Submission #11

[redacted]

[redacted]

[redacted]

[redacted]

Mob: [redacted]

Subject: Objection to Identifying Property as Land Affected by Stormwater Overland Flow - Amendment C196 Planning Scheme as SB02

Dear Merri -bek Council

I am writing to formally object to the recent decision by the council to identify my property, located at [redacted], as land affected by stormwater overland flow with a 1 in 100 chance of occurring in any given year. While I understand the importance of managing stormwater runoff and mitigating flood risks, I believe that labelling my property as such is unwarranted and unjustified for the following reasons:

1. **Absence of Evidence**: There is a lack of concrete evidence to support the claim that my property is susceptible to stormwater overland flow with such frequency. This property was built in 1920 and has withheld all climate changes to date. This equates to a 124 year period of no flooding record. Therefore, there is no evidence to support a 1 in 100 year storm outcome having a one percent chance of happening in any year. Without thorough hydrological studies specific to my property, it is unjust to make such assertions.
2. **Inaccurate Assessment**: The assessment of the probability of stormwater overland flow appears to be based on generalised data and assumptions rather than site-specific analysis. Furthermore, this has withstood recent flooding occurrences and has not affected this property or surrounding properties identified in your report. Yet, it has been identified as such, based on occurrences of flooding in other far away municipalities. I have spoken to several neighbouring property owners and they all agree that this area is not subject to flooding. Each property has unique topographical features and drainage characteristics that must be taken into account before reaching conclusions about its vulnerability to stormwater events.
3. **Loss of Money:** Labelling my property as land affected by stormwater overland flow could have detrimental effects on its market value and insurability. As an owner of this home for over 35 years, never have I seen so many properties up for sale in my area as a result. I have attended several auctions in the last few weeks, and not only have prices dropped by at least

$300,000 on an average home in my surrounding streets, yet there was a one percent increase on the market value of homes in the last quarter. Prior to this the average price of a home here was 1,200,00. I have witnessed auctioneers not begin the auction due to a lack of interest, with the flooding stigma attached. Prospective buyers perceive this as a high-risk property, leading to financial implications that are unwarranted given the actual risk level. The detrimental effects on market value is unjust when such an occurrence is less than one percent.

4. **Potential Stigmatisation:** Identifying my property as land affected by stormwater when there is no concrete evidence will have a disastrous effect on my insurance. Prospective insurers perceive this as a high risk property. Not only will my premium go up, but I will find that insurers will not insure my property and/or cover for flood damage. Why should I be in this predicament when the flooding does not affect my house and only affects my backyard?
5. **Inaccurate Location:** My property as land affected by stormwater affects only my backyard. It seems to be the back end of my property affected by the potential 1 in 100 percent chance of flooding, being the tip end of the flooding zone. The volume of water would have to be astronomical to reach not only the height of my land, but also the long distance to reach my backyard. Without specific further hydrological testing, it is unjust to make the assumption that that specific area will flood.
6. **Property Meets Standards:** The height level of this property, as it exists, having three steps height to enter the home, meets the new building height standards. It is unjust and inaccurate to stigmatise this property/house as high risk causing market values to drop and insurance premiums to rise. And it is unjust for insurers not to insure me given the fact that my home is not in the flooding zone (refer to map).
7. **Housing Loan Discrimination:** Any financial institution will note the flooding label in section 32 as high risk, and will view this as a disadvantage when it comes to selling. Not only will they decrease my borrowing capacity but also increase the loan's interest rate, noting point 3 and 4.
8. **Alternative Solutions**: There may be alternative solutions to manage stormwater runoff in the area that do not involve singling out individual properties like mine. Collaborative efforts between the council, drainage engineers, land surveyors, hydrological and further testing of water capacity and other property owners could explore community-wide infrastructure improvements or green initiatives here and around the world to address stormwater concerns more effectively.

In light of the above points, I respectfully request that the council reconsider its decision to identify my property as land affected by stormwater overland flow of a 1 in 100 chance of happening in any year. I urge you to conduct a thorough

site-specific assessment and engage in transparent dialogue with affected property owners to find equitable solutions to address stormwater management concerns.

I appreciate your attention to this matter and look forward to a prompt resolution. Please do not hesitate to contact me if you require any further information or clarification.

Sincerely,

[redacted]

Submission #12

[redacted]

Friday 7 June 2024

Strategic Planning

Submission to Amendment C196more

Merri-bek City Council

By email: StrategicPlanning@merri-bek.vic.gov.au

Dear Sir / Madam,

I am the sole registered proprietor of the property known as [redacted]. I have lived in this property for approximately 20 years.

I am writing to you to submit my application for an alteration to Amendment C196more being introduced to the Special Building Overlay Schedule 2 in the Merri-bek Planning Scheme, insofar as it concerns my property.

I have familiarised myself with the projected flood mapping provided on the Council website and believe it to be inaccurate insofar as my property is concerned.

My property has been deemed by the mapping available on the Council website to be at risk of flooding. It appears to have been 'included' the risk mapping that has been done of the neighbouring properties. However, it is inaccurate to analogise the flood risk of my property with that of neighbouring properties, for the following reasons.

My property, when compared to the neighbouring properties, is elevated to a comparatively higher level. I have established this, as well as the following measurements, using an

industrial laser level and the services of a person with experience in surveying and civil engineering.

The height from the gutter to my property line has a **rise of 264mm**. I have lived in this property for over 20 years and have never had water reach my front gate (which marks the property line), even in the heaviest of rains. This includes 2005, when Melbourne received nearly 120mm of rain in a day; and more recently in 2013 (75.7mm), 2020 (62.7mm) and 2022 (69.1mm).[1] It is important to note in this regard that the 2005 rains were the heaviest that Melbourne has ever experienced since records began to be kept in 1856.

Further, my actual residence is situated up-slope from the property line / front gate. The bottom of the front door is **617mm higher** than the gutter. Thus, even floodwaters of **half a meter (500mm)** would still not impact my residence.

Your documents claim this new overlay is required in the case of a 1-in-100-year-flood, but nearly 200 years of records do not demonstrate the claimed likelihood of this happening. Again, the heaviest rain in Melbourne's recorded history did not cause waters to reach my fence line, let alone enter my residence.

If something has happened to the local drainage or floodwater systems in the recent past to make this an issue that – you say – now specifically affects my property, it would have been conducted or addressed as Council works. Has this occurred? If so, I request full details of such works, and the steps that Council has taken in the past 20 years to manage and improve the draining and floodwater systems in order to mitigate the risk that it now claims specifically affect my property.

It is clear that the Council's flood risk mapping data on which the Amendment C196more are based are inaccurate insofar as my property is concerned. I infer from the error that no one has attended my property (or perhaps even this area) to conduct the relevant measurements (which are all able to be taken without my permission as landowner).[2] If Amendment C196more is passed without an alteration to reflect the matters set out in this letter, I will suffer harm in the form of (for example) increased insurance premiums, and reduced sale prices for my property in future. The Council is now squarely on notice of these matters by reason of this correspondence. Should it be necessary to take further action against Council in future in respect of these matters, I reserve all of my rights, including my right to rely upon this letter and produce it to a Court (including on the question of costs).

---

[1] https://www.currentresults.com/Yearly-Weather/Australia/VIC/Melbourne/extreme-annual-melbourne-precipitation.php.

[2] I can provide further measurements of my property's elevation from street level, if required by Council.

I trust that this correspondence provides sufficient information to support an alteration to Amendment C196more in respect of my property.

Yours sincerely,

[redacted]

[redacted]

[redacted]

Submission #13

From: [redacted]
Sent: Monday, 10 June 2024 9:58 PM
To: Strategic Planning
Subject: Amendment C196 - [redacted]

To whom it may concern,

We, as the owners of [redacted] object to Council's intent to introduce an SBO2 onto our property.

We seek the following from Council.

There is no mention that the flood modelling undertaken has been reviewed/peer reviewed. Can you please confirm if the flood modelling undertaken was peer reviewed?

The flood shape for the area the flood map covers our property at [redacted] doesn't make sense.

What survey data and/or LiDAR was relied on for the study? What resolution was the modelling taken? As above the flood shape does not make sense for the existing terrain at the site and surrounds of [redacted]. We expect that the flood shape should actually show the flood extent not entering the [redacted] site.

What filtering has been applied to the flood modelling shape?

How did the flood model consider blockage?

We suspect that the flood island shown at [redacted] may extend further than is shown within the flood map.

We urge Council make a specific review of the flood shape for our property at [redacted].

Pending Council's answers to the above questions, we would like to request access to the flood modelling data underpinning the flood results to undertake our own independent review of the results.

