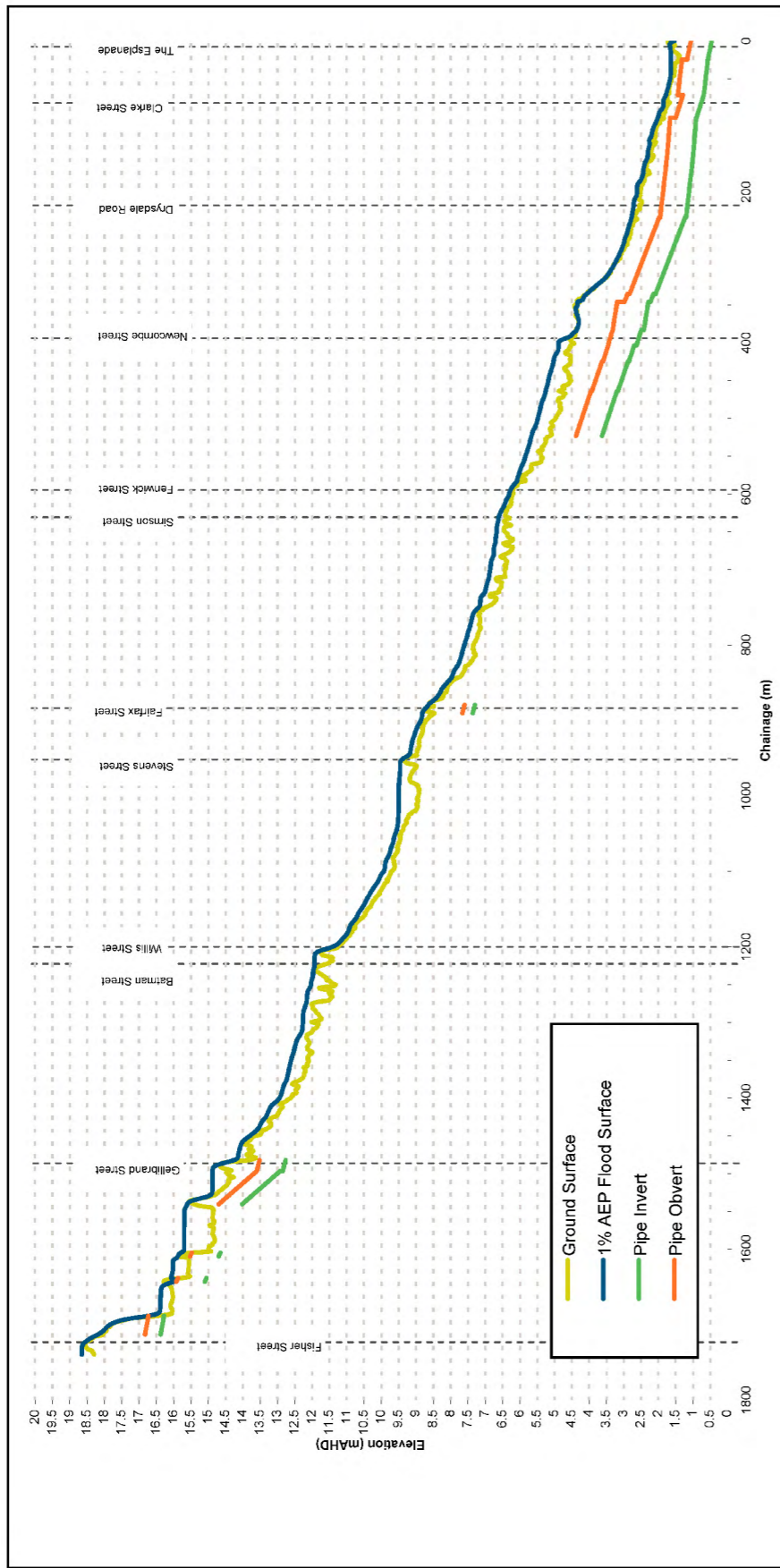

APPENDIX A: LONGITUDINAL PROFILE PLOTS



CHAINAGE (m)	GROUND SURFACE (m) AHD	FLOOD SURFACE (m) AHD
0.00	1.67	1.60
100.00	2.00	1.87
200.00	2.62	2.51
300.00	3.32	3.30
400.00	4.44	4.89
500.00	5.48	4.98
600.00	6.31	6.20
700.00	6.96	6.43
800.00	7.60	7.35
900.00	8.86	8.73
1000.00	9.50	8.94
1100.00	9.94	9.72
1200.00	11.45	11.25
1300.00	12.27	11.91
1400.00	12.94	12.60
1500.00	14.88	14.46
1600.00	15.70	14.99
1700.00	17.81	17.78
1740.00	18.65	18.30
1800.00		



Title:
1% AEP Flood Surface Longitudinal Profile
Portarlington/Queenscliff Road to Mercer Street Outfall

BMT WBM endeavours to ensure that the information provided in this map is correct at the time of publication. BMT WBM does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.

