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Dear Mr Gorgioski

**Sydney Metro – Western Sydney Airport (SSI 10051)  
Advice on Environmental Impact Statement (EIS)**

I am writing to you in reply to your invitation to the Environment Protection Authority (EPA) to provide comment on the Environmental Impact Statement (EIS) for the above project.

The EPA understand the project involves the construction and operation of a metro style rail line between St Marys in the north and the Aerotropolis Core in the south with are six stations at: St Marys (underground), Orchard Hills (underground – cutting), Luddenham Road (above ground – viaduct), Airport Business Park (surface), Airport Terminal Station (underground), and Aerotropolis Core Station (underground). The rail line will comprise: twin underground tunnels between St Mary's and Orchard Hills (approximately 4.3 km); surface / viaduct line between Orchard Hills and Western Sydney International Airport (10 km); surface track on the airport site (2 km); twin underground tunnels on the Western Sydney Airport site (3.3km); and, twin underground tunnels between the WSIA and the Aerotropolis (3 km). A stabling facility is also proposed at Orchard Hills (eastern side of the track about halfway between Orchard Hills and Luddenham Stations).

The EPA understands that part of the project is located within land 'on-airport' and the Commonwealth Airports Act 1996 applies to works located within the boundary of Western Sydney International. The EPA will not have a regulatory role for aspects of the project that occur on Commonwealth land.

The EPA has reviewed relevant sections of the EIS including:

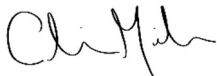
- *Environment Impact Statement*, prepared by M2A Joint Venture (WSP and AECOM), dated 21 October 2020 (EIS main report)
- *Technical Paper 2: Noise and Vibration*, prepared by M2A, dated October 2020
- *Technical Paper 6: Flooding Hydrology and Water Quality*, prepared by M2A, dated October 2020
- *Technical Paper 7: Groundwater*, prepared by ARUP, dated October 2020
- *Technical Paper 8: Contamination*, prepared by M2A, dated October 2020

Based on the information provided, the proposal will require an environment protection licence (EPL) under Clause 33 of Schedule 1 of the *Protection of the Environment Operations Act 1997* (the POEO Act) for railway activities – railway infrastructure construction. Under Schedule 1, Clause 33 of the POEO Act, an activity requires a licence if there is construction of a railway in the metropolitan area more than 3 kilometres in length.

The EPA's comments on the proponent's EIS for noise and vibration, contamination, water quality and hydrogeology are provided at **Appendix A**.

Should you require clarification of any of the above please contact Anna Timbrell on 9274 6345 or email [anna.timbrell@epa.nsw.gov.au](mailto:anna.timbrell@epa.nsw.gov.au)

Yours sincerely

A handwritten signature in black ink, appearing to read 'Claire Miles', written in a cursive style.

**CLAIRE MILES**  
**Unit Head**  
**Regulatory Operations Metro North**

## APPENDIX A

### 1. Noise and Vibration

The noise and vibration technical paper 2 (noise impact assessment, or NIA) has appropriately adopted the following guidelines to assess construction noise and vibration impacts:

- *Interim Construction Noise Guideline* (ICNG) (EPA, 2009) to assess air-borne and ground-borne construction noise impacts.
- *Assessing Vibration: A Technical Guideline* (AVTG) (DEC, 2006) has been adopted to assess human comfort vibration impacts.
- Road Noise Policy (RNP) (EPA, 2013) to assess construction generated vehicle movements.
- “On-Airport” activities have been assessed against the *Airports (Environment Protection) Regulations 1997*.

#### Construction noise assessment

The proposed sleep disturbance assessment criteria presented in the NIA at Section 4.1.2 differs from the criteria presented in the Sydney Metro *Sydney Metro Construction Noise Management Standard* (CNMS) located at Appendix H to the EIS. **The EPA requests that the sleep disturbance assessment criteria proposed to be adopted for the assessment is confirmed.**

For the purposes of the noise impact assessment the study area has been broken down into twelve (12) Noise Catchment Areas (NCA's) and sensitive receivers identified for each catchment. NCA's in the north of the project area (i.e. NCAs 1, 2, 3, 4, 5, 6, 7 and 8) have typically denser residential settlements patterns than those to the south.