Kind regards,

[redacted]

[redacted]

Submission #14

From: Web Services
Sent: Tuesday, 11 June 2024 8:14 AM
To: Strategic Planning
Subject: Amendment C196more: Submission received

Name : [redacted]
Email(2) : [redacted]
Address(3) : [redacted]
Phone : [redacted]
Make a submission : I oppose the new flood overlay. The council's poor planning of water flows, and the way it has constructed the carpark behind our building (next to [redacted]) is the cause of the flooding risk on our property. Instead of the council putting a flood overlay over our property which will affect our property values, the council should take active steps to address the problems instead.
Upload your submission :
Privacy : I accept

Submission #15

From: [redacted]
Sent: Tuesday, 11 June 2024 9:34 AM
To: Strategic Planning
Cc: [redacted]
Subject: Stormwater Mapping Information [redacted]

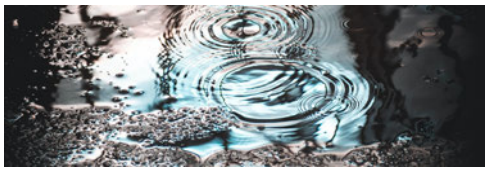
Hi,
I have taken time to read through the proposed Special Building Overlay and how the Stormwater Map was prepared (https://conversations.merri-bek.vic.gov.au/stormwater/councils-drainage-area) as well as Amendment C196 (https://www.merri-bek.vic.gov.au/building-and-business/planning-and-building/strategic-planning/current-amendments/amendment-c196/) and how it relates to our property located at [redacted].

Merri-bek City Council

Amendment C196

Council is proposing to apply a Special Building Overlay - Schedule 2 (SBO2) to properties affected by stormwater overland flows in the city's local drainage areas.

www.merri-bek.vic.gov.au



Stormwater map for Council drainage areas | Stormwater map for land development

/

conversations.merri-bek.vic.gov.au

I am writing on behalf of [redacted] who own the property.
I'd like to firstly state that there has been no communication or consultation with us in the preparation phase prior to or at the time of publishing of the Stormwater Map. Our property is significantly affected by this map and the proposals but we did not receive communication at the actual property address nor the registered postal address as the owners. It is started in some of the documents recently sent in regards to Amendment C196 that the maps prepared were shared with property owners at several times (namely in 2021 and 2023) but this is not the case for us and our property.

Upon now studying the documents regarding the Map and its preparation, we would like to request a formal review of the site as we don't feel the mapping is accurate in its relation to our site. The topology of the site as well as the its surroundings do not correlate properly to the maps prepared for the flooding studies.

Please let us know if any further action is needed in order to initiate a review.

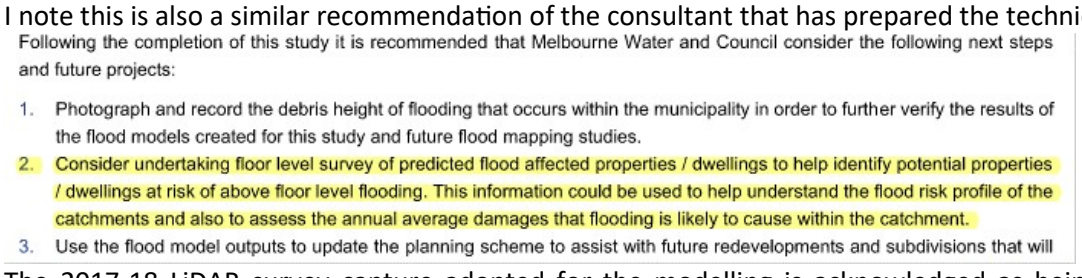
Kind regards,
[redacted]

From: [redacted]
Sent: Tuesday, 11 June 2024 12:25 PM
To: Strategic Planning
Subject: Amendment C196more Submission for [redacted]
Attachments: 202306_merri-bek-submission-to-the-inquiry-into-the-2022-flood-event-in-victoria.pdf; Fwd: Stormwater map website enquiry

Hello,

I am the owner of [redacted] which will be impacted by the proposed new SBO Schedule 2 overlay.
I provide the following submission:

1. I have previously made a submission to the Council stormwater map for land development public consultation. A copy of that submission including Council's response dated 22 September 2023 is attached. I contend that my query on the public exhibition should not have been responded to by Council requesting fees for the provision of a yet to be incorporated new flood level.
2. Notification was subsequently received on 14 March 2024 from Council that the updated Stormwater Map has been designated for report and consent use under Regulation 153 of the Building Regulations 2018, effective 30 November 2023. That Council letter advised that the planning scheme amendment would proceed separately.
3. Accordingly, as this is now a formal planning scheme amendment I repeat my original enquiry:
    a. Can you please provide the proposed new flood level for my property in Australian Height Datum? I am unable to determine the specific proposed flood level from the maps and technical reports as provided.
    b. The apparent decision to not extensively survey the existing stormwater pipeline network is a significant limitation given that rule of thumb principles have an underground pipeline network capable of conveying up to 40% of the 1% AEP storm event.
4. SBO 2 and the technical reports indicate that this is a climate resilience process. Unlike for example the extensive policy for Managing Coastal Hazard and the Coastal Impacts of Climate Change the Victorian Planning Provisions do not appear to give clear policy support for this application albeit in time may do so. Noting it took some time to develop the planning for sea level rise policy adoption. The implementation of this technical report also creates a difference between the original SBO based on different technical data that is used to derive the mapping and along with having two maps creates confusion rather than planning clarity. It might be described as having two heritage overlays derived from separate archaeologist statements.
5. From inspection it would appear the foundation policy for SBO2 is Australian Rainfall and Runoff 2019 (AR&R2019). I note AR&R is not an incorporated background report or existing planning scheme reference document. I do not believe that incorporating the Engeny technical report satisfactorily makes it a reference planning policy document.
6. Survey information in an urban environment that relies on aerial capture is problematic given interference from tree, building, fence, vehicles, shop awnings and other ground coverage. Profile checks of the survey data would assist in confirming the accuracy of the data especially in dense urban environments. For an exercise of this magnitude consideration of physical feature and level ground survey of the new SBO2 areas should be considered as a further work item prior to adoption.
   I note this is also a similar recommendation of the consultant that has prepared the technical report.



Following the completion of this study it is recommended that Melbourne Water and Council consider the following next steps and future projects:

1. Photograph and record the debris height of flooding that occurs within the municipality in order to further verify the results of the flood models created for this study and future flood mapping studies.
2. Consider undertaking floor level survey of predicted flood affected properties / dwellings to help identify potential properties / dwellings at risk of above floor level flooding. This information could be used to help understand the flood risk profile of the catchments and also to assess the annual average damages that flooding is likely to cause within the catchment.
3. Use the flood model outputs to update the planning scheme to assist with future redevelopments and subdivisions that will

   The 2017-18 LiDAR survey capture adopted for the modelling is acknowledged as being accurate to 100mm vertically. In the context of older urban drainage areas, the depth of flow from invert of kerb and

channel to property line is typically anywhere from 100 to 250mm. Accordingly, the survey level error represents up to a 100% (100mm/100mm) error of the road cross section profile. Such an error in stream \ river bathymetry which was the early development of such modelling software cannot be considered satisfactory.

7. The intent of my original request for the flood level at my property is that it would enable a profile check versus my property levels. It does not appear that Council has conducted profile testing of the flood levels of the new SBO2 to confirm the veracity of their outputs noting the base 100mm inaccuracy in survey data adopted.
   The conclusions in page 19 section 6 of the Engeny technical report give rise to concerns regarding the suitability of adopting the SBO2 into the planning scheme.
   Furthermore, TUFLOW modelling is simply that. It does not appear to actually provide a flood level at a specific location as an output that can be relied upon.
8. Council's response to my 2nd request indicates that reasonable assumptions have been made about the existing pipelines. It would be appropriate for Council to show on an annotated plan of the drainage system where and how many of these reasonable assumptions have been made for insufficient drainage system detail.
9. As evidenced by the Flemington Racecourse flood wall, the impacts of physical infrastructure can detrimentally impact flood levels. Similarly, infrastructure works such as augmentation of Melbourne Water's Harding Street main drain would improve the scenario for [redacted] and [redacted]
   I note in their submission to the Inquiry into the 2022 Flooding Event in Victoria, Council is advocating for Melbourne Water to upgrade the Harding Street main drain. Refer attached copy of Council's submission.

   - The Melbourne Water, Harding Street Main Drain has been noted as having major capacity issue affecting the Coburg Shopping precinct and residential properties within the area. The need to upgrade this drain has been raised with Melbourne Water in the past to mitigate this from reoccurring. No action has yet been taken.

My submission essentially is to recommend the amendment as premature being founded on insufficient planning policy or to request the removal of the SBO2 on [redacted] from my property at [redacted] based on insufficient technical accuracy.

For further information please do not hesitate to contact me.

[redacted]

Attachment 1:

Inquiry into the 2022 Flood Event in Victoria

Submission to Legislative Council Environment and Planning Committee

June 2023

Merri-bek City Council

This feedback has been prepared by council officers on behalf of Merri-bek City Council ('Merri-bek') and is based on endorsed Council policy.

Introduction

Merri-bek Council welcomes the opportunity to provide input to Victoria's preparedness for, and response to Victoria's major flooding event of October 2022. We acknowledge the Terms of Reference seeking specific feedback[1] and have framed our submission accordingly.