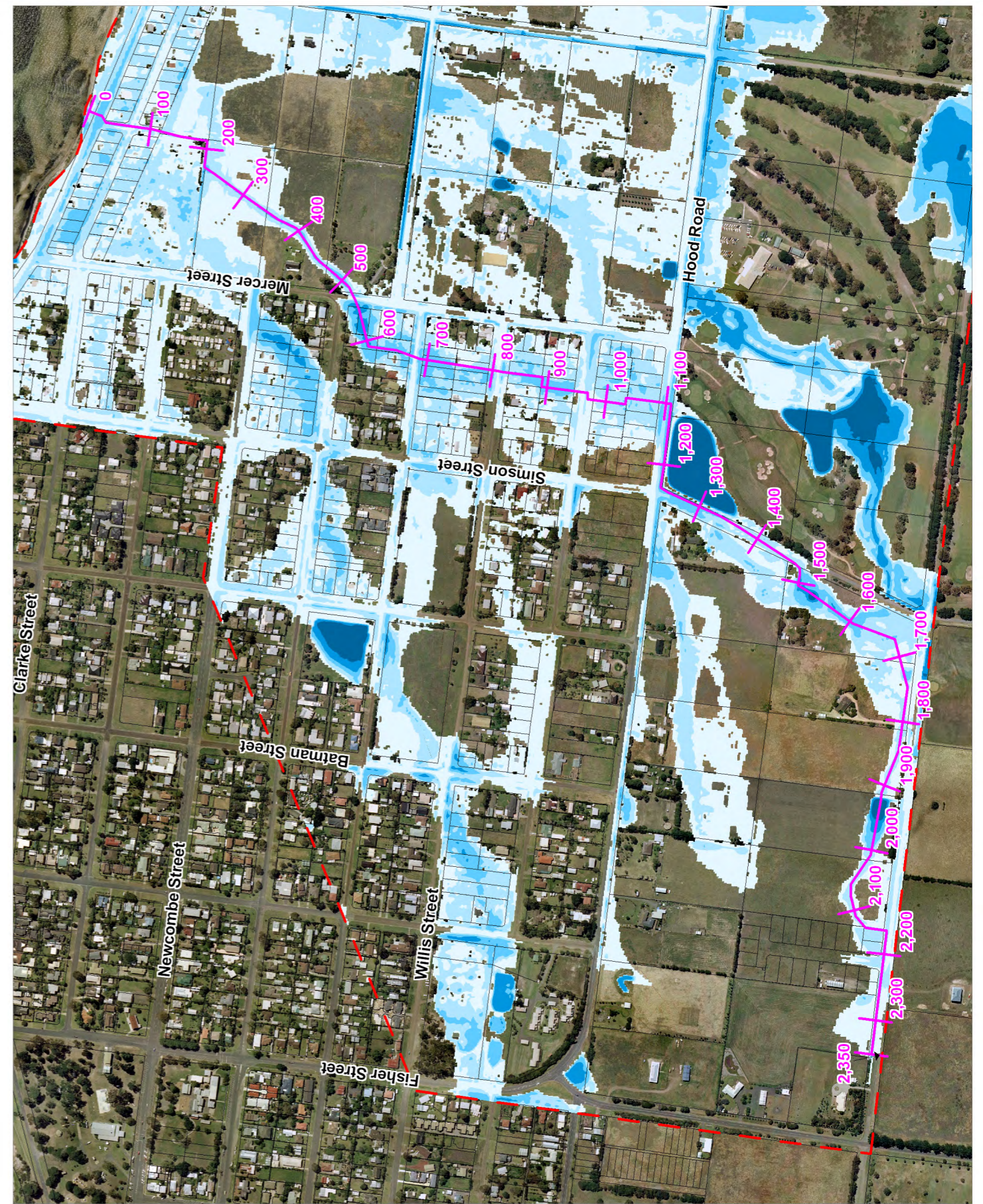