Ambient noise monitoring has been undertaken at eighteen (18) locations to characterise the existing acoustic environment and establish construction Noise Management Levels (NMLs) in accordance with the ICNG. Daily charts of the ambient noise monitoring results are presented in Appendix A of the NIA.

**The EPA recommends that the daily charts of ambient noise monitoring results (Appendix A of the NIA) should be examined to identify any repetitive daily trends that cannot be explained by normal diurnal patterns. The likely cause of these patterns should be identified to determine if a local, atypical or seasonal noise source occurred so that this can be removed to ensure the Noise Management Levels are based on representative long-term trends in each noise catchment area. Additional information is required to provide assurance that the ambient noise monitoring results are indicative of ambient and background noise levels across the greater catchment.**

The NIA has considered and modelled nine construction scenarios: enabling works; tunnelling and associated works; bridge and viaduct construction; earthworks and excavation; station construction; construction of stabling and maintenance and other ancillary facilities; rail systems fit out; station fit out, precinct and transport integration works; and finishing works.

Construction noise levels have been modelled and presented in the NIA for sensitive receiver locations both in graphical (colour coded maps) and tabulated form. The modelling has considered noise enhancing weather conditions. Modelling considered both a realistic worst-case scenario (i.e. equipment on 100% duty cycle for full 15 minutes) and typical case scenario (i.e. equipment operating at a reduced duty cycle).

However, in terms of presentation of results the tabulated form does not identify receivers via street address but rather via a unique identifier. This may make it difficult for the community to identify the expected impacts at their premises and should be addressed. Additionally, the predictions do not provide the community with any temporal information about when and for how long these impacts may be experienced.

**The EPA recommends that identifiers are replaced with specific addresses or localities and further information provided on the anticipated duration of impacts associated with these construction scenarios.**

Predictions indicate that airborne construction noise levels could significantly impact noise sensitive receivers in proximity to the project. These impacts include exceedance of noise management levels, highly noise affected receivers, and in some cases, sleep disturbance. The most affected clusters of receivers are located around the St Marys construction site and Orchard Hills tunnel portal.

Ground-borne construction noise predictions indicate that sensitive receivers, grouped above the tunnel between St Marys and Orchard Hills Stations, and above the tunnel between Western Sydney International and Bringelly Stations may experience significant exceedances of target ground-borne noise and vibration levels. These receivers would be typically located within a 35-metre sideline distance of the tunnels beneath.

The EPA considers that management of ground-borne construction impacts associated with tunnelling will not only require consideration of both exceedance of relevant ground-borne noise and vibration levels, but also the duration of the exceedance when determining appropriate mitigation measures. **The EPA underlines the importance of engagement with the community to consider their views and identify the most appropriate method(s) for managing the impact of ground-borne construction noise and vibration.**

Mitigation is principally dealt with in Chapter 7 of the NIA. The general approach is that overall strategies for noise mitigation are outlined in a Sydney Metro Construction Environmental Management Framework (CEMF) presented at Appendix F to the EIS main report. The CEMF requires the preparation of a Construction Noise and Vibration Management Plan (CNVMP) that must incorporate, as a minimum, the standard mitigation measures in the Sydney Metro Construction Noise Management Standard (CNMS) located at Appendix H to the EIS. In addition to this, Construction Noise and Vibration Impact statements (CNVIS) would be prepared, based on detailed design, that outline mitigation measures that would be deployed during construction.

The NIA does identify specific mitigation measures in Table 7-2 which include:

- **NV1** – Acoustic Sheds at St Marys construction site; Claremont Meadows services facility construction sit, Orchard Hills construction site, Western Sydney International tunnel portal construction site, Airport Terminal construction site, Bringelly services facility construction site, and Aerotropolis Core construction site;
- **NV2** – Measures to protect Warragamba to Prospect Water Supply Infrastructure; and
- **NV3** – Commitment to an operational noise and vibration review.