Merri-bek acknowledges that localised flooding has been occurring since before European settlement. Large rainfall events will continue to occur however the impact of urban development has changed forever the way our cities and waterways cope with rainfall and floods.

As land managers it is our responsibility to mitigate the effects of flooding on the now very altered landscape, to protect our environment from the damage caused, to minimise its impact through stormwater management techniques and to accept the need to act and adapt to a changing climate.

There were a range of flooding impacts as a result of the October 2022 flood event visible in Merri-bek. Damage recorded included localised flooding, inundation over our Shared User Paths, damage to assets and erosion of our urban landscapes along the tributaries and creek corridors, including loss of habitat and the visual impact of litter (still) left in the tops of tall shrubs.

With population growth, rapidly increasing development and the challenges of a changing climate, the natural and built environment is no longer equipped to deal with the increased stormwater runoff from storm and flood events. Merri-bek is planning for a changing climate. We are continuing to mitigate the known impacts of storms and large rainfall events and adapting where we can. But more needs to be done at all levels of government to enable change to occur at the speed needed to mitigate the impacts of flooding in the future.

Merri-bek context

Merri-bek is a municipality in the inner north of Melbourne with a diverse and rapidly growing population. The Merri-bek municipality covers an area of approximately 51 square kilometres and comprises of 12 suburbs. The municipality is bounded by Moonee Ponds Creek to the west and the Merri Creek to the east. Merri-bek is a highly urbanised municipality with approximately 174,502 residents. Forecast to reach over 228,000 people by 2036[2].

Merri-bek Council has a long and proud history as a local government leader on social justice and environmental issues, including 1) One of the first councils in Victoria to have an Environmentally Sustainable Design Policy within its Planning Scheme and 2) Declared a climate emergency in Merri-bek on 12 September 2018.

[1] Inquiry into the 2022 Flood Event in Victoria (parliament.vic.gov.au)

[2] 2021 census

Contents:

TOR 1 - Causes of and Contributors to the Flood Event

Merri-bek acknowledge that flooding and high rainfall events will always occur and have been occurring since before European settlement. However urban development has changed forever the way our city responds to floods. The factors below all contributed to the flood and the magnitude of its impact.

Physical factors

- Significant, ongoing, high rainfall over weeks prior to the flooding resulting in saturation of the ground. Stormwater was not able to infiltrate soil profiles. Instead, it became runoff that flowed into waterways.
- The engineered drainage system in place could not cope with this kind of flood event.
- Many of the Melbourne Water's main drains are inadequate to deal with these larger volumes of stormwater.
- There has been a historic and ongoing lack of understanding in how traditional drainage and pipes assets can combine with other stormwater mitigation approaches resulting in lost opportunities.
- Inadequate mitigation measures in the upper catchment suburbs. The lack of integrated planning approach which considers downstream impacts including best practice retarding basins.
- A pattern of inadequate local scale designs of streetscapes and landscapes across the region, which fail to consider stormwater collection and flood management which also deliver co-benefits of lush, well maintained, and cool urban landscapes.
- Not enough focus on minimising peak flows at the source including in urban developments through such technologies as smart water tanks, leaky hoses, slow release of water harvesting and other innovative technologies.

Lack of Information and Communication of Risk

- A lack of up-to-date data and mapping to inform controls and development planning in adapting for a changing climate has slowed down or prevented investment in the areas where it is needed.
- An absence of a targeted communications to explain to industry, community, government, and decision makers that it will always flood. We need to learn to live with flooding but how will that look and what impacts can we mitigate.
- Flood warnings and roles and responsibilities are ambiguous resulting in confusion around location of event and response needed.

Planning, Institutional Arrangements, and Funding

- The Victorian Flood Management Strategy of 2016 is ineffective due to lack of awareness of its existence and function.
- Lack of a Melbourne Flood masterplan to prioritise investment therefore the delivery and process for any change is ad-hoc and underfunded. There is a lack of masterplans with integrated solutions at a catchment level balancing use of open space, floodplains, engineering structures, early warning, and whole-of-system management across different sectors.

- Lack of coordination and a cross-sector governance model for a whole of catchment system, and the need to consider a prioritised suite of cross boundary Integrated Water Management (IWM) and stormwater initiatives, with ongoing funding and commitment to deliver.
- Lack of clarity or agreement on the lead governing, collaborative body that provides the inter-organisation agency forum.
- Lack of clear roles and responsibilities at all levels of government and industry to promote collaborative decision making.
- Lack of investment in infrastructure to mitigate and adapt to flooding impacts – there is a need to take investments seriously
- We're not caring for our country. We have altered parks, open spaces and undeveloped land across the region. We need to take greater care of these spaces, to enable infiltration, so they can act as sponges throughout our urban landscapes. Need to create healthier open spaces to allow them to act the way they did before urban development stripped them of their natural ecosystem functions.

TOR 2 - Adequacy and effectiveness of early warning systems

There is a lack of awareness and clarity around how Councils vis-à-vis other agencies should support residents and business owners through floods. While mitigation and adaptation measures can help, there is also a level of expectation management that needs to take place at all levels of government and industry. Activities includes:

- Supporting community resilience so that people know what to do when, as well as understand uncertainty and limitations of warning systems.
- Educate community on how to live with the risk of flooding and to adapt to flooding as a new norm. Similar to fire events, there could be targeted communications to clarify is this a 'get out of here' flooding or is this a ' I need to clean my gutters' rainfall.
- Need for timely and accurate flood intelligence and warnings in the lead-up to an event.
- Investigate whether flood event terminology was poorly understood by many local residents causing unnecessary anxiety.
- Need for awareness raising among property owners of the risks and insurance needs.

If adequate warning systems are effectively delivered by the Bureau of Meteorology, typical proactive works undertaken by Merri-bek prior to storms and floods include:

- Culverts inspected for debris; detention basins needed to be mown.
- Street cleansing program altered to mitigate the impacts of floods through blockages.
- Clearing of debris and rubbish on every pits/drain in flood-affected streets.
- Placing "Water Over Road" and "Road Closed" signs as required in known flooding sites.

Council currently encourages businesses to develop private flood evacuation plans by providing the following to business owners in areas known to be affected by flood:

- Information about the benefits of evacuation plans.
- Contact details of relevant council and emergency service personnel for inclusion in evacuation plans.

If funded, Councils could consider the following initiatives:

- Development of locally-specific information for business owners that would assist them to develop evacuation plans for commercial premises.
- Development and implementation of disaster management plans/flood response plans, as part of municipal emergency management plans.
- Maintain and enhance local flood information and monitor significant local flood events.
- Continue to improve early warning systems, investing in preparedness measures.
- Harmonise information systems and communication for stormwater, river, and coastal flooding'

There is a lack of clarity regarding the body responsible for:

- Maintaining and repairing flood mitigation assets. This confusion highlights the need for a state-wide review of mitigation infrastructure, and clarity regarding ownership, maintenance and liability.
- Implementing and maintaining local flood warning systems, including systems for flash flooding.
- Planning more generally in flood event.

TOR 3 - resourcing of the State Emergency Service

Merri-bek currently funds the State Emergency Services (SES) with a yearly grant of between $10,000-$15,000 which assists in their operations such as equipment, fuel and vehicle costs, training and community engagement. Council officers assist with requests for sand, traffic management as part of the Emergency Management arrangements. The SES is primarily run with volunteers and need support to recruit, train and attract volunteers.

Merri-bek City Council is serviced by the Fawkner SES Unit. During recent storm events, there has been a heavy reliance from the community for the SES volunteers to respond. The local SES Unit has provided an outstanding service to residents of Merri-bek as well as working collaboratively with council before, during and after an incident.

TOR 4 - 2016 Victorian Floodplain Management Strategy

The Floodplain Management Strategy is listed in the Terms of Reference but little is known or understood about this strategy and how it is used or can be used.

TOR 5 - Merri-bek flood mitigation strategy

While Merri-bek does not have a specific 'mitigation strategy', a number of council plans and strategies combine to provide a combined endorsed approach which for the purposes of this TOR has been used in our response.

Council plans and strategies include:

- Integrated Water Management Strategy 2040
- Climate Risk Strategy
- Drainage Asset Management Strategy
- Open Space Strategy
- Urban Forest Strategy
- Urban Heat Island Effect Action Plan
- Zero Carbon 2040 Framework
- Zero Emergency Action Plan 2020-2025

In all Council engineered structures and stormwater assets, continued maintenance is critical to ensure the stormwater system operates to the full extent of its capacity. A program of upgrades is essential to meet requirements and to serve the current population and level of development.

The inspection and maintenance of the pipe network is often difficult because most of it is located underground. New technology, such as remote-controlled vehicles with cameras, has reduced the need for manual inspection, but remains a slow process. Merri-bek City Council is presently able to inspect a portion of its pipes network each year but is constrained by the cost and the lack of trained personnel.

In light of these resource constraints, Merri-bek City Council targets its upgrade and inspection program on the basis of 1) complaints, 2) observations in the field and 3) a rating system based on the age of those pipes and evidence/indicators from recent storm events which includes localised flooding events.