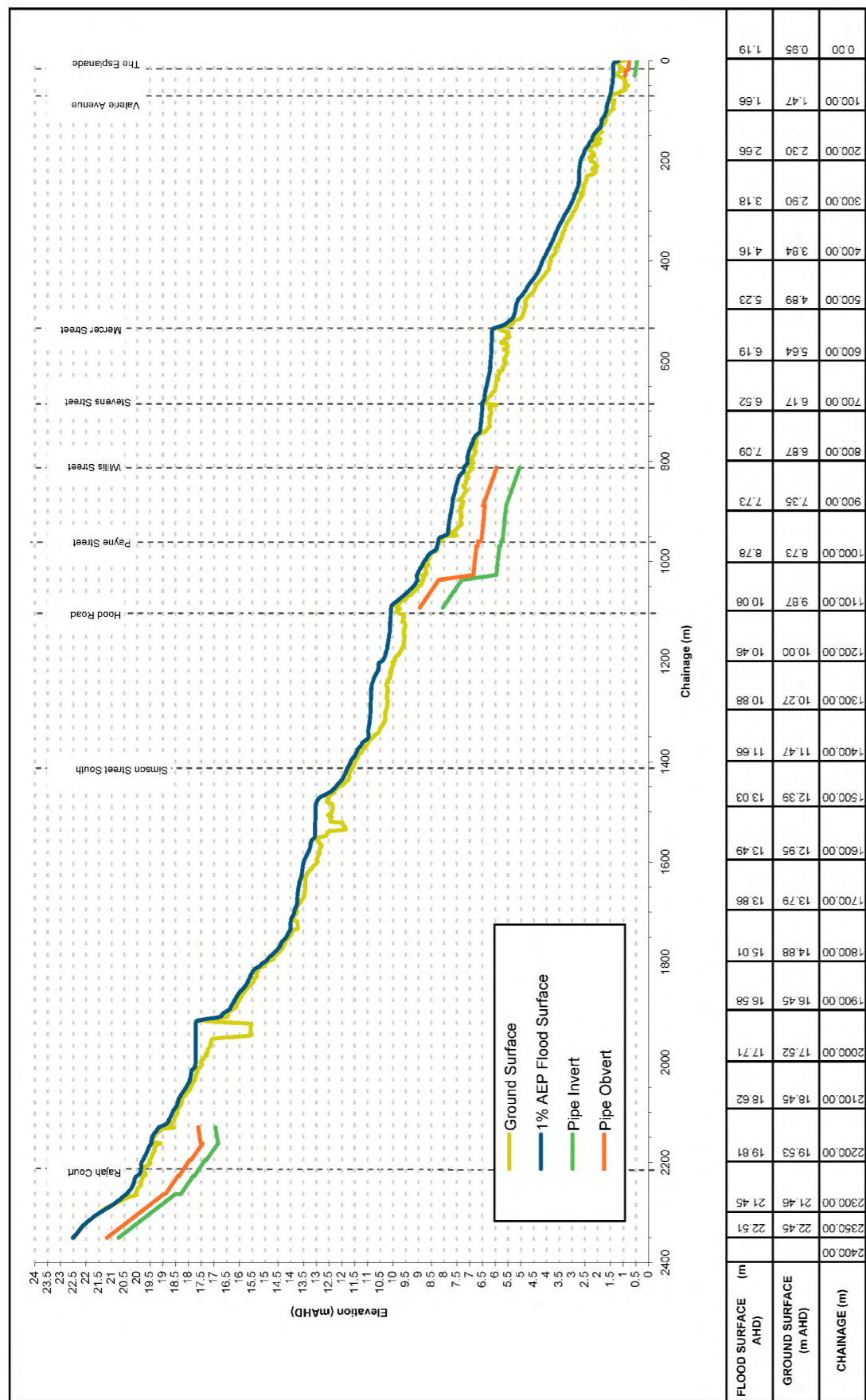


