flow depths and it is proposed to downgrade the designation from SBO2 to SBO3.	Yes. Flood shape to be converted from SBO2 to SBO3.
531.	3 Greta Court, Lower Templestowe	Bulleen North	SBO3	1, 4, 6	The submitter states that in the 50 years spent at the property, he has not witnessed overland flows through the property, except on one occasion in 2016. It is possible that the submitter has not experienced a 1 in 100 year ARI flood event while living at the property. The flood shape modelled in respect of a 1 in 100 year ARI storm event is considered to be consistent with the topography and existing underground drainage system capacity. 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. The	No

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					proposed SBO3 flood shape is considered to be consistent with the reported flows through the property in 2016 and no changes to the flood shape are proposed.	
532.	16 Rangeview Road, Donvale	Mullum Mullum	SBO3	3	The critical storm duration for the property is 120 minutes. For the storm event on the 29th December 2016, the 120 minute storm was the storm associated with the greatest ARI from the event, which was 1 in 55 years. Contour and LiDAR data show that there is a valley running through the property which follows the same alignment as indicated by the flood modelling results. The model was updated and re-run with the upgraded pipes included which has resulted in a significant decrease in SBO on the property. It is therefore recommended to upgrade the SBO to include these revised modelling results.	Yes. Reduce extent of SBO3 flood shape.
533.	19 Springwood Close, Donvale	Mullum Mullum	SBO3	5, 7, 8	Flows come from Old Warrandyte Road upstream, through 21 and 22 Springwood Close, then through 18 and 19 Springwood Close, on their way to Mullum Mullum Creek. The impacts shown by the flood extents from the SBO, have been produced from a 1 in 100 year storm event, so it is expected that the storm from the 29th December 2016 would have been significantly smaller than that which was used for the development of the SBOs. Manningham City Council has a policy to prioritise drainage upgrades where required to alleviate flooding of habitable floor areas. The flood	No

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					modelling that underpins the SBO will allow Council to prioritise future drainage upgrades in critical areas. There remains a need for the proposed overlays, to control development and minimise future flood risk. Based on the foregoing, it is recommended that the exhibited flood shape remain unaltered. The flood shape modelled in respect of a 1 in 100 year ARI storm event is considered to be consistent with the topography and existing underground drainage system capacity. It is recommended that the SBO3 shape as modelled be supported without amendment.	
534.	11 Akoonah Close, Donvale	Mullum Mullum	SBO2	1, 5, 7, 8, 12	While the submitter states that the property has not flooded during the last 36 years, it is possible that the submitter has not been present at the property during a 1 in 100 year ARI storm event. The flood shape modelled in respect of a 1 in 100 year ARI storm event is considered to be consistent with the topography and existing underground drainage system capacity. 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. 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%	No

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					<p>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.</p> <p>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 future drainage upgrades in critical areas. Council will consider whether to refer the Amendment to an independent Panel in September 2017. The property is located on the low side of Springvale Road and the residential catchment to the east of Springvale Road falls to the west, toward 11 Akoonah Close. The property is located in a shallow valley. It is considered that the SBO is consistent with the local topography and the capacity of the existing drainage systems. It is recommended that amendment to the SBO not be supported in this case.</p>	
535.	12 Moonbria Way, Templestowe	Mullum Mullum	SBO2	14 Council must reconsider overlay. No reasons given	The property is subject to 2 minor incursions of SBO2, at the eastern boundary and the north-western corner of the property. The total incursion has been determined to be an area of 15sm with less than 2% of the total property area affected. It is recommended that the SBO2 incursions be removed from the property.	Yes. Remove SBO2 from property.
536.	18 Hillcroft Drive, Templestowe	Ruffey Creek	SBO1	1	The submitter states that there has been no flooding experienced at 18 Hillcroft Drive in the last 18 years. It is however possible that the submitter	Yes. SBO to be downgraded