Merri-bek prioritises local drainage system maintenance in known locations where stormwater runoff most significantly affects the council's drainage network. Doing this helps us manage fresh silt deposits.

Currently there is lack of clarity in the roles and responsibilities for some assets. Councils within metropolitan Melbourne and Melbourne Water have been working on the drainage asset delineation project (MUSIA Project) to identify the asset ownership based on 60ha rule.[3] This may result in drainage assets changing ownership between Councils and Melbourne Water and vice versa.

Data collected following the October 2022 flood event plus ongoing customer feedback indicates the following impacts of the event include:

[3] Melbourne Urban Stormwater Institutional Arrangements Review (MUSIA)

- The Melbourne Water and Merri-bek outlet pipes were blocked. This is regularly the case during flood events depending on the severity and location of the rainfall.
- The Melbourne Water, Harding Street Main Drain has been noted as having major capacity issue affecting the Coburg Shopping precinct and residential properties within the area. The need to upgrade this drain has been raised with Melbourne Water in the past to mitigate this from reoccurring. No action has yet been taken.
- Significant volumes of litter were lodged in the limbs of trees and shrubs along the waterways. The debris and rubbish remains to be a problem.

This underinvestment in drainage infrastructure has had other direct implications for Council over the past decade in its role as a responsible authority to deliver housing and jobs in major precincts like Coburg. Merri-bek would happily work with Melbourne Water to advocate to State and Federal Governments to fund upgrades of this critical infrastructure where it is holding back the realising of urban consolidation and revitalisation.

Waterways management and maintenance

Merri-bek's Natural Resource management team, in partnership with management committees and Friends groups are responsible for the management of the natural and constructed landscapes along the creek corridors.

Documented flood damage along the waterways in Merri-bek include damage to plantings, erosion of mulch and established garden beds, widespread distribution of debris, litter and weeds. This caused a large-scale clean-up effort which still exist today as well as the long-term impact on weed control. There was also damage documented to physical items such as handrails, concrete paths and signage.

Local government land managers are expected to undertake local emergency recovery support, clean-up, repairs and maintenance. An increase in funding for Councils is needed, so that we can undertake essential waterway management planning, maintenance and repair work as required.

The unclear ownership and management of riparian land and waterways between Catchment Management Authorities, Local Government authorities, Committees of Management, state government, Parks Victoria and private landholders makes flood planning and response difficult. There is a need to identify the entities and individuals who have ownership of waterways and the responsibility for their clearing and their maintenance.

TOR 6 - Flood Event as a whole

Merri-bek is bounded by Moonee Ponds Creek to the west and the Merri Creek to the east and located partially within the Maribyrnong River and Yarra (Birrarung) River Catchments.

There is need for a whole of system hierarchy which accounts for the interplay between catchments. Both surface and sub-surface run-off. This must also consider how green spaces can store water in the landscape and contribute to cooling, thereby also countering the impacts of the urban heat island effect. A region wide prioritisation of public open spaces is required combined with and understanding of whether they can be (sacrificially) inundated or not. This also creates value to uninsurable land.

There is a critical need to support natural ecosystem functions of waterway corridors, floodplains, and broader landscapes in partnership with traditional owners. This includes the natural assets such as sports ovals and parks which can act as sponges but have additional co-benefits through the creation of habitat and cooling, but are not typically seen as flood management. Infiltration into our urban surfaces is critical to protecting downstream landowners and our waterways.

Increasingly councils including Merri-bek are adopting integrated water management[4] (IMW) or water sensitive urban design (WSUD) across a range of council functions including capital works, land use planning; environmental protection, open space management and urban water resource (conservation) management to contribute to flood management.

We need to better understand the whole of catchment system and the cross boundary and downstream impacts of upstream developments and urbanisation, For Merri-bek, this includes growth areas north of Melbourne to Merri-bek.

[4] Merri-bek developed Integrated Water Management Strategy 2040 and 5-year Action Plan and was adopted in 2020

TOR 7 - Adequacy of Climate change considerations and Flemington Racecourse flood wall

Merri-bek Council is in the vicinity to the Flemington Racecourse. Merri-bek agrees that flood mapping taking into account climate change data for the Maribyrnong River catchment needs to be carried out.

It is important to factor in climate change in decision making more broadly as it is critical to planning and preparing for floods. Climate change is already impacting the hydrological cycle. We are experiencing more intense rainfall events, more often, facing sea level rise and combining this with other extremes weather events.[5] Traditional approaches or ad-hoc solutions and investments are no longer sufficient to protect people and nature. We need to learn to understand, plan for, live with, and manage the risk now and well into the future.

Victoria faces increasing risks from the impacts of global climate change. Recent storms, including heavy rain events, demonstrate that the stormwater system is at risk from extreme weather that must be addressed through implementation of integrated climate adaptation interventions.

The Merri-bek Council Plan 2021 - 2025 addresses climate risk through Strategy 3.3, to: 'Strategically invest in Council's community services and assets to increase our resilience and adapt to climate change risks and impacts that are now unavoidable (such as severe heatwaves, flash flooding, unreliable rainfall).'

Merri-bek Council has also been working with expert drainage engineers to prepare 100-year stormwater maps for its local catchments. This work has been informed by national guidelines[6], which prompts such mapping to factor in increased rainfall intensity – brought on by climate change.

Merri-bek Council has developed a Climate Risk Strategy. This includes actions such as hazard mapping, monitoring of identified at-risk assets, and conducting building vulnerability assessments to develop recommendations to reduce risks. In parallel, other actions to communicate risks include the Special Buildings Overlay (SBO2) process, to develop residents' awareness of risks.

There is a continued need to support community in understanding the service levels of natural and structural infrastructure, understanding nuisance flooding, understanding risks at the property or neighbourhood level, potentially supported by tools such as data visualisation of flood depths.

Awareness of the future impact of climate change and the changing risk of flood is not well understood. We need integrated planning and investment into flood management at the state level which support a catchment scale approach to intervention, supported by the best available, evidence-based information. This includes greater funding to support continued learning and education in Council and in the community.

---

[5] Victoria's Climate Science Report 2019 https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0029/442964/Victorias-Climate-Science-Report-2019.pdf

[6] Australian Rainfall and Runoff 2019, Geoscience Australia.

Merri-bek through council Alliances for Greenhouse Action and Council Alliance for a Sustainable Built Environment have engaged with State Government over their proposed planning reforms; through the ESD Roadmap development; and through consultation on Victoria's Built Environment Adaptation Action Plan.

TOR 8 - Implications for future planning

(a) how the Victorian planning framework can ensure climate mitigation is a consideration in future planning decisions;

Merri-bek flood mapping completed to date

Under the *Water Act* 1989, councils and Melbourne Water are responsible to find out how far storm events are likely to extend and how high they are likely to rise. However, Melbourne Water has overarching responsibility, arising from its role as metropolitan Melbourne's Floodplain Management Authority.

In the absence of government funding, or any grants program from Melbourne Water, in 2017 Merri-bek City engaged Engeny Water Management (Engeny) to carry out a hydraulic and hydrologic analysis for the city's local drainage catchments, to assess the impact of major storm events.

The analysis included:

- stormwater modelling to produce stormwater maps for the 1, 5, 10, and 20% AEP (Annual Exceedance Probability) storm event, and identify affected areas in Merri-bek. Climate change impacts were factored into the digital model that was created.
- determining and prioritising the mitigation works and associated costs to address stormwater hazards for the 10% AEP event.

Merri-bek's stormwater mapping factors in climate change by increases rainfall intensity in-line with national guidelines. Doing this helps us better understand where there are local stormwater overland flow paths and what this means for future land development.

This study guides Council in the assessment of future developments and ensures the existing flooding 'hot spots' are not adversely impacted by future development. Council has proactively declared its stormwater maps, under the provisions of the Building Regulations. Council is also refreshing these maps with new information, before updated maps are used to inform the introduction of a new Special Building Overlay into the Merri-bek Planning Scheme.

Council has also identified drainage locations in the city's local catchments and assessed 42 flood mitigation options, to help prioritise works and determine the infrastructure necessary to reduce stormwater impacts for the 10 % AEP storm event[6].

Planning Controls and Flood Mapping for Waterways.

For many years, planning schemes within metropolitan Melbourne have included schedules for Land Subject to Inundation Overlays (LSIO). Melbourne Water is the Floodplain Management Authority and is responsible for the waterway flood mapping that generates the mapped extents for these LSIOs.

The current LSIO planning control in the Merri-bek Planning Scheme was introduced more than two decades ago. It is not known if Melbourne Water has done a review of its flood mapping for Merri-bek's waterways.

[6] Stormwater mapping in Merri-bek

It is unclear whether Melbourne Water has checked its waterway flood mapping for climate change implications. Similarly, it is unclear if such review work has been done for other waterways in metropolitan Melbourne.

There is a need to communicate to local government the status of Melbourne Water's flood mapping reviews including timing and scope.