However, the EPA notes that the predicted levels presented in the NIA do not consider the effect of mitigation, so the likely extent of impact from the construction of the project cannot be readily determined from the EIS.

The EPS considers that the hierarchal documented approach to mitigation is complex and difficult for the community to understand and navigate when looking to determine the likely extent (level and duration) of construction noise impact and mitigation measures to protect sensitive receivers.

**The EPA recommends that to enhance understanding, and help manage community expectations, further ‘plain English’ information should be provided to explain:**

- **the likely construction activities;**
- **the method(s) that will be considered to mitigate these activities;**
- **the likely reduction in construction noise impacts that may be expected; and**
- **how the project will determine which method(s) to use to manage noise and evaluate their effectiveness.**

## Work outside standard construction hours

**Out of standard hours work:** The EIS and NIA details a list of construction activities that may be undertaken outside of standard work hours as defined in the ICNG. Many of the activities listed do not fall within the scope of the modelled construction scenarios described in the NIA where out of standard hours impacts have been assessed – e.g. the “earthworks and excavation” scenario has not been assessed against outside of standard hours noise management levels. The EIS, Chapter 10 identifies “works within an acoustic shed” as activities that may be undertaken outside of standard hours, which could include excavation. However, this scenario is not modelled in the NIA against out of standard hours noise management levels.

**Potential for activity based 24/7 approval conditions:** The planning approval for the Sydney Metro City and South West project (SSI 7400) nominated certain works permissible outside of standard hours that included: *tunnelling and associated support activities; excavation within an acoustic enclosure; station and tunnel fit out; and, haulage and delivery of spoil and materials*. It is assumed that these activities were either deemed essential to project delivery – e.g. tunnel boring machine (TBM) activities – and/or envisaged could be undertaken with little or no impact – e.g. station and tunnel fit out. Any repeat of these types of conditions should include a “test” to demonstrate that these nominated activities are in fact essential outside of standard hours and/or have little or no impact.

**The EPA advises that the proponent should clearly describe what activities will be undertaken outside of the recommended standard construction hours, and present the likely noise impact of these scenarios in an updated NIA for the Response to Submissions so that the full extent of construction noise impacts, and feasible and reasonable mitigation can be identified. Additionally, this must be accompanied by a clear justification for the reason why work is necessary outside of standard hours works (other than for convenience) and how that justification will be tested and applied in detailed project planning and delivery. It is further recommended that any planning conditions that seek to allow activity-based approval for out of standard hours works also include qualifiers – e.g. a demonstration that the works are required to be undertaken outside of standard hours.**

## Construction regulated by the Commonwealth Act

The EPA notes that construction works on the Western Sydney Airport site are proposed to be assessed against criteria outlined in the *Airports (Environment Protection) Regulations 1997*. The Regulation designates a sound pressure level of LA10, 15 min of 75 dB, from noise generated by the construction, maintenance, or demolition of a structure, to be met at the site of any sensitive receiver. This significantly exceeds the noise management levels (NMLs) in the ICNG and in fact the NIA identifies that construction works on the Western Sydney Airport site will satisfy the Regulation objectives but will significantly exceed the ICNG NML's.