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					has not been present at the property during a 1 in 100 year ARI storm event. The overlay shapes impacting the property are consistent with overland flows along Hillcroft Drive and overland flows running from the north toward Hillcroft Drive. On review, the flow depths are consistent with an SBO3 designation and it is recommended that the property be downgraded to SBO3.	from SBO1 to SBO3.
537.	4 Sowter Court, Donvale	Mullum Mullum	SBO2	2	The proposed SBO only occurs adjacent to the road, within 9m of the front boundary. Any development, etc. proposed by the owner of the property would only be affected by the SBO if it is within 9m of the road. The existing house is not encumbered by the proposed SBO. While the house is not encumbered, given the depth of flows and risk, it is recommended to retain the SBO2 overlay.	No
538.	35 Fyfe Drive, Lower Templestowe	Ruffey Creek	SBO2	1, 5	In a 1 in 100 year rainfall event, the underground pipes will be full and so water will surcharge and flow overland as modelled. Flood modelling results show that the majority of these areas are likely to experience greater than 0.1m of flood depth and the SBO2 designation is appropriate. Site photos indicate that the flood extent on the south-eastern section of the property is unlikely to occur and so should be removed. Furthermore, it is recommended that the extent running along the western boundary as indicated from the site photos be trimmed to better reflect the site	Yes. Remove part of the SBO2 overlay. Change SBO2 at 37 Fyfe and 12 Dillwynia

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					conditions. It is recommended that the SBO2 overlay be adjusted accordingly.	
539.	10 Boonah Court, Lower Templestowe	Ruffey Creek	SBO3	1, 2	Modelling results indicate that flooding of the property originates from the upstream catchment, and overflow of the Council drainage at the rear of the property. As shown by the SBO shape, properties at a lower elevation are also flooding from upstream flows. Council drainage is generally sized to accommodate flows associated with a 1 in 5 year ARI storm event at a maximum. During 1 in 100 year ARI rainfall events, the underground pipes will be full and so surcharge and overland flows can be expected. The LiDAR and surface contour data were investigated which showed that when the area around the house was thinned from the tin, it created a slight inaccurate depression. Thus, it is recommended that the flood shape for 10 Boonah Court be trimmed back to the house, but the flood shape between the property and 6 Herlihys Road be retained.	Yes. It is recommended that the flood shape in 10 Boonah Court be trimmed back to the house, but the flood shape between the property and 6 Herlihys Road be retained. In addition SBO3 to be removed from 7 Ardgowder Court.
540.	11 Louisa Place, Templestowe	Mullum Mullum	SBO3	2, 12	Taking account of the changes to the topography of properties upstream of 11 Louisa Place since 2009 when the Lidar data was collected, it is recommended to realign the central section of SBO2 from the property to the rear of the property.	Yes. Realign the central section of SBO2 to the rear of the property. In addition realign the SBO3 shape through

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						12, 13 and 14 Louisa Place.
541.	3/20 Allen Street, Bulleen	Koonung Creek	SBO3	4	Minor nuisance flooding has occurred in the past at this property due to blockages in the drain within the easement at 78 Thompsons Road. The submitter disputes that water would come from Thompsons Road. A site inspection and desktop review lead to the view that flooding will not reach sufficient depths to allow water to flow over the kerb between 74 and 76 Thompsons Road. An issue has been identified with the modelling in Thompsons Road which has resulted in a low point in the nature strip in Thompsons Road which permits modelled flows to enter the common property at 20 Allen Street. In reality it is likely that flows in a 1 in 100 year event will continue west along Thompsons Road to Allen Street. It is recommended that the SBO be removed from this property.	Yes. Remove SBO3 from property. In addition SBO shape to be removed from: 76 Thompsons Road, 1,2 /20 Allen St, 14, 16 and 18 Allen St, 35 Furneaux Gr and part of the SBO3 at 37 Furneaux Gr.
542.	3 Veda Court, Templestowe	Ruffey Creek	SBO3	1, 2, 4, 7, 8	The submitter states that the property is not at risk of flooding based on knowledge that the property has not flooded since the building was constructed in the early 2000's. Given that the modelling is based on a 1 in 100 year ARI storm event of critical duration and the submitter has only been living at the property for two years, it is likely that the submitter has not experienced the impacts of a major storm event while at this property. Underground drainage systems are usually	No.

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					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. Council's policy is to prioritise drainage upgrades where required to minimise flooding of habitable floor areas. The flood modelling that underpins the SBO will allow Council to prioritise future drainage upgrades in critical areas. Council will consider whether to refer the Amendment to an independent Panel in September 2017. Taking account of the results of the field and desktop reviews, it is recommended that the SBO be retained as exhibited at this location.	
543.	4 St Muir Drive, Warrandyte	Mullum Mullum	SBO3	1, 2, 12	The submission states that the property is on the high side of the street and that they installed extensive drainage, as well as that the driveway falls towards St Muir Drive. The contours indicate that there is a Shallow valley running north to south through the middle of this properties as well as 6, 8, and 10 St Muir Drive. This gully ends back in the road reserve where any overland runoff would be deposited. site inspection conducted by CARDNO Consultants has confirmed that possibly as part of the development of the land, the gully has been filled and the houses have been built overt the region where the gully was situated. CARDNO Consultants have recommended that the	Yes. Remove SBO3 from property.