Roles and Responsibilities

Melbourne Water is the Floodplain Management Authority for Merri-bek and all other councils within metropolitan Melbourne. However, Melbourne Water has historically not conducted floodplain management for Melbourne's urbanised local catchments. Instead, local councils have worked to understand where urban stormwater overland flow paths are located, to inform the introduction of the Special Building Overlay planning control for local catchments.

Local councils have had to develop their own in-house methods, establish resources and decision-making guidelines for considering floodplain management issues in local catchments. Melbourne Water, in its role as the region's Floodplain Management Authority, has provided little direct support. It is challenging for councils to expand its service offer, for local floodplain management, in a rate-capping environment. With 31 metropolitan Melbourne councils, this also poses a challenge for consistency and capacity building in the sector. Funding and resources need to be quarantined to complete mapping for metro Melbourne in collaboration with councils and Melbourne Water

Metropolitan Melbourne's Floodplain Management Authority should increase funding, resourcing and have a long-term action plan to lead floodplain management across all of metro Melbourne. If local councils are to assess planning permit applications, in their role as a local drainage authority, tailored guidelines may be required for each local catchment. Therefore, Melbourne Water needs to take an active role in capacity-building across the local government sector and leading the preparation of guidelines for consistent decision-making within its Port Phillip and Western Port areas of responsibility.

Planning Provisions:

There are Merri-bek planning controls in place which apply to new buildings to help adapt to weather extremes and our changing environment and are listed below:

- Councils planning requirements are that the habitable floor level of all developments must be above flood levels
- Council's Building and Subdivision Guidelines require that new developments must not have any negative effect on flooding, either upstream or downstream[7]

Merri-bek's Environmentally Sustainable Development Policy within the planning scheme enables Council officers to require minimum sustainability standards including new developments to better manage water quality, use and collection. On its own, ESD measures in a single development will not impact flooding but if all new developments were to include minimum standards the impact across the region can have a meaningful impact.

[7] Stormwater mapping in Merri-bek

Councils, through the Council Alliance for a Sustainable Built Environment of which Merri-bek is a member, have introduced local Environmentally Sustainable Design (ESD) policies to tackle climate change and have submitted a planning scheme amendment to state government on how we can elevate ESD targets in the Victorian planning scheme to improve our built environment.

Local government in Victoria has identified a disconnect between high level policy positions on climate change, both by State and local government, and the day-to-day decisions that are being made through the planning system. In practice, climate change adaptation has not yet 'trickled down' to inform decision-making through Victoria's planning system.

(b) how corporate interests may influence decision-making at the expense of communities and climate change preparedness;

The role of governments needs to shift to think more about how we can proactively adapt at municipal and state level. Learn from other countries where flooding is more accepted as the norm. Rethinking how we use land that periodically floods and move away from the purely financial or development opportunity.

Consideration of land buy backs / strategic purchasing of land in floodplains and areas affected by river flooding, overland stormwater flows, and coastal inundation for vegetated open space and drainage reserves as a voluntary purchase schemes'. This includes the opportunity as part of a long-term flood risk prevention strategy to consider the acquisition and removal of properties within the primary flow area of the floodplain.

The buy-back of properties often provides the ideal solution to the problem of mitigating the impact of damage to existing buildings in areas particularly exposed to natural hazards such as floods. The benefit to the community of a property buy-back program, and the consequential removal of structures in the floodplain, is the minimisation of the risk posed by flood to life and property. However, there is no scheme or planned program on this and funding is insufficient for the scale of impact expected if flooding continues to increase in severity and frequency.

Recognise private development and minimising at the source catchments (water takes and WSUD within property boundaries play a critical role in minimise flood waters at the source). At the municipal scale, information and modelling is already available and demonstrates how urban development and imperviousness can significantly impact flood risk and to understand if measures under ESD recommendations are sufficiently offsetting any additional flood risk

More incentives are required to activate the role of the private sector and developers. Similar to or aligned with the planning scheme amendment work currently underway and led by CASBE.

It is worth noting that Councils tend to use 10-year flood (structural) to upgrade drainage assets – often due to costs. But for planning, a 100-year flood (non-structural) is used. Scrutiny around this decision is required.

TOR 9 - Other related matters

Integrated Water Management (IWM):

Integrated Water Management (IWM) is a holistic approach to managing water cycle that considers social, economic and environmental benefits for the community through the use of vegetated swales and buffer strips as a substitute for traditional forms of drainage and the use of wetlands, ponds and retarding basins for flood retardation, water storage and to provide amenity. These need to be seen as part of the story in mitigating floods.

Taking an integrated approach ensures that the water cycle is more resilient to the impacts of climate change and a growing population.

One of the key objectives of the IWM Framework for Victoria is to manage water-related risks, including the risk of flooding which aligns with Merri-bek's IWM strategy for 2040.

This strategy is aligned with the Healthy Waterways Strategy and Water for Victoria. There are a significant number of actions which contribute to the mitigation of flooding impacts including the delivery of large-scale water harvesting systems and smaller scale IWM interventions including Water Sensitive Urban Design (WSUD). They help to reduce the volume (and improve the quality) of runoff that reaches our waterways.

Merri-bek is impacted by rains in the upper catchment. This impacts on our drainage pipes by preventing our stormwater drains from discharging into the creeks. We are bounded by two main creeks and we don't have the land to install lots of retarding basins etc. in Hume. We don't have the land to do this so it needs to happen in the upper catchments.

Vegetation and the natural function of the waterway needs to be managed to be resilient against flooding. Erosion and habitat loss through storm flooding has a detrimental impact on the ecosystem waterway habitat. The ecological impact of floods also needs to be considered in any changes to a catchment scale approach to flooding. This means adopting an integrated ecosystem service approach to waterway management, which should also support flood mitigation activities as required.

There is a need to encourage, support, fund and require interventions such as listed below to yield benefits to nature and biodiversity, cultural benefits, supports our connection to nature, support carbon storage for a safe climate (wetlands and trees store carbon):

- Enhancing waterway corridors and floodplain connectivity or urban billabongs where feasible
- Promote daylighting of drains and restoration of healthy waterways to slow down flows and support natural functions
- Ensure Development of retarding basins and wetlands for water storage, sponge city approaches.
- Reforest key watersheds where applicable and where pre-colonial woodlands exist
- Promote Urban greening programs, including in public land owned by the state and other public sector organisations
- Avoid engineering our rivers in ways that may potentially increase flood risk and have adverse outcomes, such as the Victorian Murray River Floodplain Restoration Project

Governance and building on existing industry knowledge

Stormwater management and responding to floods requires a shift in the way we do things. For decades flooding has been managed through localised engineered structures. With climate change and an altered urban landscape, a whole of system approach needs to be considered not just a band-aid fix.

There have been attempts at centralising governance and decision making including the DEECA led IWM forum which approaches our catchments from an IWM lens. The custodianship of the current and future plans for our city when it comes to water management no longer sits with any one land manager. A collaborative approach across water authorities, catchment management authorities, all levels of governments including councils, traditional owners and in partnership with external organisations such as Melbourne Water, state government, Management Committees and Friends of groups (Merri Creek Management Committee, Friends of Merri Creek and Friends of Moonee Ponds Creek) is required.

Continue to fund and promote the Integrated Water Management interventions including the upstream and whole of river catchment to have a positive a ripple effect downstream. This means both a range of interventions, with a range of stakeholders and over a catchment and region wide scale.

Continue the work that DEECA currently leads as part of the Integrated Water Management forum to bring these land managers together continue the development of Catchment Scale Integrated Water Management (CSIWM) Plans for each of the five metro Melbourne IWM Forum Areas: Werribee, Maribyrnong, Yarra, Dandenong and Western Port. Merri-bek led the first trial of these plans as an active member of Yarra and Maribyrnong IWM Forums.

- Listen and respond to the recommendations of the Integrated Water Management Forum
- Listen and integrate to the outcomes of the Melbourne Water Led Stormwater Industry Guidance work.
- Seek advice and listen to the voice of the peak body, Stormwater Victoria.
- Continue to engage with and support recommendations from the Council Alliance for a Sustainable Building Environment (CASBE) and the CASBE led initiatives including support for the Elevating ESD targets in the planning scheme.
- Support further research through grants and scholarships to develop, test and monitor innovative solutions to heavy rainfall and associated physical and societal impacts.
- Clarify and communicate the role of Catchment management authority and VPA.

Recommendations

1 Melbourne Water should be better resourced and prompted to allocate funding to:
   a) creating and reviewing all flood (riverine) maps and stormwater (urban drainage) maps across it's Port Phillip and Western Port area of responsibility, as the region's Floodplain Management Authority. This would include all local and region catchments.
   b) Better enable its role as the region's Floodplain Management Authority, by leading the creation of guidelines and other resources the local government sector can use, to enable consistent consideration of planning and building application proposals, for effective consideration of stormwater risks for property development.

2 Melbourne Water's progress for flood and stormwater mapping should be given high priority, so that progress can be completed for all councils as soon as possible.

