OUT20/12835

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Dear Mr Gorgioski

Sydney Metro - Western Sydney Airport (SSI-10051)
Environmental Impact Statement (EIS)

I refer to your email of 20 October 2020 to the Department of Planning, Industry and Environment (DPIE) Water and the Natural Resources Access Regulator (NRAR) about the above matter. DPIE Water and NRAR require further information on some of the water related aspects of the project with detailed recommendations provided in **Attachment A**.

Watercourses

- The proponent should provide correct stream ordering for watercourses that will be intersected by the development. The provided stream orders are significantly less than they should be and need to be updated to provide correct assessment against the NRAR Guidelines for Controlled Activities on Waterfront Land. Additionally, the watercourse bridge and viaduct crossings should be developed in accordance with the NRAR guidelines for watercourse crossings on waterfront land.

Groundwater

- DPIE Water reviewed the characteristics of the conceptual hydrogeological model and consider it reasonable for the purpose of the EIS. However, we recommend additional studies and monitoring if the project is approved.

Surface Water

- The EIS appropriately identifies potential surface water impacts and mitigation actions. To ensure these are effectively implemented the Erosion and Sediment Control Plan should be developed in consultation with DPIE Water.

Water Take

- The proponent should demonstrate if the project is exempt from requiring a Water Access Licence.

Any further referrals to DPIE Water and NRAR can be sent by email to: landuse.enquiries@dpie.nsw.gov.au.

Yours sincerely

Liz Rogers
Manager Assessments
Water – Office of the Deputy & Strategic Relations
26 November 2020

ATTACHMENT A

Advice to DPIE - Planning & Assessment regarding the Sydney Metro - Western Sydney Airport (SSI-10051) EIS

DPIE – Water and the Natural Resources Access Regulator (NRAR) provide the following advice and recommendations.

1. Watercourses

1.1 Explanation

Table 4.5 within Technical Paper 6 – Flooding, hydrology and water quality has provided stream ordering for a number of watercourses that are to be intersected by the development. These stream orders are incorrect and are significantly less than they should be. Watercourses must be categorised as per the Strahler System with impacts on riparian corridors assessed as per the NRAR Guidelines for riparian corridors on waterfront land - https://www.industry.nsw.gov.au/__data/assets/pdf_file/0003/160464/licensing_approvals_controlled_activities_riparian_corridors.pdf. The removal of watercourses in the upper catchment does not reclassify the downstream watercourse Strahler classification. The correct stream order categorisation should be used so that the works on waterfront land are developed and assessed appropriately. This will allow correct assessment of impact for the vegetated riparian zone (VRZ) width. Detail of VRZ revegetation and management should be provided where appropriate and clearly state how the project is compliant or non-compliant with the NRAR Guidelines for Controlled Activities on Waterfront Land.

To mitigate construction and operational impacts, the watercourse bridge and viaduct crossings should be developed in accordance with the NRAR guidelines for watercourse crossings on waterfront land - https://www.industry.nsw.gov.au/__data/assets/pdf_file/0019/160471/licensing_approvals_controlled_activities_watercourse_crossings.pdf

1.2 Recommendations

Prior to approval

- Provide correct stream ordering for watercourses that are to be intersected by the development and demonstrate compliance with the NRAR Guidelines for Controlled Activities on Waterfront Land

Post approval

- The watercourse bridge and viaduct crossings should be developed in accordance with the NRAR guidelines for watercourse crossings on waterfront land.

2. Groundwater impacts

2.1 Explanation

DPIE Water notes that, near to the southern tunnel alignment of the project, historical extraction at a quarry within the Bringelly Shale experienced negligible groundwater inflow due to the low permeability of the shales and clays in this geological unit. Whilst this does support the proponent's claims in regard to extrapolating the hydrogeological setting of the northern tunnel alignment to the southern tunnel and proposed excavations, further investigation is warranted.

Further, DPIE Water notes that previously conducted testing to determine hydraulic parameters in this southern Badgerys Creek area indicated a result akin to the averaged maximum groundwater inflow rates predicted by the proponent in the groundwater modelling. The proponent states in the EIS they are conducting further studies in this southern area. The results of these studies must

update the final design numerical groundwater model to better determine groundwater incidental take, drawdown and potential impacts plus inform the final design of the project. A minimum 24 months of data is generally required for EIS groundwater modelling and impact assessment.

The proposed development impacts including cumulative, drawdown and impacts in relation to the NSW Aquifer Interference Policy (2012) are indicated to be low. The EIS does recognise that there are groundwater dependent ecosystems to the east and south of the proposed Orchard Hills tunnel portal, station and drained railway cutting which may be affected by the drawdown from the proposed development in that area. This requires additional follow-up investigation and additional monitoring to ensure any potential impacts on Badgerys and South Creeks are minimised, managed satisfactorily and maintained within statutory limits.

Conceptual hydrogeology sections, long sections and plans of tunnels, predicted drawdown plots are satisfactorily presented in the EIS. However, cross sections at key areas (major impact - areas of concern) should be provided in the final design groundwater model report, these include:

- South Creek
- Orchard Hills tunnel daylight cut and cover area
- Orchard Hills cutting south of Station
- Airport dive cut and cover structure
- Badgerys Creek, and
- Aerotropolis turn around / station.