Figure:
A-1

Rev:
A



Filepath : T:\M7373.MT.PortArlingtonFS\Mapinfo\Drawings\FinalReport\ApenA_Fig1_LS_001_RevA_WOR



Title:
**1% AEP Existing Conditions Flood Surface Longitudinal Profile
 Tower Road to The Esplanade**

Figure:
A-2
 Rev:
A

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Filepath : T:\M7373.MT.PortArlingtonFS\Mapinfo\Drawings\FinalReport\ApenA_Fig2_LS_002_RevA_WOR

APPENDIX B: TGM FIELD SURVEY

APPENDIX C: MELBOURNE WATER RATES

2007 Melbourne Water Greenfield Stormwater Pipe Rates

Nominal pipeline diameter (mm)	Category 1	Category 2	Category 3	Category 4
	Rate for Interlocking / Flush Jointed pipes with 20% FCR backfill (\$/m)	Rate for Rubber Ring Jointed pipes with 20% FCR backfill (\$/m)	Rate for Interlocking / Flush Jointed pipes with 100% FCR backfill (\$/m)	Rate for Rubber Ring Jointed pipes with 100% FCR backfill (\$/m)
300	108	124	129	148
375	134	166	156	194
450	152	189	188	234
525	174	216	218	271
600	195	243	249	310
675	215	267	276	343
750	239	297	309	384
825	265	355	343	459
900	293	395	378	509
1050	365	489	460	617
1200	446	599	570	766
1350	544	729	696	933
1500	655	879	841	1,128
1650	788	1,057	1,013	1,359
1800	954	1,280	1,244	1,670
1950	1,189	1,602	1,538	2,072
2100	1,502	1,931	1,901	2,444
2250	1,942	2,610	2,452	3,295
2400	2,396	3,211	3,061	4,102

APPENDIX D: PUBLIC SUBMISSIONS AND RESPONSES

The key issues of concern raised by owners of affected properties, community organizations or authorities during the consultation process are listed below with the relevant responses:

- 1. I live near the foreshore, at the bottom of the Portarlington East catchments, and believe flooding due to coastal inundation constitutes a greater risk than the stormwater or drainage - related flooding studied in the Portarlington East Drainage/Flood Study.**

Response:

The City is awaiting the results of the study being undertaken by the CSIRO for the State Government under the Future Coasts Project. This study will include projections of the effects of storm surges and sea level rise on Victoria's coast.

The scope of the Portarlington East Drainage/Flood Study does not include flooding due solely to storm surges or climate change.

- 2. I pay my rates and expect to have a flood-free property in return.**

Response:

The flooding problem within the Portarlington East catchments is reflective of the long history of subdivision and development within the catchments, where in general, much lower town planning and infrastructure provision standards were applicable at that time. Community expectations were also lower at that time, with most dwellings constructed with elevated floors (i.e. minimal flood damage was likely).

