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SSI-10038

Jennie Yuan
Planner Officer
Transport Assessments
Planning and Assessment Group
Department of Planning, Industry and Environment
4 Parramatta Square, 12 Darcy Street
PARRAMATTA NSW 2250

Dear Ms Yuan,

State Significant Infrastructure proposal - Sydney Metro West (SSI-10038)

I refer to the request for Environment, Energy and Science Group (EES) advice on the Environmental Impact Statement (EIS) for the above.

EES has reviewed the biodiversity and floodplain risk assessment in the EIS and provides the following advice.

Biodiversity assessment

The Biodiversity Development Assessment Report (BDAR) adequately assesses the biodiversity impacts of the proposal in accordance with the *Biodiversity Conservation Act 2016* (BC Act) and Biodiversity Assessment Method (BAM) apart from the following matters:

- The services facility between Five Dock and The Bays stations has not been assessed as its location is currently being investigated. It is noted the locational and design criteria for determining the location of the services facility includes no removal of vegetation that constitutes a locally occurring Plant Community Type and no negative impacts to groundwater users, groundwater dependent surface flows or groundwater dependent ecosystems. Appendix H of the EIS advises that if vegetation clearing is required for the site potential impacts would include potential disturbance of native vegetation, habitat, species and ecosystems but these impacts are likely to be confined to a small isolated area and the biodiversity would be negligible. Despite this opinion, part 7 of the BC Act requires the biodiversity impacts of the services facility be assessed in accordance with Stages 1 and 2 of the BAM.
- The identification of measures to mitigate and manage the impacts of the proposal has been done in a general sense only, with reference being made to a Flora and Fauna Management Plan that has not yet been developed. In accordance with section 7.1.1.1 and Appendix 10 (Table 26) of the BAM, the BDAR should include a table of measures to be implemented before, during and after construction, to avoid and minimise the impacts of the proposal. This table should include actions, outcomes, timings and responsibilities.
- In relation to Plant Community Type (PCT) 849, the BDAR states *'plant roots will be in the silty clay soils separated from the zone of drawdown by the lower permeability shale layer'* (page 58, Table 4-6). However, given the structure and composition of this PCT, it is highly

likely that the roots of many trees and shrubs will extend beyond the soil profile and into the underlying geology.

- In relation to the proposed groundwater and soils and surface water mitigation measures (Table 10-1 of the BDAR), it is recommended the following amendments and/or additional measures be incorporated:
    - Mitigation Measure B2 - The incorporation of a vegetated riparian zone into the realigned sections of A'Becketts Creek and Duck Creek, and that this is addressed in the Flora and Fauna Management Plan which includes a planting schedule with representative species from PCT 920 (Mangrove Forests in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion).
    - Mitigation Measure B3 - The additional investigations and assessments be extended to cover all metro stations and tunnels. This approach will address current knowledge gaps, for example, for PCT 920 where *'reliance of this PCT on baseflow and therefore the extent of potential impact is unknown'* (page 59, Table 4-6, BDAR). This approach will also address uncertainty regarding the final tunnel alignment noting *'the level of characterisation of hydrogeological conditions and potential impacts are limited to the data available and the preliminary nature of the project design'* (page 39, Technical Paper 7: Hydrogeology). The hydrogeology report also identifies high priority groundwater dependent ecosystems in the vicinity of the construction site for the Sydney Olympic Park metro station (page 29, Technical Paper 7: Hydrogeology). This site is not listed as an applicable location for Mitigation Measure B3.

      The strategy for additional investigations and assessments should be documented and include relevant adaptive management strategy elements identified in section 9.3.1.2(d) of the BAM.

Floodplain risk assessment

The following comments on the floodplain risk assessment in Technical Paper 9: Hydrology and flooding (TP9) of the EIS are generally confined to the methodology. Much of the EES advice provided on TP9 at the consistency review stage in February 2020 remain relevant as it still lacks information on any flood assessment undertaken for the construction and operational phases to adequately identify the project impact on flooding and on adjacent areas, except for Clyde facilities. Adequate assessments should be undertaken and documented, in addition, proposed temporary or permanent mitigation works should be assessed considering their flood affectation on surrounding properties.

The proposed key design criteria and performance outcomes as outlined in Section 2.2 of TP9 are supported, from a floodplain risk management perspective, however, it is prudent to include a key point regarding stations and tunnels portal to be located outside the floodplain above the PMF level or to be protected from the PMF flood to ensure floodwater would not enter the tunnels for the full range of flooding. TP9 only mentions Rosehill tunnel portal but is still not clear about meeting this requirement for other stations.