2.2 Recommendations

Post Approval

- Undertake further studies of the hydrogeology and hydraulic parameters for the southern Badgerys Creek tunnel and station alignment.
- Continue to further assess impacts to the groundwater dependent ecosystems near the Orchard Hills Station, tunnel portal and rail cutting.
- Provide cross sections, perpendicular to alignment, at key areas (major impact - areas of concern) listed above.

3. Groundwater monitoring

3.1 Explanation

Although the proponent has installed a series of groundwater monitoring wells along the alignment and implemented a groundwater monitoring program, the existing monitoring network will require extension areas that may have a potential impact. All monitoring bores, existing and future, should be incorporated into a monitoring program required under a Groundwater Management Plan. DPIE Water recommend that 24 months of continuous monitoring data, from the period prior to the project commencement, be used in the final numerical groundwater modelling that informs the detailed design plan for the project.

The proponent has predicted a combined total groundwater inflow of 240 ML/year during construction. This will reduce to 9 ML/year after the excavations and tunnels have been lined or “tanked” and the internal structures are in place during the operational phase.

The combined construction total has been based on average inflow rates predicted for the excavations. However, the proponent has also modelled a predicted maximum inflow rate to the excavations which results in a maximum combined volume of incidental groundwater take of 266 ML/year. The inconsistency between the 240ML/year and the 266 ML/year should be resolved via monitoring.

Whilst the proponent may be eligible for an exemption from holding licences for this maximum volume of groundwater take; DPIE Water expects the proponent to monitor and account for incidental groundwater take volumes from the excavations against the predicted maxima.

3.2 Recommendations

Post Approval

- Continue the groundwater monitoring program as conducted for the EIS and undertake a monitoring program gaps analysis to determine where the monitoring network needs to be enhanced and extended.
- Install further monitoring bores as indicated from the monitoring network gaps analysis and include these new bores in the groundwater monitoring program.
- Develop a process to measure groundwater inflow volumes during construction and post construction at extraction points to monitor and account for incidental groundwater take. This process should be outlined in the Groundwater Management Plan and volumes detailed in the groundwater monitoring reports.
- A Groundwater Management Plan including a detailed groundwater monitoring plan should be drafted and provided to DPIE Water for comment prior to commencement of construction. Details of specific monitoring networks that may be required for site specific development should be determined during detailed design and incorporated into the groundwater monitoring plan.

4. Groundwater model

4.1 Explanation

As an independent peer review of the groundwater model was not provided as part of the EIS, we assume that this has not been undertaken. As a peer review of the groundwater model is required for major tunnels projects, we recommend that this is provided post approval with the final design groundwater model report. DPIE Water will require a minimum of three months to review and provide comment prior to the commencement of the project.

4.2 Recommendation

Post Approval

- The numerical groundwater model for the final design of the project should be independently peer reviewed by a hydrogeological modelling expert.
- Include all groundwater monitoring in the updated groundwater modelling for purpose of informing the final design of the project.
- The final design groundwater model report, accompanying data and independent expert peer review should be provided to DPIE-Water for assessment a minimum of three months before the commencement of the project.

5. Surface water

5.1 Explanation

The EIS documents appropriate potential surface water impacts and mitigation actions. To ensure these are effectively implemented, the Erosion and Sediment Control Plan should be developed in consultation with DPIE Water.

5.2 Recommendation

Post Approval

- The Erosion and Sediment Control Plan should be developed in consultation with DPIE Water.

6. Water take

6.1 Explanation

There will be some incidental groundwater inflows as a result of construction and operation, primarily as a result of tunnelling. The EIS concludes the predicted groundwater inflows can be

mitigated and managed to ensure low impact. The EIS states risks to groundwater are generally considered to be low. Predicted water take during construction is 266 ML/year and 9 ML/yr during operation.

A Water Access Licence from NRAR would typically be required to account for water take during construction or maintenance of rail infrastructure. Sydney Metro are listed as a transport authority under the *Transport Administration Act 1988*. The following Water Access Licence exemption likely exists for Sydney Metro:

3 Transport authorities

(1) A transport authority—in relation to water required for the construction or maintenance of rail infrastructure facilities (within the meaning of the *Transport Administration Act 1988*) if the transport authority, after considering the environmental impact of the activity in accordance with section 5.5 of the *Environmental Planning and Assessment Act 1979* (as if the transport authority were the determining authority under that section), is satisfied that the activity is not likely to significantly affect the environment.

(2) In this clause—

transport authority means the following within the meaning of the *Transport Administration Act 1988*—

(a) RailCorp,

(b) Transport for NSW,

(c) ARTC,

(d) the Secretary.

Given the EIS states the activity is not likely to significantly affect the environment, there would be no requirement to obtain a Water Access Licence during construction or maintenance. A deed will be developed between Sydney Metro, Transport for NSW, Western Sydney Airport and the Commonwealth, in relation to the on-airport section of the project ensuring the works meet the definition of a 'rail infrastructure facilities' under the *Transport Administration Act 1988*. However, a Water Access Licence would be required for operational groundwater take, estimated to be 9 ML/year.

6.2 Recommendation

Post Approval

- The proponent should confirm with NRAR that the project is exempt from requiring a Water Access Licence if conditions under the Water Management (General) Regulation 2018, Schedule 4, Part 1, Clause 3 can be satisfied. The exemption is for construction and maintenance activities, but not water take as a result of operational activities which will require a Water Access Licence before taking the water.