Any proposal to now provide all private properties with immunity from the 1 in 100 year flood event would have an exorbitant cost and may also not be technically feasible given the significant constraints related to working within built-up areas and low-lying areas close to the Bay.

Given all the circumstances, the preferred mitigation scheme (Scheme 1) is considered to be a reasonable and responsible approach to flood management within the Portarlington East catchments.

The City has an ongoing program of drainage/flood studies that identifies feasible flood mitigation measures to be prioritised within the City's ongoing capital works program. This process is consistent with best practice for flood management within Victoria and Australia.

- 3. I believe the flooding along the low-lying section of The Esplanade (east of Mercer St) is due to sand build-up at the outfalls and the City needs to undertake more frequent maintenance of these outfalls.**

Response:

The existing outfalls at Portarlington have a limited hydraulic capacity (minor storm events), even when clear of sand, reflecting the design standard applicable at the time of design and construction and the low-lying nature of this section of The Esplanade. With the critical 1 in 100 year storm event, the exceedance flows would overtop The Esplanade and pass overland to the Bay, as shown in the flood mapping from the Study.

Keeping the existing outfalls clear at all times, to convey flows from minor storm events, is a major challenge for the City. Further investigation is to be undertaken into how the functionality of these outfalls can be improved.

- 4. How can my property be considered subject to flooding when it has never flooded (eg February 2005 storm event)?**

Response:

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 mapping of the 1 in 100 year overland flows.

The February 2005 storm event was not a critical or major storm event for drainage systems at Portarlington, being a long duration and low intensity storm. Critical storms that generate peak flooding at Portarlington are shorter duration with higher intensities.

There is no evidence that the 1 in 100 year or 100 year Average Recurrence Interval (ARI) flood event for the Portarlington East catchments has occurred within living memory. When reliable rainfall figures have been available, proper analysis has indicated that actual storms were less than the critical event for 1 in 100 year flooding within the catchments.

It should also be borne in mind that the modelling within the Study is based on the catchments being fully developed, as allowed by current land use zones. The relevant catchments currently has a significant number of residential lots that are undeveloped or only partially developed. The volume of stormwater runoff increases as the area of development increases. Hence the flooding that has been experienced to-date does not represent the eventual situation with a more developed catchment.

5. The 1 in 100 year flood extent only encroaches onto a small part of my property. Can't the proposed designation be cancelled?

Response:

It is normal practice to designate properties that have any encroachment of the 1 in 100 year flood extent across a property line. This helps to prevent builders excavating the site and constructing relatively low slab-on-ground floors that would become vulnerable to flooding. This is consistent with the Victoria Flood Management Strategy that seeks to minimise flood damage.

6. Can't a stormwater harvesting system be designed to capture runoff and make properties flood-free?

Response:

Stormwater harvesting is normally based on capturing runoff from very minor or very frequent rainfall events that generally don't cause flooding. The volume of runoff generated by less frequent storm events that cause flooding is huge and a normal harvesting system would have little or no positive impact.

It should be noted that the Portarlington Golf Club, which is within the Study area, has significant stormwater harvesting infrastructure in place. The Club is currently investigating opportunities to expand their stormwater harvesting operation.

7. How will the preferred mitigation scheme reduce flooding?

Response:

The preferred scheme (Scheme 1) includes the construction of levees, an increase in flood storage on public land and augmentation of underground drainage. Overland flows would be diverted by the levees and reduced downstream of the storages and pipe augmentation. Hence flooding of properties would be mitigated.

8. I have contributed to a previous main drainage scheme undertaken by the previous Bellarine Rural City Council. Haven't these works removed the flooding problem?