Although, there is missing flood information in multiple sites including Silverwater, Sydney Olympic Park and Five Docks, TP9 discusses the potential impact of flooding on all the project sites in Section 4.1. Excluding Clyde site, it is not clear, how the consultants identified these impacts without undertaken a developed scenario modelling for sites with previous flood studies. It is also unclear how the consultants assessed the project impacts at sites with no flood information. For sites with no flood information such as Silverwater, Sydney Olympic Park and Five Docks, the consultants should undertake a preliminary flood study to identify whether this site is located within the floodplain to inform decisions about suitable key criteria for construction and operational stages.

In relation to specific site comments:

- It is acknowledged that the consultant developed hydrologic and hydraulic models at Clyde site, however, no calibration has been undertaken, rather, a depth validation exercise as outlined in section B3 of Appendix B. Although, the validation indicates major discrepancies against Council's previous adopted flood studies in the PMF, the consultants conclude the models' validity. It is recommended the models be reviewed.
- The maps outlined in Appendix B for existing condition also show significant discrepancies regarding the depth and extent of flooding comparing to Parramatta Council's most up-to-data flood data (i.e. Parramatta LGA Flood Study), particularly in the PMF. PMF level is critical as it is the planned level of protection at the construction site at the tunnel dive crest location. Therefore, an adequate assessment of flooding at this site is essential to meet planned protection and to ensure the impact of the proposed large scale of filling on flooding and on adjacent properties is adequately assessed and documented. Consultation with Parramatta Council is recommended regarding this matter. Figures B11 to B13 shows the impacts need to be reviewed and amended accordingly. It is also prudent that the consultants utilise this information to identify whether new properties would be within the extent of the PMF and/or whether additional properties would become affected by over floor flooding in floods larger than the 100 year ARI as a result of the project, to adequately undertake consultation with the affected landowners.
- Silverwater services facility construction site is impacted by Parramatta and Duck Rivers in addition to major overland flows. The presented maps in Appendix A are misleading as previous flood studies did not cover the site area and accordingly, there is missing flood information at the site. The consultants need to adequately address this site and an envelope mapping for different types of flooding should be considered as a representative of flood behaviour of the site.
- The Bays is located in the lower portion of the White Bay catchment. The development site has a flat topography and is considered to be a very wide floodplain. The site has minor (and /or limited) flood affectation under an 1% AEP event due to extensive upstream drainage networks and the road reserves, which act as the major conveyance system for flood flows (especially Robert Street acts as a major floodway for the catchment) prior to discharging to White Bay towards the north-east end of the catchment. The upstream portion of the development site is subject to flooding under the PMF event when the capacity of drainage networks and road reserves will be exceeded. The floodwater will overtop and distribute uniformly towards Port Access Road due to its natural topography and inundate the development site with an anticipated floodwater depth of 0.2-1m along with high flood hazard at some locations within the site.
- The development site is subject to flooding due to overland and coastal sources. This requires a comprehensive assessment of the flooding condition prior to investigating the potential flood mitigation measures suitable to address the requirements for critical infrastructure (such as entry and exit boxes of The Bays Station) under the PMF event to ensure safety to commuters and protect physical assets of the station.
- It is understood that the alignment, configuration and connectivity of the trunk drainage networks in the White Bay Catchment are not known (page 15, Technical Report 9). This is common in the inner west suburbs of Sydney where expansive drainage networks were constructed in some flood prone areas to accommodate previous developments, but these were not accurately recorded in the spatial database. It is important, therefore, to collect and validate the drainage network data (i.e. trunk drainage and critical assets) along with its current conditions, structural capability and serviceability rating prior to undertaking any modelling works for the assessment of flooding conditions and the development of risk management options. The modelling works undertaken in the Leichhardt Flood Study (2015) will need to be revisited to determine the accuracy and adequacy of drainage network data and the assumptions used in the models.

It is recommended the floodplain risk assessment issues raised above with TP9 be addressed at technical meetings involving the proponent and their consultants, relevant Councils, DPIE and other appropriate agencies.

Should you have any queries regarding this advice, please contact Richard Bonner, Senior Conservation Planning Officer on 9995 6917 or at richard.bonner@environment.nsw.gov.au

Yours sincerely

S. Harrison

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