1 August 2019

Chris Wiseman
Clayton Utz
Melbourne

Dear Chris,

**Expert Conclave Report – Surface Water**

As requested, I chaired the surface water expert conclave in accordance with the IAC directions.

A duly reviewed and signed copy of our conclave report is attached.

Please note that this is a revised version with the following changes made:

- **EPR SW6**
  – removed the words “The project should seek to ameliorate existing flood risks where possible.” from the first paragraph as agreed by all experts.

- **Sign off of report by Observers**
  – Melbourne Water observers have not responded to emails or phone calls re signatures.

Yours sincerely

David Fuller
Principal Water Management and Technology
0438 559 763
david.fuller@entura.com.au

Scott Dunn
Warwick Bishop
Gavin Hay
Statement of outcomes of the expert meeting - Surface Water

Topic: Surface Water

Attendees:

Experts:
- David Fuller (Entura - Chair),
- Warwick Bishop (Water Technology),
- Scott Dunn (Engeny),
- Gavin Hay (GHD)

Observers:
- Stephen Woods (Melbourne Water),
- Kieran Moran (Melbourne Water),
- Simon Sharp (Vic EPA)

Assistants:
- Niels Unger (Water Technology) supporting Warwick Bishop,
- Dinela Samarasekara (Entura - note taker)

IAC Technical Advisor:
N/A

Date, time and location of meeting:
25 July 2019
Level 25, 500 Collins Street, Melbourne (Entura Offices)
0900 - 1500

Key Issues

1. The following key issues were identified by the participating experts at the meeting:
   (a) Water quality monitoring
   (b) Surface Water Management Plan
   (c) Minimise risk from changes to flood levels, flows and velocities
   (d) Minimise impacts from waterway modifications
   (e) Maintain bank stability
   (f) Adopt Water Sensitive Urban and Road Design
   (g) Minimise impacts on irrigation of sporting fields or other land uses
   (h) Meet existing water quality treatment performance

2. The conclave also discussed and agreed there were a number of issues that we believe the IAC should consider. These issues typically require whole-of-project consideration and might
require the adjustment to recommended EPRs, the creation of new EPRs, or directions from the IAC regarding the delivery of the project.

(a) Changes in Guidelines: The conclave members are aware of a number of guidelines that are in draft form or may emerge during the Project. We believe this issue is one that applies not only to Surface Water but also to other subject areas. Consequently we believe that the IAC should consider a requirement that allows for the use of the latest guidelines in consultation with the relevant regulatory authority.

(b) Asset design, maintenance, and transfer: The maintenance of assets such as WSUD elements is important to ensure that the infrastructure developed under the Project continues to perform according to its design objectives. The experts cited a number of examples where assets provided by major projects are not being maintained and are likely to be under-performing. The regulation of these existing assets is unclear. We also discussed and agreed that a number of local councils have preferences for different types of WSUD assets and may be unwilling to take on the responsibility for certain asset types. The proposed ownership and transfer of WSUD assets is unclear to the Conclave and may very well vary across the project. This may very well be the case for non-WSUD assets. Consequently we suggest that the IAC should consider a requirement for the involvement of the ultimate asset owners in the design process with the aim of reaching agreement on the transfer and maintenance of assets in the longer term. Resolution of this matter may in our opinion affect the wording of EPR SW4.

(c) Monitoring and review of assets: The conclave is unclear on the intended arrangements for on-going monitoring and review of Project performance during operations. This is an important issue that we believe should be addressed to ensure assets are maintained and perform in accordance with design objectives. We recommend that the IAC consider the arrangements for monitoring and review of WSUD assets and other relevant assets associated with the Project.

(d) Integrated Water Resource Management: The conclave recognises that WSUD is a key component of Integrated Water Resource Management. However, WSUD is largely focussed on the management and treatment of flows and water quality. Amenity and environmental values are considered as part of WSUD, but are less prominent and may be lost during engineering design stages without a broader requirement for integration with Urban Design Strategy and other policies and requirements. We believe integrated water management is an important component of the North East Link Project, not least because of its large scale and high prominence in and around the Yarra River floodplain and tributary streams. We agreed that it is difficult to address this issue from the point of view of surface water considerations only, but recommend that the IAC give due consideration of the need for an integrated plan for the Project that addresses social, environmental and performance needs; and the appropriate means of implementing such a plan.