Response:

At best, the main drainage scheme undertaken by the Bellarine Rural City Council in the 1980's would have a 1 in 10 year design storm capacity; however this underground drainage would be constrained

by the lesser capacity within the pre-existing downstream drainage (discharging to the Bay). With the critical 1 in 100 year storm event, the exceedance flows would cause flooding of roads and properties.

9. Will the construction of the proposed works impact my property?

Response:

The major works within the preferred scheme (Scheme 1) are located on public land except for the proposed levee south of Seaforth Dr and Sunset Blvd. An easement for the levee would need to be acquired from the owners of the relevant rural properties.

10. There are a significant number of unmade streets near my property. Will the construction of these streets help mitigate flooding?

Response:

The design and construction of the unmade streets will most likely reduce flooding of properties as there will be design objectives to provide street drainage and to convey more of the overland flows along road reserves. The construction of these streets is normally funded by means of a Special Charges scheme.

11. When will construction of proposed mitigation works commence?

Response:

The proposed implementation schedule in the Study's Final Report indicates construction of major works commencing in Year 2. This is subject to the allocation of funds by Council.

The proposed schedule reflects the typical timeframe required for such a costly and complex flood mitigation project, which includes consultation with various parties and approval from other authorities.

The City has a significant number of major drainage works projects listed on its capital works program and awaiting funding. These projects are prioritised mainly according to frequency and severity of flooding and maximum community benefit.

12. Will I be required to contribute to the cost of the proposed mitigation works?

Response:

A definitive answer can not be provided at this point in time, but in recent years the Council has fully funded major drainage works. The final decision would need to be made by Council, based on advice from council officers.

The City's current policy on infrastructure funding allows for contributions from benefiting property owners towards the cost of providing "backlog" drainage infrastructure, which is the situation within Portarlington. Special Charges schemes under the Local Government Act 1989, which are based on the principle of "special benefit", are normally used to levy these contributions.

The use of Special Charge schemes for easement drainage is well established, however there is some uncertainty regarding schemes for main drainage in areas where properties have "lawful points of discharge". The Final Report of the Study recommends the City seek independent legal advice on main drainage schemes.

13. I believe the proposed mitigation works should be funded totally by Council, rather than using a Special Charge scheme, as there is a wider community benefit.

Response:

Comment noted. The City's current policy on infrastructure funding allows for contributions from benefiting property owners towards the cost of providing "backlog" drainage infrastructure, which is the

situation within Portarlington. However in recent years the Council has fully funded major drainage works.

The final decision would need to be made by Council, based on advice from council officers. The Final Report of the Study recommends the City seek independent legal advice on main drainage schemes.

14. Is the information being gathered by Council going to affect property values or saleability?

Response:

It is important to note that designation of an area as liable to flooding does not cause or change the likelihood of flooding, but recognises the existing condition of land.

The designation will not be described on title, but will be disclosed in Land Information Certificates issued under the Local Government Regulations, and for building permits under the Building Regulations.

The value of any property is determined by the complex interplay of many different factors such as demand/supply, location, streetscape and amenity, and it is difficult to assign what effect if any, the identification of land as liable to flooding may have on the value of a property. Devaluation of properties (identified as being liable to flooding) is considered unlikely at Portarlington once the flood management strategy is explained and the limited lot supply situation in Portarlington (close to foreshore) is taken into account.

15. I object to the flood status of my property being disclosed on a Land Information Certificate

Response:

The City is obligated under State Government legislation to disclose the flood status of a property that is considered to be liable to flooding as defined in the Building Regulations 2006.

16. Will the designation affect my house insurance?

Response:

The Insurance Council of Australia has advised Melbourne Water that most insurance policies, which provide coverage for storm damage, include cover for damages resulting from overland flows. The preferred mitigation strategy includes further investigation into feasibility of property specific measures to manage risk from residual flooding, as well as an education and awareness program.