3 Given that flood (LSIO) and urban stormwater (SBO) mapping is linked to the Victoria Planning Provisions, Melbourne Water and the Victorian Government should consider an appropriate planning scheme amendment avenue to ensure the maps are put into planning schemes with minimal delay. For this, Merri-bek believes affected landowners must be informed, before any new or revised maps are introduced.

4 Consult with industry, agree on and establish a cross sector, cross catchment all level of governance model similar or linked to the DEECA led IWM Forum, to manage the ongoing prioritisation and decision making through an integrated water management and planning lens

5 Fund and endorse a buy-back model for high-hazard properties affected by riverine flooding.

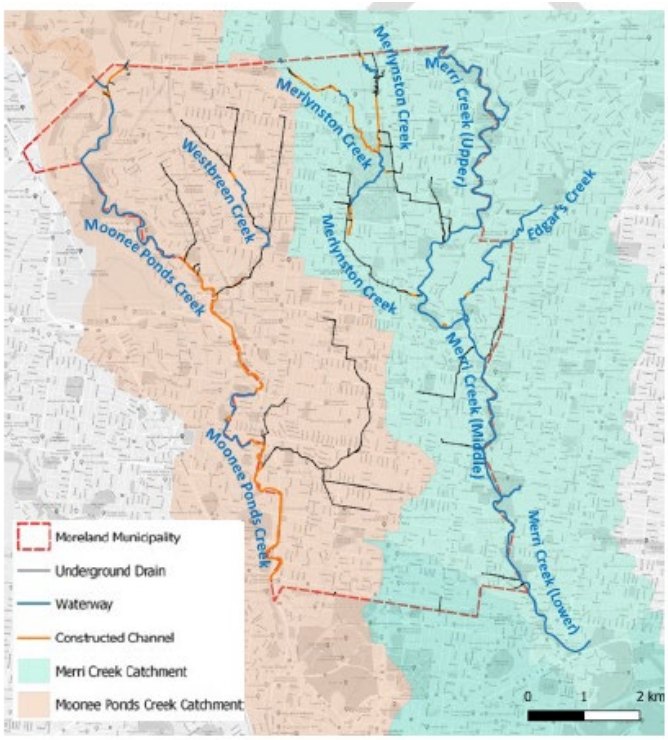
6 Agree on roles and responsibilities of flood response Implementing and increased funding to local governments for the maintenance of local flood warning systems, including systems for flash flooding

7 Support Councils in the development and delivery of flood emergency response plans by providing funding and resources to enable regular review of local emergency response plans and consequence management planning as an appendix to these plans.

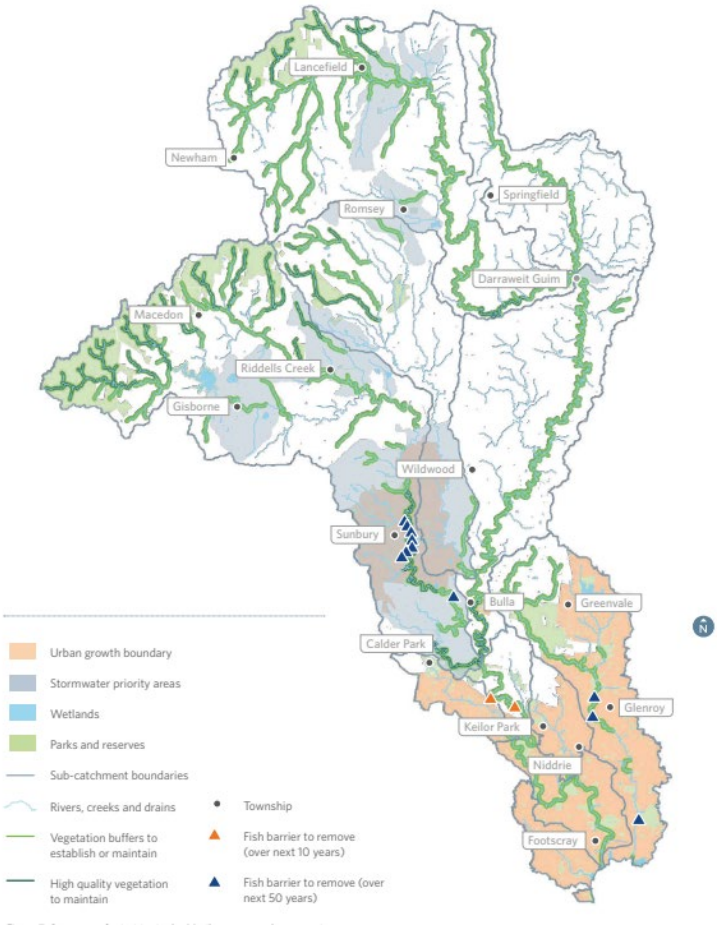
8 Through the outcomes of this inquiry, reframe how we in Victoria see flooding. There is need for a whole of system shift and a new hierarchy which accounts for the interplay between catchments. Both surface and sub-surface run-off. This must also consider how green spaces can store water in the landscape and contribute to cooling, thereby (also) countering the impacts of urban heat island effect. A region wide prioritisation of public open spaces is required combined with and understanding of whether they can be (sacrificially) inundated or not. This also creates value to uninsurable land.

Merri-bek Catchment location maps:

Merri-bek boundary showing catchment locations and water infrastructure:



Maribyrnong River Catchment Location in relation to Merri-bek:



Attachment 2:

From: [redacted]
Sent: Thursday, 28 September 2023 2:17 PM
To: [redacted]
Subject: Fwd: Stormwater map website enquiry
Attachments: Technical Report for landowner engagement - Appendix E_compressed.pdf

[redacted]

Begin forwarded message:

From: Strategic Planning <StrategicPlanning@merri-bek.vic.gov.au>
Date: 22 September 2023 at 11:41:40 am AEST
To: [redacted]
Subject: RE: Stormwater map website enquiry

Hi [redacted],

Thank you for your interest in our stormwater mapping project. I've sought to address your questions below:

1. Can you please provide the proposed new flood level for my property in Australian Height Datum. I am unable to determine the specific proposed flood level from the maps and technical reports as provided.

Areas affected by the stormwater map have a minimum depth of 50mm. In terms of knowing a more accurate flood level for your property at [redacted], you would firstly need to apply for a flood level certificate, followed by arranging a land survey to be conducted by a licenced land surveyor. The flood level certificate application is also the first step if you are planning on doing any kind of development to your property.

If you would like a flood level certificate, please follow the below process:

1. Register with Council Online Services. As a registered user, you don't need to re-enter your personal information and can keep track of requests and applications on any device.
2. Apply for a flood level certificate. You need to sign in to Council Online Services to apply.
3. As part of the online application process, the fee is paid online by Visa or MasterCard. The 2023-24 fee for flood level certificate from Council is $53.

2. The apparent decision to not extensively survey the existing stormwater pipeline network is a significant limitation given that rule of thumb principles have an underground pipeline network capable of conveying up to 40% of the 1% AEP storm event.

An extensive pipe survey has been done for the local drainage network combined with digital data which was used to help prepare the stormwater map. The layout of the local drainage network is shown in Appendix E to the Engeny Technical Report. In locations where the digital survey data needed to be supplemented, the expert engineers applied reasonable assumptions.

The survey for the council's drainage network relates to the performance of the pipe network to transmit 5-year flows. For the 100-year event, these pipes will be at capacity because the 100-year event generates significantly more stormwater than the 5-year event. The

modelling method has also been independently reviewed by Melbourne Water, and the method has applied current national guidelines for the preparation of such maps.

I hope the above responses are helpful, and please be in touch if there's anything further I can clarify.

And finally, if you'd like to provide some feedback on my customer service today, I'd be very grateful if you'd follow the link to let me know how I'm doing.

Kind regards,
[redacted]

[redacted]
Merri-bek City Council

T +61 3 9240 1111
www.merri-bek.vic.gov.au

Merri-bek City Council

Merri-bek City Council acknowledges the Wurundjeri Woi-wurrung people as the Traditional Custodians of the lands and waterways in the area now known as Merri-bek. We pay respect to their Elders past, present, and emerging, as well as to all First Nations communities who significantly contribute to the life of the area.

From: [redacted]
Sent: Tuesday, 19 September 2023 7:05 PM
To: Strategic Planning <StrategicPlanning@merri-bek.vic.gov.au>
Subject: Stormwater map website enquiry

Hello,
I am the owner of [redacted] which is impacted by the proposed changes to flood mapping.
My submission is:

1. Can you please provide the proposed new flood level for my property in Australian Height Datum. I am unable to determine the specific proposed flood level from the maps and technical reports as provided.

2. The apparent decision to not extensively survey the existing stormwater pipeline network is a significant limitation given that rule of thumb principles have an underground pipeline network capable of conveying up to 40% of the 1% AEP storm event.