Facts and opinions agreed and not agreed

3. Please refer to the conclave discussion of proposed changes to EPRs in the attached table. All facts and opinions on the matters in paras 1 and 2 were agreed with the following exceptions:
### Statement of outcomes of the expert meeting - Surface Water

<table>
<thead>
<tr>
<th>Issue</th>
<th>Agreement / Disagreement</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW11 Adopt Water Sensitive Urban and Road Design</td>
<td>Disagreement (from Scott Dunn)</td>
<td>The current wording does not include “encourage improved outcomes relative to existing conditions as noted in our conclave” discussion notes. I suggest this is included in the wording as it aligns with the Sustainability Policy of the project which includes the following statement “Seek opportunities to improve stormwater quality and contribute to improvements in waterway environments.” I can foresee some issues with this EPR in that different references require different levels of treatment and which one takes precedence. For example the Urban Design Strategy states the following with respect to element based requirements and qualitative benchmarks, “The project maintains or improves the river health of the waterways that it crosses” whilst compliance with BPEMG does not ensure that existing conditions water quality is maintained. Due to the lack of summary with respect to the water quality mitigation assessment in the EES I am not confident that meeting BPEMG targets will result in pollutant loads generated from the Project being lowered to existing or improved levels. Therefore I cannot agree that this EPR will achieve its intended objective.</td>
</tr>
</tbody>
</table>

4. In addition to the above, the conclave sought clarity on a range of matters that were raised by experts in their witness statements. This was solely for the purpose of ensuring common understanding amongst the experts and that the full range of topics relevant to the review of the EPRs were covered. This discussion led to the inclusion of the ANCOLD Guidelines in para 6.

5. Many of these discussions focussed on the identification and mitigation of hydraulic and water quality impacts. Concerns regarding the level of detail presented in the EES and supporting documents was flagged by David Fuller and by Warwick Bishop and Scott Dunn (as raised in their expert witness reports). At this point it was agreed by the experts that an analysis and discussion of these surface water issues on a site-by-site basis would be a significant undertaking and unlikely to lead to further agreement among the experts.
Statement of outcomes of the expert meeting - Surface Water

Relevant standards or criteria

6. The conclave identified the following additional technical standards or criteria that EPR SW6 should be assessed against by the IAC:

<table>
<thead>
<tr>
<th>Issue</th>
<th>Relevant standard or criteria</th>
<th>Agreement / Disagreement</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW6 Minimise risk from changes to flood levels, flows and velocities</td>
<td>ANCOLD Guidelines on Dam Safety Management (2003), ANCOLD Guidelines on the Consequence Categories for Dams (2012) and any emerging ANCOLD guidelines on retarding basins</td>
<td>Agreed</td>
<td>N/A</td>
</tr>
</tbody>
</table>

EPRs and other approval documentation

7. Please refer to the attached table for proposed changes to EPRs.

Signatures:

8. This is a true record of the surface water conclave meeting and additional discussions between the experts on the detail of EPRS:

Experts:

David Fuller  Scott Dunn  Warwick Bishop  Gavin Hay

9. This is a true record of the discussions at surface water conclave meeting and the majority of the proposed changes to the EPRS. It is noted that the experts have engaged separately in discussion of the exact wording in the EPRs and this is a matter outside the standing of the observers:

Observers:

By email response    No response    No response

Stephen Woods    Kieran Moran    Simon Sharp
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<table>
<thead>
<tr>
<th>EES EPR</th>
<th>Conclave Discussion</th>
<th>Recommended EPR</th>
<th>Design</th>
<th>Construct</th>
<th>Operation</th>
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</thead>
<tbody>
<tr>
<td>SW1</td>
<td>Agreed without further discussion.</td>
<td>N/A</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>SW2</td>
<td>Agreed without further discussion.</td>
<td>N/A</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>SW3</td>
<td>Agreed without further discussion.</td>
<td>N/A</td>
<td></td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>EES EPR</td>
<td>Conclave Discussion</td>
<td>Recommended EPR</td>
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<tr>
<td>SW4</td>
<td>BEPM are changing would need to be captured in the EPR</td>
<td>Develop and implement a surface water monitoring program prior to commencement of, and during construction, and for at least three years after commencement of North East Link operation to assess surface water quality a suitable distance upstream and downstream of works to establish baseline conditions and enable assessment of construction impacts on receiving waters and confirm the effectiveness of environmental controls. This monitoring program must be developed in consultation with and to the reasonable satisfaction of EPA Victoria and the asset owner/manager and as appropriate with reference to applicable policies and guidelines, including SEPP (Waters), Best Practice Environmental Guidelines for Urban Stormwater, EPA Victoria Publication 596 Point source discharges to streams: protocol for in-stream monitoring and assessment and Industrial Waste Resource Guideline 701 Sampling and analysis of waters, wastewaters, soils and wastes. The surface water monitoring program is to be used to inform the development and refinement of the Surface Water Management Plan (EPR SW5).</td>
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Operations monitoring to ensure WSUD is achieving outcomes.
Baseline needed to understand the difference from current situation.
What is the baseline of existing treatment systems?
Potential use of baseline as a protection against pursuit of project for damage.
Develop a water monitoring plan from the outset with specific questions to be answered. Need experimental design.
Avoid over-reliance on spot sampling, aim for statistical power and evidence of elements working as expected.
Duration of sampling 5 years Mordialloc, etc. But duration etc is dependent on the mitigation measure (e.g. WSUD element).
Should establish a minimum duration of sampling (nominally 3 years for basic performance monitoring).
Separate designs are required for design (pre-development), construction and operation.