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					SBO shape be removed from this properties as the gully is no longer present and any storm water runoff would run to St Muir Drive and be conveyed in the road carriage way. Council officers agree that the SBO shape can be removed from this property.	
544.	12 Jolen Court, Donvale	Mullum Mullum	LSIO	10	The property is already encumbered by the LSIO and the current Amendment will result in reduction of the impact of the LSIO on this property when compared with the existing overlay. It is recommended that the reduced LSIO be applied as exhibited to 12 Jolen Court as proposed. However, based on the review of the overland flow characteristics, it is recommended that the overlay designation be changed from LSIO to SBO2.	Yes. Change LSIO to SBO2. In addition, change LSIO to SBO2 for 13 and 14 Jolen Crt and 9 Era Crt.
545.	1 Mintara Court, Templestowe	Ruffey Creek	SBO3	1, 4	The submitters state that they have lived at the property for 30 years and the property has never been subject to flooding in that time. The incursion of SBO3 into this property is less than 30sm and encumbers less than 6% of the property area. It is recommended that as the removal of the incursion will not significantly compromise the management of flood risk at this location, the SBO3 shape be removed from the property.	Yes. Remove SBO3 from property.
546.	332 Serpells Road, Doncaster East	Mullum Mullum	SBO2	2	The property is located on the western side of a valley which conveys overland flows in major storm	No

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					events such as the modelled 1 in 100 year event. The proposed SBO has been reviewed taking account of the local site conditions and including the site topography and it is considered that the modelled SBO extent should be retained.	
547.	2 Forest Place, Templestowe	Mullum Mullum	SBO3	4, 7, 8, 12	The property is located downstream of a low point in Forest Place. The modelling for the SBO is based on a 1 in 100 year ARI storm event and the results indicate that the capacity of the existing drain is exceeded in a major event, leading to overland flows from the low point through private property. It is likely that the submitter has not been present at the property during a 1 in 100 year storm event of critical duration. Council's policy is to prioritise drainage upgrades where required to minimise flooding of habitable floor areas. The flood modelling that underpins the SBO will allow Council to prioritise future drainage upgrades in critical areas. There remains a need for the proposed overlays, to control development and minimise future flood risk. The flood shape modelled in respect of a 1 in 100 year ARI storm event is considered to be consistent with the topography and existing underground drainage system capacity. It is recommended that the SBO3 shape as modelled be supported without amendment.	No

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548.	19 Margaret Court, Warrandyte	Mullum Mullum	SBO3	2	The submission disputes the shape of the SBO overlay and states that in high intensity events overland storm water runoff enters the property from the driveway and heads toward the property boundary between 19 and 20 Margaret Court. The LiDAR data shows that water would enter the property at the driveway (where the drain is located), pool in the tennis court and spill out along the eastern boundary of the property. The SBO shape should be changed to better reflect the LiDAR data.	Yes. Remove SBO3 from the middle of the block and replace it over the driveway.
549.	307 George Street, Doncaster	Ruffey Creek	SBO1	1, 11	Deletion of the SBO1 incursion from this property is supported.	Yes. SBO1 to be deleted from property.
550.	21 Corsican Avenue, Doncaster East	Mullum Mullum	SBO3	1, 7, 8, 10	The LiDAR and contour surface data as well as site photos were analysed which indicate that there is a low point on the road which would pond in the 1 in 100 year ARI storm event, however, the pond depths would not be sufficient to overtop the nature strip and the footpath elevation. This has likely been caused by the resolution of the model not properly picking up the high point within the pedestrian strip. It is therefore recommended to remove the SBO in respect of both 21 and 19 Corsican Avenue.	Yes. Remove SBO3. The SBO shape to be removed from 19 Corsican Avenue as well
551.	273 Church Road, Templestowe	Ruffey Creek	SBO3	1, 2, 7, 8	The terrain at the property in the vicinity of the building has not been adequately picked up in the modelled surface. This has likely been caused by	Yes. Remove SBO3 from property.