We note for example the existing underground drainage system has not been surveyed accurately and assumptions such as the following have been applied to pipeline gradient and diameter which each impact capacity.

project. Information regarding the upstream and downstream invert levels of each pipe was not present throughout the entire pipe network. Therefore, it was necessary to artificially generate invert levels where they were missing or inaccurate (e.g. where the suggested invert of the pipe was above the ground level). Engeny estimated inverts by adopting the following formula:

- Invert level = Ground level RL – 600 mm (pipe cover) – pipe diameter/height

data gaps where the pipe was not critical and could be reasonably estimated. In some instances where this process was not able to resolve the remaining data gaps. Between the 24th November 2017 and 17th January, a series of pipe/pit queries were sent to council for clarification on diameters, types, directions and confirmation on outlets/MW pipe discharges across the municipality of Moreland to ensure the most up to date and correct information was used regarding council data.

I look forward to your response to assist with my consideration.

[redacted]

--

[redacted]

Please consider the environment before printing this e-mail.

Strategic Planning
Merri-bek City Council
Locked Bag 10
Brunswick, Victoria, 3056

2nd June 2024

Subject: Objection to proposed Amendment C196

To whom it may concern,

I am writing to object to the proposed inclusion of Special Building Overlay - Schedule 2 (SBO2) outlined by Amendment C196. My opposition to the proposed overlay is based upon use of an inherently inaccurate hydrodynamic model to define the overlay extents and as such, imposes additional planning controls on properties that, in reality, are at either low or negligible risk of stormwater inundation. This additional bureaucracy results in cost and time burden to land owners amidst a housing crisis in the city, further limiting the development and availability of housing. Additionally, imposing these controls may be outside of the scope allowed per the relevant planning and building regulations. I request the council review the extent of the proposed SBO2 overlay with the intent to only impact properties under considerable risk of inundation or in major flow paths during extremely rare 1 in 100 year events.

Having knowledge of similar simulation environments for the majority of my career, I am aware of the inherent inaccuracy of hydrodynamic models, particularly given the scale and inputs to the model. A particular example of this, among many others, is the variation in LiDAR results between the 2007-2008, 2017-2018 and 2021 scans (Refer to Technical Report VC2023_006-REP-002-5, Revision 5, Appendix C: Data Validation Report), which show variation in a large portion of the council region of magnitude up to and over 0.2m. Variation in this input parameter will contribute significantly to the result of the stormwater flow models. The resulting models predict flood level to an accuracy of 0.05m, which is an unreasonable level of accuracy given the variation in the input data. It is also evident that the SBO2 overlay affects properties which are affected by flooding at the predicted 0.05 to 0.1m level range.

With reference to the Australian Rainfall and Runoff Guidelines, Book 8, Figure 8.1.1 - Design Characteristics of Notional Event Classes, the 1 in 100 year event is considered to have a ‘Moderate’ to ‘Large’ nature of uncertainty with regard to flood estimation. Book 9 (refer to *Attachment 1* to this letter) also indicates the inherent inaccuracy of these hydrodynamic models when considering the ‘freeboard’ recommendations of a minimum of 0.3m above the nominal flood level to account for inaccuracies in the models. Imposing the SBO2 overlay based upon assumed flood levels of 0.05 to 0.10m is therefore unreasonable. It is also noted that the contractor council has employed to perform the analysis used to

inform the SBO2 overlay does not warrant the accuracy of its works (refer to *Attachment 2* to this letter), which is a concern given the impact the outcome of their works imposes on landowners.

When reviewing specific details of the hydrodynamic model results compared with the SBO1 (Melbourne Water) and proposed SBO2 overlay extents, it is also evident there is clear mismatch between the flood hazard severity and the region in which the overlay applies. With reference to *Attachment 3* of this letter, a comparison is made between the level of risk to people, vehicles and buildings and the extents of the existing SBO1 and proposed SBO2 overlay. It is clear that there is a mismatch between the extents of the SBO2 overlay compared with the illustrated risk to properties, when considered against the SBO1 overlay extents to the same illustrated risk. Evidently the SBO1 overlay only applies to properties which are exposed to elevated flood hazard (H2 and above), whereas more generally the proposed SBO2 overlay applies to properties in the H1 hazard category. It is noted the H1 flood hazard severity equates to a region 'generally safe for people, vehicles and buildings'. As such, I am suggesting the council re-assess the extents of the proposed SBO2 overlay to only include properties exposed to elevated flood hazard severities H2 and above.

In view of the uncertainty of the modelled results, and level of flood hazard presented in those results, it is also noted that council may potentially be overstepping the scope to impose planning controls per the *Planning and Environment Act 1987* and designation under the Building Regulations 2018. With reference to *Attachments 4 and 5* of this letter it is clear that the regulations require a likely event (usual or occasional flows) and areas which are or are likely to become hazardous in such events. The council analysis supporting the proposed SBO2 overlay is based upon an event which has a moderate to large level of uncertainty, and affects properties which are shown to be in a region 'generally safe for people, vehicles and buildings' (H1 flood hazard). This demonstrates that the current proposals are not inline with the intent of the regulations.

Given the uncertainty of a 1 in 100 year event and the significant climate change we are seeing today, I also suggest council introduce better general awareness and consideration of potential stormwater inundation in general planning and building rules, as opposed to imposing planning overlays for specific properties which have been highlighted based on an inaccurate assessment. The proposed amendment may give landowners a false sense of security regarding stormwater inundation risk if not affected by the SBO2 overlay, whereas in reality they may be affected. I have no objection to highlighting the risk to properties in regions of elevated flood hazard, which exist in clear flood paths and/or areas of inundation.

Thank you for your consideration of this objection. The above points highlight several areas which require re-assessment prior to the introduction of SBO2. I look forward to the council's response to this matter in consideration of the points made above.

Yours sincerely,

[redacted]

Attachment 1:
Extract from Australian Rainfall and Runoff (ARR) Book 9, May 2019
Relevant section highlighted in bold.

A freeboard allowance above a calculated flood level is applied to determine the minimum level of infrastructure such as a habitable dwelling. **Freeboard is required to account for the uncertainties that are inherent in the calculation of flooding. A typical minimum value of 0.3 m above a flood surface is suggested**. However, this value can be varied to account for local factors such as the sensitivity of specific infrastructure to flood damage and expected uncertainty in estimates of flood level estimates for a site. Uncertainty about flood levels are variable and dependent on many factors including the nature of the catchment and the cross-sectional profile across the flow path.

Freeboard should not be used to protect against measurable uncertainties for example risk of blockage and climate change. If these risks are a concern for the site then they should be explicitly incorporated into the basic flood level estimates before freeboard is applied.

Attachment 2:
Extract from Engeny Technical Report, VC2023_006-REP-002-5, Revision 5
9. QUALIFICATIONS
(d). **Engeny does not give any warranty nor accept any liability in relation to the completeness or accuracy of the works, which may be inherently reliant upon the completeness and accuracy of the input data and the agreed scope of works**. All limitations of liability shall apply for the benefit of the employees, agents and representatives of Engeny to the same extent that they apply for the benefit of Engeny.

Attachment 3:

Comparison between model results and proposed stormwater maps in the planning scheme

Extract from Engeny Technical Report, VC2023_006-REP-002-5, Revision 5.

[redacted]

Appendix E - 1% AEP DEPTH AND HAZARD MAPS	Appendix F - 2023 AMENDED STORMWATER OVERLAND FLOW EXTENT MAPS (WIDER SCALE)
[redacted]	

Flood Hazard

- H1 - generally safe for people, vehicles and buildings.
- H2 - unsafe for small vehicles.
- H3 - unsafe for vehicles, children and the elderly.
- H4 - unsafe for people and vehicles
- H5 - unsafe for people and vehicles. All buildings vulnerable to structural damage. Some less robust building types vulnerable to failure
- H6 - unsafe for vehicles and people. All building types considered vulnerable to failure.

Legend

- Merri-Bek City Council Boundary
- Council's 2023 amended stormwater map
- Melbourne Water's existing stormwater map in the planning scheme (SBO1)
- Melbourne Water's existing riverine flood map in the planning scheme (LSIO)
- Suburbs
- Rail Line
- DTP Road Casement Layer

Attachment 4:

Extract from Building Regulations 2018, Section 5(2)(d):

Relevant wording highlighted in bold.

5 Definitions

(2) For the purposes of subregulation (1), land is in an area liable to flooding if—

(d) it is designated by the relevant council as **likely to be flooded** by waters from— (i) a waterway, as defined in section 3(1) of the Water Act 1989; or (ii) any land upon which water concentrates or upon or over which surface water **usually or occasionally flows** (whether in a defined channel or otherwise) including land affected by flow from a drainage system.

Attachment 5

Extract from Planning and Environment Act 1987, Section 6(2)(e):

Relevant wording highlighted in bold.

6 What can a planning scheme provide for?

(2) Without limiting subsection (1), a planning scheme may—

(e) regulate or prohibit any use or development **in hazardous areas or in areas which are likely to become hazardous areas**;

Submission #18

From: [redacted]
Sent: Wednesday, 12 June 2024 7:45 PM
To: Strategic Planning
Cc: Mayor Cr Adam Pulford; Cr Annalivia Carli Hannan; Cr Helen Pavlidis; Cr Angelica Panopoulos; Cr Helen Davidson; Cr Oscar Yildiz JP; Cr Monica Harte
Subject: Planning scheme - amendment submission
Attachments: Unacceptable.jpg; Acceptable.jpg

Importance: High

Hi All,

I am writing in relation to the AMENDMENT C196MORE - MERRI-BEK PLANNING SCHEME. INTRODUCTION OF THE SPCEIAL BUILDING OVERLAY - SCHEDULE 2

I have previously met with council officers and noted the following:

- The council is avoiding the root cause of the flooding issue
- Our houses are now placed in a flood risk zone, affecting our house prices and building costs
- We are seeking larger water drainage outlet pits on our roads.