Design | Construct | Operation |
-------|-----------|-----------|
✓      | ✓         | ✓         |
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| SW5     | 347 Bunding guidelines superseded by 168 liquid and storage handling guidelines (more relevant to CL5) Agreed to changes proposed by EPA Victoria | **Implement a Surface Water Management Plan during construction**  
Develop and implement, in consultation with and to the requirements of EPA Victoria and relevant drainage authorities, a Surface Water Management Plan for construction that sets out requirements and methods for:  
• Best practice sediment and erosion control and monitoring, in general accordance with EPA Victoria publications 275 Construction techniques for sediment pollution control, 168 Liquid and Storage Handling Guidelines, 480 Best Practice Environmental Management Environmental Guidelines for Major Construction Sites, 960 Temporary Environmental Protection Measures for Subdivision Construction Sites, and Industrial Waste Resource Guideline 701 Sampling and analysis of waters, wastewaters, soils and wastes  
• Maintaining the key hydrologic and hydraulic functionality and reliability of existing flow paths, drainage lines and floodplain storage  
• Retain existing flow characteristics to maintain waterway stability downstream of construction  
• Location and bunding of any contaminated material (including tunnel spoil and stockpiled soil) to the 1% AEP flood level and to the requirements of EPA Victoria |
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<td>and the relevant drainage authority</td>
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<td>• Works scheduling to reduce flood related risks</td>
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<td>• Bunding of significant excavations including tunnel portals and interchanges to an appropriate level during the construction phase</td>
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<td>• Protecting against the risk of contaminated discharge to waterways when working in close proximity to potential pollutant sources (e.g. landfill or sewer infrastructure)</td>
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<td>• Documenting the existing condition of all drainage assets potentially affected by the works (including their immediate surrounds) to enable baseline conditions to be established and potential construction impacts on these assets to be assessed and managed</td>
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<tr>
<td>SW6</td>
<td></td>
<td><strong>Minimise risk from changes to flood levels, flows and velocities</strong></td>
<td>✓</td>
<td>✓</td>
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Permanent works and associated temporary construction works must not increase overall flood risk at relevant locations or modify the flow regime of waterways without the acceptance of the relevant drainage authority or asset owner (typically Melbourne Water) and in consultation with other relevant authorities (e.g. Council, VicRoads, Parks Victoria, SES, emergency services). Consultation with the drainage authority should identify and discuss the potential for
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<td>the project to assist in reducing existing flood risks. Flood risk should be appropriately assessed using modelling of the design of permanent and temporary works to demonstrate the resultant flood levels and risk profile. This modelling analysis is to include sufficient events (at least up to and including the 1% AEP event) and scenarios (e.g. with and without blockage) to support the estimation of tangible (e.g. average annual damages) and intangible flood damages. If significant increases in flood risk are predicted for any events analysed, an assessment of overall flood risk considering tangible and intangible flood damages must be prepared and presented with appropriate mitigation measures for the acceptance of the relevant drainage authority or asset owner prior to construction. The final models must represent the &quot;as constructed&quot; information and demonstrate that the design objectives are being met. If updated, the models and results of modelling must be resubmitted for the acceptance of the relevant drainage authority or asset owner prior to the acceptance of the works.</td>
<td></td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>SW7</td>
<td>Agreed without further discussion.</td>
<td>N/A</td>
<td></td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>SW8</td>
<td>Changes to the wording of the EPR are recommended:</td>
<td>Minimise impacts from waterway modifications</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
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<td>&quot;Reasonable&quot; is included simply to require a reasonableness test for an approval. There are strong linkages between this EPR with &quot;non-SW&quot; EPRs that reinforce the need for an integrated design and plan for the social and environmental impacts of this Project. &quot;Supports&quot; is recommended instead of &quot;maximises&quot; since the SW EPRs cannot determine the performance measures or targets for amenity, etc. This SW EPR will be influenced by requirements for the performance measures determined under ecological and other EPRs</td>