17. Do I need to advise my insurer that my property is considered to be liable to flooding?

Response:

It would be advisable to contact one's insurance company if disclosure of such information is a condition of the relevant insurance policy. For the vast majority of affected properties within the Portarlington East catchments, the flooding is shallow, very infrequent and external to dwellings. The potential for flood damage in such cases is very small.

18. Will the flooding information and planning scheme overlay controls stop redevelopment of my property?

Response:

Generally not. The information will only be used to ensure that any future development of your property is carried out in a manner that recognises the location of areas that may be subject to flooding. Requirements for any proposed development will depend upon the flooding characteristics of the land such as depth and velocity, and the nature of the development proposed. Both Corangamite Catchment Management Authority and Council officers can provide preliminary advice on any likely requirements that will need to be met.

It should be noted that development controls, apart from minimum floor levels, are only applicable in a statutory context once the flood overlay is created within the planning scheme. The overlay creation requires a planning scheme amendment where again submissions from the public are invited.

19. Why was designation or a flood overlay not applicable to my property prior to purchase?

Response:

The City's knowledge of actual flooding within the Portarlington East catchments has tended to be anecdotal in nature and therefore it was not suitable for designation of the 1 in 100 year flood extent, as required under State Government legislation. Reliable and credible flood data relating to the 1 in 100 year flood event is needed and this data can only be derived from a detailed flood study such as the Portarlington East Drainage/Flood Study.

The proposed flood overlay on the Planning Scheme is a future planning scheme amendment, as recommended in the Study. The planning scheme amendment generally follows designation by Council under the Building Regulations 2006.

20. I have received a letter from the City advising that my property has been identified in the Study as being liable to flooding. When will this flood status begin to be disclosed on a Land Information Certificate?

Response:

Once Council has designated a property as being liable to flooding, under the Building Regulations, the flood status needs to be disclosed on a Land Information Certificate.

21. Why was the recent subdivision of the block bounded by Simson St, Payne St, Mercer St and Hood Rd approved before the findings of the Study were known?

Response:

This subdivision was completed in about 2004 and the Study was commenced in 2008. The City does not have the statutory authority to refuse a planning permit application for residentially zoned land based on the need for a drainage/flood study. The subdivision application was assessed using the best available information at that time.

The preferred scheme (Scheme 1) includes the augmentation of underground drainage near this subdivision and hence flooding of properties should be mitigated by these works.

22. Shouldn't further development be stopped in the Portarlington East catchments if drainage infrastructure is inadequate?

Response:

Rezoning of further residential land is unlikely without a satisfactory flood impact assessment based on principle of zero net adverse flood impact. The Final Report of the Study recommends improvements to the drainage system with development controls and assessment of development and subdivision applications to include application of best practice guidelines for development within or upstream of flood-prone areas. These development controls would relate mainly to developments requiring planning permits, and on-site detention storage would be one of the controls to be considered.

23. What is the proposed timing of designation and creation of the flood overlay within the Planning Scheme?

Response:

Designation by Council under the Building Regulations is sought at the Council meeting at which the Final Report of the Study is presented to Council. This normally occurs a month or two after the

finalisation of the Final Report. The planning scheme amendment to create the relevant flood overlay normally occurs one or two years after the designation by Council.

- 24. I plan to build on my land and have received a letter from the City advising that my property has been identified in the Study as being liable to flooding. What restrictions are or will be in place from this point in time?**

Response:

Until designation by Council under the Building Regulations, the City and CCMA are unable to legally enforce minimum floor levels, but owners/builders are advised that it is in their best interests to avoid low floor heights. After designation, a minimum floor level is required as part of a building permit.

Once the Special Building Overlay (SBO) is in place within the Planning Scheme, a planning permit application is normally required and applications need to be assessed in accordance with the provisions of the SBO.

- 25. Once the planned drainage works are completed will Council remove the Special Building Overlay?**

Response:

Once the 1 in 100 year flood extent is reduced as a result of structural flood mitigation works, the SBO extent is revised accordingly through a planning scheme amendment.



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