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					the building being inadequately thinned from the LiDAR as well as model resolution issues. This has led to pooling of water in the location of the building which is unlikely to occur. Therefore, it is recommended that this area be removed from the SBO. Incursions at the front of the property are unlikely, and can also be removed. It is recommended that flood shapes effecting 271 Church Road be removed.	In addition the SBO shape to be removed from 269, 271 and 275 Church Road to be removed.
552.	12 Acheron Street, Templestowe	Koonung Creek	SBO2	1, 3	The house is suitably raised above the pool area level to be protected from flooding. Flood water is expected to overflow in this area and flow down the easement to the downstream reserve. The SBO overlays have been developed based on the theoretical 1 in 100 year ARI rainfall event. Therefore, it is highly likely that no flooding has occurred as represented by the SBO overlays in the last 25 years. As there is a large drain running along the boundary of this property, once the capacity of this is exceeded, overland flow will be generated and flow along this valley. The LiDAR and contour information as well as site photos corroborate the flood extent as shown in the SBO. It is recommended that the SBO remains as exhibited.	No
553.	2 Oxford Close, Templestowe	Mullum Mullum	SBO3	1, 7, 8	From aerial imagery, the LiDAR data used for modelling accurately represents the property, showing the tennis courts on both 2 and 3 Oxford Close clearly, as well as the flow path behind the	Yes. Remove SBO3 from property.

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					tennis court on 2 Oxford Close. Flooding through the rear of the property follows the drainage network to Cliveden Court, and are the flows are shallow, hence the application of the lowest SBO category (SBO3). Given the steepness of the site and the flow paths noted onsite, it is considered that the proposed SBO will not appreciably assist flood risk management. It is proposed that the SBO shape be removed from this property.	In addition remove SBO3 from 3 Oxford Cl, 2 Cliveden Crt and 42 Websters Rd
554.	26 Chippendale Court, Templestowe	Ruffey Creek	SBO2	1, 7, 8	LiDAR and surface contour data as well as site photos show that the subject property sits in the low point at the junction of Dellwood Court and Chippendale Court. Flows will naturally flow from the north and south down Chippendale Court and from the east down Dellwood Court. 26 Cheppendale road is then located at the confluence of these flow paths which is why there is an underground drain that runs along the property. It is recommended to retain the SBO shape accordingly.	No
555.	Eastlink	Mullum Mullum	Multiple	14. No objection	Eastlink have not made a submission per se but have raised queries regarding the modelled flood extents. Cardno met with Grayson Andrew to discuss the issues raised and the following responses are provided. Tunnel entrance shown as flooded, this has 1 in 200 year ARI protection. The rainfall on grid modelling floods this area due to the topography being included but not the associated infrastructure for the freeway. The	Yes. Delete SBO2 from Eastlink Reserve abutting tunnels.

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					flood extent has been removed from the SBO layers. Areas marked up as per email were queries as they were close to the Eastlink boundary. Most of these areas have been trimmed to the MW LSIO and have not been modified. 25 Park Road flooding seems too extensive. This has been revised and remodelled with the correct pipes under the freeway and will be amended upon adoption. LSIO definition near Chaim Court. This SBO area has been redefined as SBO3	
556.	7 Saxon Street, Doncaster	Ruffey Creek	SBO2	1, 2, 12, 14. Overlay will not provide any significant risk mitigation benefit	As the SBOs have been developed using the theoretical 1 in 100 year rainfall event, it is possible that there has not been an event of this magnitude at the property in the last 50 years. However, it is unexpected that water would rise up the driveway given its elevation. This is likely that the LiDAR data thinning in the vicinity of the retaining wall has led to this result. It is recommended that the SBO2 extent be deleted from the property accordingly.	Yes. Remove SBO2 from property. In addition remove SBO2 from 5 Saxon St.
557.	24 Taunton Street, Doncaster East	Ruffey Creek	SBO2	3, 7	In 2007 the pipe network in the vicinity of this property was upgraded to a 1050mm dia pipe. This pipe upgrade was not included in the original modelling as it was not supplied in the GIS layer by Council. The upgraded pipe has since been inserted into the model based on the Council supplied plans and rerun for the 1 in 100 year flood event. The introduction of this pipe has reduced the flood extent in this area but while the pipe is effective and significantly improves the level of	Yes. SBO2 extent to be amended to match revised modelling.

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					protection to the property, the model indicates that there are still overland flows through the property in a 1 in 100 year ARI storm event. The overland flow paths take the excess water in events such as these. The flow through the pipe is also limited by the fact that it still outlets into a single 525mm diameter pipe in Hertford Road. It is recommended that the SBO shape associated with the property be amended to match the revised modelling.	
558.	20 Bali Hi Boulevard, Templestowe	Mullum Mullum Creek	SBO2	2, 4, 7, 8	Refer to Panel. No review undertaken at this stage.	No