<td>Where waterway or flow regime modification is necessary, modifications will be designed and undertaken in a way that mitigates to the extent practicable the effects of changes to flow and minimises the potential for erosion, sediment plumes, impacts on bed or bank stability and exposure or mobilisation of contaminated material during construction and operation to the requirements of Melbourne Water or the relevant drainage authority. Waterway modifications are to be designed and undertaken in a way that supports the visual and aesthetic amenity and environmental conditions (including habitat, connectivity, refuge and hydraulic conditions) and the aquatic ecosystems of the waterways having regard to relevant strategies, policies and plans for that waterway and in consultation with and to the reasonable satisfaction of Melbourne Water or the relevant drainage authority.</td>
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<tr>
<td>SW9</td>
<td>Minimise risk from changes to flood levels, flows and velocities</td>
<td><strong>Maintain bank stability</strong> Develop and implement appropriate measures to minimise erosion and protect bank stability of waterways affected by construction or operation activities both directly or indirectly (for example as a result of site access), in consultation with and to the reasonable satisfaction of Melbourne Water or the relevant drainage authority.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>SW10</td>
<td>Agreed without further discussion.</td>
<td>relevant drainage authority</td>
</tr>
</tbody>
</table>
| SW11    | After considerable discussion it was generally agreed that the EPR should be amended as shown. Removal of CSIRO 1999 and/or other references to allow inclusion of new guideline editions...? The suggestion by MW to test against natural is not considered appropriate. How to embed opportunities into the EPR? The EPR should encourage improved outcomes. How does the EPR drive the adoption of new standards above those specified. What is the mechanism to involve stakeholders in refining/maximising impact benefit? Insert "consultation and reasonable satisfaction" with agencies again? to encourage improved outcomes Need to consider a new separate IWRM EPR. | **Adopt Water Sensitive Urban and Road Design**  
Adopt and implement water sensitive urban design and integrated water management principles in the stormwater treatment design, in general accordance with:  
- the Urban Design Strategy,  
- the specifications of the relevant local council as applicable,  
- VicRoads Integrated Water Management Guidelines (June 2013),  
- the Victorian Stormwater Committee’s Victoria Best Practice Environmental Management Guidelines for Urban Stormwater (as published by CSIRO in 1999 with assistance from EPA Victoria and others) and  
- the DELWP Integrated Water Management Framework for Victoria (September 2017) and,  
in consultation with, and to the reasonable satisfaction of, Melbourne Water and relevant drainage authorities. | ✓                                                                 |
| SW12    | Agreed to broaden out land uses, Need to include WQ test - agreed "Fit for purpose"                                                                                                                                                                                                      | **Minimise impacts on irrigation of sporting fields or other land uses**                                                                                                                                                                                                              | ✓ ✓ ✓ |
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<tbody>
<tr>
<td>WQ</td>
<td>Maintain existing storage and available water supply of a quality that is fit for purpose for the irrigation of sporting fields and other existing land uses impacted by the project as necessary in consultation with the impacted stakeholders.</td>
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<tr>
<td>SW13</td>
<td>There is further advice and guidance regarding climate change documented in ARR2019</td>
<td>N/A</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>SW14</td>
<td>Establishing baseline conditions is important in &quot;proving&quot; existing performance. This is important to consider existing treatment potential of the asset not current performance as the baseline. Interaction with ultimate asset owner is important as they may not be willing to take on certain types of assets. SW13 relates only to flood risk not performance on treatment systems - remove where practicable.</td>
<td>Meet existing water quality treatment performance Retain or replace existing water quality treatment assets to meet or exceed existing water quality treatment performance potential. In consultation with relevant drainage authorities, consider climate change effects and the potential for improved treatment outcomes where the opportunity exists.</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>