Melbourne Water
Enhancing Life and Liveability

15 May 2018

Planning Panels Victoria
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To whom it may concern,

Melbourne Water Response: Expert Witness Statement Ramboll (Tom Patterson)

Thank you for the opportunity to review the Expert Witness Statement from Ramboll (Tom Patterson) dated March 7th 2018, provided in support of the City of Port Phillip and City of Melbourne submissions on the Draft Framework at Fishermans Bend.

Melbourne Water is committed to enhancing life and liveability and supports the use of integrated water management to improve urban design. The draft vision for Fishermans Bend is inspiring - a thriving place that is a leading example for environmental sustainability, liveability, connectivity, diversity and innovation.

A water sensitive city requires a whole range of water management arrangements to ensure liveability and resilience; the current drainage base case plan for Fishermans Bend incorporates many of these – including rainwater tanks, building and planning controls, and new and upgraded infrastructure. We welcome the opportunity to develop an even broader and effective integrated flood strategy for Fishermans Bend, developed in partnership with the City of Melbourne, City of Port Phillip and the relevant State Government departments and agencies, cognisant of the inspiring vision for Fishermans Bend.

A number of comments and numerous factual corrections to the Ramboll evidence are provided in Attachment 1.

Yours sincerely

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Attachment 1: Specific commentary

Melbourne Water offers the following specific comments on the report:

- Section 4.2 (42) – please note additionally that the Victorian Floodplain Management Strategy[1] (Victorian Government 2016, p39) identifies the 1% AEP event as the "design flood event to regulate new development and construction standards in Victoria".
- Section 4.2 (43) – the adopted 1% AEP flood level for Port Phillip for the year 2100 is 2.4 metres AHD, leading to tidal flooding of parts of the Fishermans Bend development area.
- Section 4.2 (44) – Melbourne Water requires residential building floor levels at least 0.6 metres above the year 2100 1% flood in areas prone to tidal inundation and requires building floor levels at least 0.3 m above the year 2100 1% overland flow path flood level. Concessions may be considered for the required freeboard for retail floor areas in areas with very low street levels but alternative flood protection works are also likely to be required.
- Section 4.2 (45) – Melbourne Water will require residential minimum floor levels to be set at 3.0 metres AHD.
- Section 4.2 (46) – There are some parts of Fishermans Bend that will be impacted by the year 2100 1% tidal level or local catchment flooding. The lowest lying areas within Fishermans Bend have road levels between 1.0 and 1.6 mAHD. In these areas retail floors will need to be 0.8-1.4 metres above the road, residential floors will need to be from 1.4-2.0 metres above the road. This occupies around 4.5% of the development area (21 hectares), or 14.5% of road length (4.8km). For the remaining flooded area, required floor levels are considered to be manageable, with many already developed.
- Section 5 (55) – flooding from the Yarra River and Port Phillip Bay is tidal/fluvial flooding.
- Section 5 (60) – Melbourne Water's base-case drainage plan (GHD, 2017) is designed to provide acceptable protection against pluvial and fluvial flooding, consistent with requirements in Melbourne Water's Guidelines for Development in Flood Prone Areas[2]. Floor levels (provision of appropriate freeboard above the design flood level) is part of an overall solution which primarily comprises a drainage system upgrade (pipes and pumps) for pluvial flooding and levee for tidal/fluvial flooding protection. Melbourne Water agrees that there will be residual flood risk at the site if managing flooding is through increasing floor levels in buildings alone. This is particularly true for roads within the proposed development area.
- Section 5 (67) – Historically, Melbourne Water has not supported reliance on mechanical mechanisms (e.g. pumps) or other engineered solutions (e.g. flood gates, retaining walls, levees) to achieve appropriate levels of protection for habitable areas because of failure risk. Levees are generally long linear structures that can be considered like a chain: only as strong as the weakest link. Despite best design and construction methods there remains a risk of irregularity or future impacts which can lead to failure of the levee. These include overflow and overtopping, foundation instability (sliding, shearing, slumping or spreading), erosion, settlement, structural failure or failure of any associated gates or mechanisms. Furthermore, levees may stand for a long period of time without being loaded to their design capacity and tested – they may fail when they are needed most.
- Section 5 (68) – Ramboll's solution uses roads (Blue Laneways, Green Streets, Cloudburst Boulevards) to convey water, in contrast to the 'base case' solution GHD (2017) which relies on traditional buried pipe infrastructure and pumps. Within Ramboll's solution roads are required to convey water to a greater extent in order to provide the overall detention requirement, thereby increasing risk within roads.

[1] https://www.water.vic.gov.au/managing-floodplains/new-victorian-floodplain-management-strategy
[2] https://www.melbournewater.com.au/sites/default/files/Flood-prone-area-development-guidelines.pdf

- Section 5 (82) – GHD (2017) does not propose the use of concrete lined channels for flood management.
- Section 5.1 (94) – Melbourne Water is working with City of Port Phillip, City of Melbourne, Ramboll and GHD to incorporate Ramboll's "conceptual plan" into GHD's flood model for the site. Melbourne Water supports both Councils in aspiring for the use of designated flood areas for "parks or other public open spaces during times of no flood" which will provide much needed community space at Fishermans Bend. Work is commencing to understand the feasibility of this proposal, including the requirement for space in roads and should also include a comparison of construction and ongoing maintenance costs, maintenance requirements and potential impact on other services.
- Section 5.2 (97) – Some cities and regional areas use levees for flood mitigation without also raising floor levels and therefore accept a higher level of risk (e.g. New York, Copenhagen, Rotterdam, and Launceston). Typically these areas were developed historically or on reclaimed land and the flood risk was managed subsequently by use of levees, therefore reducing overall flood risk in that situation.
- Section 5.3 (99) – The "risk management methodology" described in Ramboll's report (Ramboll, 2018) describes the framework for management of existing flood and infrastructure risk in the Netherlands. It is similar to the ANCOLD framework (Guidelines on Risk Assessment (2003), Guidelines on the Consequence Categories for Dams (ANCOLD, 2012) and Guidelines on Dam Safety Management (ANCOLD, 2003)) used by Melbourne Water for management risk from dams and retarding basins. The level of risk associated with a levee system is based on the associated consequences of failure: the potential for loss of human life and property damage. Melbourne Water broadly agrees with the methodology proposed, however the approach of substituting usual freeboard requirements in favour of levee protection comes with an increased level of risk that has not been tested with the community.
- Section 6 (102) – Ramboll (2018) provides a reference to a framework for managing risk associated with the proposed levee. Melbourne Water does not agree that the information provided in the report provides direction on managing the residual risk associated with the levee. Given the consequences of failure Melbourne Water does not agree that setting floor levels to allow an appropriate freeboard (0.3 or 0.6m) from pluvial or fluvial 1:100 flood levels provides "only a marginal additional protection against flooding".
- Section 6 (102) –GHD's (2017) report for Melbourne Water does not propose raised floor levels only as an option for Fishermans Bend. Community road safety and site safety are also important considerations and only setting floor levels would not achieve safety requirements. Melbourne Water manages development in flood prone areas in a similar manner throughout the metropolitan area.
- Section 6 (103-117) – Out of the three options included in the comparison, none represent the Melbourne Water base-case drainage plan (GHD 2017).