Specifically on the corner of [redacted] - flooding is a constant issue. I have written to the council previously in regards to this, however to no avail. The council has mentioned that they are happy to clean the outlets, however this is inevitably a short term solution. With such small draining outlets, and so few, there is zero chance that flooding can be avoided in times of high rainfall. Especially during any hail storm, the small drains often get clogged easily, leading to flooding until such time that the ice melts. This can easily be fixed with larger or more drains. We constantly have flooding issues which often flows into our home and garden, leading to large costs and cleaning efforts on our part.

This needs to stop.

We need larger and more drainage outlets as a matter of urgency, especially at this time of year. We are not seeking dramatic changes. We only seek larger drain outlets so that water can flow into the under ground sewage at a faster rate, avoiding congestion and clogging of water. Without this, ourarea will forever remain a high risk flood zone, affecting our house prices, as well as building costs. The special building overlay is avoiding the real, simple issue - which is the fact that our drains are too small and too few!!

Please look into this urgently and call me where possible - as I would like an urgent solution. [redacted] **and am seriously opposed to this amendment, as it does not look into the root cause of flooding issues.**

Please view the attached photos of 2 drains on the corner of [redacted] - one being acceptable and the second clearly being unacceptable. What possible water flow can go through this second drain? This opening needs to be far wider!!

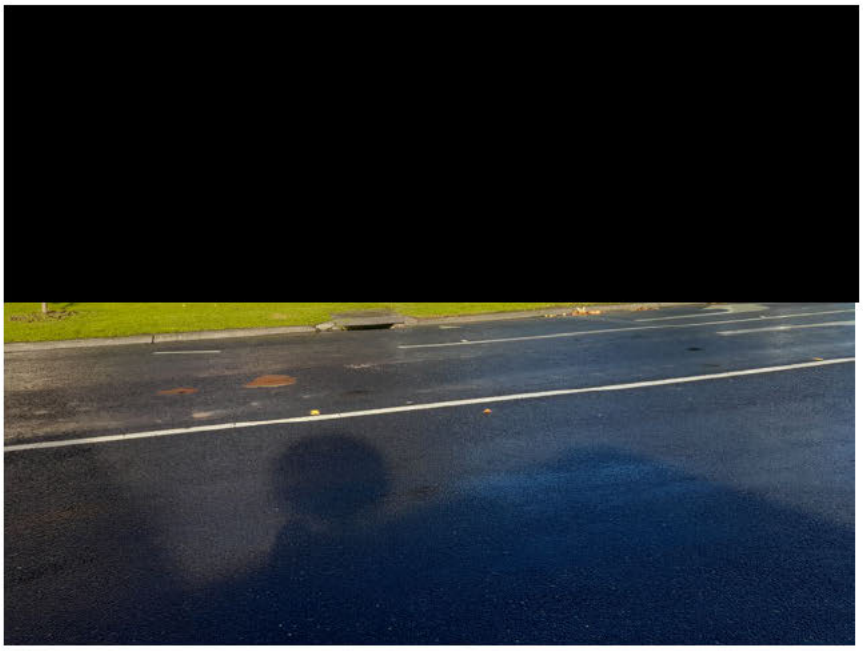
[redacted]

[redacted]

Attachment 1:

Unacceptable.jpg

Attachment 2:



Acceptable.jpg

From: [redacted]
Sent: Thursday, 13 June 2024 3:32 PM
To: Strategic Planning
Subject: Merri-Bek Amendment C196 Objection - Introduction of the Special Building Overlay Schedule 2
Attachments: Merri-Bek Amendment C196 - SBO2 (May 2024).pdf

Importance: High

Attention: Joseph Tabacco / Strategic Planning Merri-bek City Council

I am writing on behalf of [redacted], the owners of [redacted] who have received the Merri-bek Council letter dated 10th May 2024 (attached) regarding the C196 amendment proposing the introduction of the special building overlay schedule 2 (SBO2) for properties affected by stormwater overland flows. We wish to confirm that the Owner **opposes** the introduction of SBO2 to [redacted] based on the following:

- The survey data used is not reflective of the current conditions for the site:
  - The flood modelling had utilised Lidar data from 2007-2008, however updated to 2017-2018 data.
  - Significant earthworks have been done to the site in 2018 & 2019
  - Adjoining railway carpark works were complete post 2018;
  - The below is justification for the use of the data, however the data time is at a pivotal point in the sites history as it was at this moment that the site was being re-constructed.

3. LIDAR VERIFICATION

LiDAR (Light aerial ranging) is topography data which is captured from an aeroplane and typically ground truthed against known survey points to establish a 3d surface of the ground. The lasers from the plane bounce back against the first hard surface they encounter. This is known as first strike data. Post processing is undertaken to remove trees and buildings from the data. High quality LiDAR is typically accurate to ± 100 mm vertically and ± 200 mm horizontally (root mean square error (RMSE) confidence of 68%).

The original model that Engeny developed for Council was based on LiDAR obtained in 2007 and 2008. This LiDAR data set was quoted as being accurate to 100 mm vertically and ± 200 mm horizontally (RMSE confidence of 68%).

Engeny has also completed stormwater overland flow mapping utilising an updated version of the models for Melbourne Water. Part of this update included using newer LiDAR data which was obtained in 2017 and 2018. The 2017-18 LiDAR was quoted as being accurate to 100 mm vertically and ± 200 mm horizontally (RMSE confidence of 68%). The 2017-18 LiDAR data set captured by the Victorian Government superseded the previous 2007-08 LiDAR data set (also captured by Victorian Government) as part of their periodic update of LiDAR data.

Council also has a program of LiDAR capture, largely for the purpose of assessing tree canopy cover. This LiDAR data was captured in 2021, making it more recent than both of the previous datasets used. Council have reported that the vertical accuracy of the data is ±300 mm vertically and ± 300 mm horizontally. It is also understood that the density of point capture is higher in the 2021 LiDAR data set at 12 points per square metre compared with 8 points per square metre for the 2007-08 and 2017-18 data sets.

However, it has been advised that the 2021 LiDAR has not been calibrated against on-the-ground survey control points, whilst the 2017-18 data has. Vertical accuracy is particularly important given this accuracy informs the determination of flood levels for properties.. As such the 2017-18 LiDAR data is considered to be the best available vertical imaging data for flood modelling purposes.

3.1.1 Change in LiDAR Elevations

Engeny has compared Council's 2021 LiDAR data to the 2007-08 LiDAR used in the original Council stormwater overland flow mapping and the 2017-18 LiDAR used in the Melbourne Water stormwater overland flow mapping in 2023.

Figure 3.1 shows the difference between the 2007-08 LiDAR and the 2021 LiDAR. Figure 3.2 shows the difference between the 2007-08 LiDAR and the 2017-18 LiDAR. Areas where the 2021/2017-18 LiDAR is higher than the 2007-08 LiDAR data are shown in red and orange, areas where the 2021/2017-18 LiDAR is lower than the 2007-08 LiDAR is shown in blues.

Figure 3.3 shows the difference between 2017-18 LiDAR and 2021 LiDAR. Areas where the 2021 LiDAR is higher than the 2017-18 LiDAR data are shown in red and orange, areas where the 2021 LiDAR is lower than the 2017-18 LiDAR is shown in blues.

The figures shows that generally the newer LiDAR data sets (2017-18 and 2021) are slightly higher than the previous data set (2007-08) but that overall the change is not completely consistent. The figures also suggest little difference between the 2017-18 and 2021 LiDAR datasets and supports use of the 2017-18 LiDAR to inform any updated stormwater overland flow mapping because it is considered to be the best available vertical imaging data based on its accuracy.

- Engeny's data validation has confirmed a significant difference at the site from validating the 2017 lidar with the 2021 Lidar data.
- **The model has used 2017 data and hence if the 2021 data was used, the site would not be prone to the inundation as indicated in the new SBO mapping.**
- Site Images below for clarification

October 2009-October 2017

November 2017

March 2024

[redacted]

Based on the above, we request that the SBO2 not be applied to [redacted].

Should you have any queries, please do not hesitate to contact me.

Kind regards,

[redacted]

[redacted]

[redacted]

From: [redacted]
Sent: Wednesday, 12 June 2024 6:59 PM
To: Info@Merri-bek

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: [redacted]

My property is identified as prone to stormwater overland flows in a local catchment and I object and have my property removed from the stormwater overland as it only covers 5% of my property.

Kind Regards [redacted] address: [redacted] mobile [redacted]
I want this address removed from the overlay please.