**While EPA will not have a regulatory role for activities in the Western Sydney Airport site, it is recommended that some harmonisation of construction noise objectives be considered for on-site Western Sydney Airport activities so that communities potentially impacted by construction works associated with the project are treated equitably and fairly.**

It is likely that any planning approval will include a hierarchical approach to construction noise management and mitigation framed largely around Sydney Metro's strategic documents i.e. CEMF (EIS, Appendix F) and CNMS(EIS, Appendix H); and requirements in the planning approval for preparation of a CNVMP and CNVIS

**To supplement this, the EPA recommends that the approval also include an overarching condition which states that all feasible and reasonable construction noise mitigation measures shall be applied to seek to achieve the relevant construction noise and vibration objectives contained in the ICNG, AVTG and RNP.**

## Operational Noise Assessment

The NIA has appropriately adopted the following guidelines to assess operational noise and vibration impacts:

- *Rail Infrastructure Noise Guideline* (RING) (EPA, 2013) to assess operational rail noise impacts in terms of air-borne and ground-borne noise impacts.
- *Assessing Vibration a Technical Guideline* (AVTG) (DEC, 2006) has been adopted to assess human comfort vibration impacts.
- *Noise Policy for Industry* (NPfl) (EPA, 2017) for stations and ancillary facilities, and for stabling and maintenance facilities.
- *Road Noise Policy* (RNP) (EPA, 2013) to assess operationally generated vehicle movements.
- On-airport noise generated by rail traffic has been assessed against the *Airports (Environment Protection) Regulations 1997*.

**The method to derive the project amenity noise levels does not follow the methodology in the NPfl. The EPA requires this to be revisited and amended for the Response to Submissions. Both the project intrusive noise levels and the project amenity noise levels should be expressed using a LAeq,15min descriptor.**

The NIA generally concludes that:

- Airborne noise from the operational rail corridor is predicted to meet the noise trigger levels outlined in the RING, without the need for any specific noise mitigation. There may be some controls required for future development.
- Ground-borne noise resulting from rail operation within the tunnels can achieve the desired performance outcomes with standard attenuation rail fixings and high attenuation rail fixings for some small sections of rail track. It is likely that ground-borne noise impacts for all future buildings within Western Sydney International can be managed by using standard attenuation rail fixings.
- Operational noise and vibration impacts associated with the stabling and maintenance facility located at Orchard Hills have been assessed. Predicted noise levels are generally expected to comply with relevant noise criteria at the nearest receivers in NCA07 and NCA09 for all scenarios and all assessment periods. Noise levels at receivers in NCA08 are predicted to experience noise level exceedances of up to 8 dBA during the morning shoulder and night-time periods and 7 dBA during the daytime and evening periods. Sleep disturbance and awakening impacts are not predicted at any sensitive receivers.

**The EPA advises that exceedances identified for the stabling and maintenance facility will require careful consideration at detailed design stage with the aim of achieving the confirmed project noise trigger levels derived from the NPfl. The EPA recommends that this be conditioned in any planning approval.**

- Noise from operation of ancillary facilities such as stations and service facilities will lead to minor exceedances at Orchard Hills Station.

**The EPA advises that exceedances identified for stations and service facilities will require careful consideration at detailed design stage with the aim of achieving the confirmed project noise trigger levels derived from the NPfl. The EPA recommends that this be conditioned in any planning approval.**

- Noise from operations associated with ancillary facilities have been assessed based on allocating a maximum 'permissible' sound power level for all mechanical and electrical plant to ensure that noise from ancillary facilities meets the relevant project noise trigger level at the nearest noise sensitive receivers. The EPA is satisfied that with the installation of appropriate noise attenuation measures, and based on a review of similar projects, noise

from ancillary facilities can be effectively managed to achieve the maximum noise levels outlined in the NIA.

**The EPA advises that detailed design of these facilities will require careful consideration to achieve the confirmed project noise trigger levels derived from the NPfl. This should be conditioned in any planning approval.**

- Operational road noise impacts have been assessed to consider the impacts of additional traffic on public roads, and new internal access roads. Minor exceedances of traffic noise criteria are predicted along multiple existing arterial and sub-arterial roads. Due to the minor nature of predicted traffic noise impacts and the current operational state of these roads, further mitigation is not considered to be reasonable or feasible.

**The EPA advises that management of road traffic noise will require careful consideration at detailed design stage with the aim of achieving the applicable criteria, where feasible and reasonable, under the Road Noise Policy.**

### Strategic Planning Considerations

The EPA notes that the NIA indicates that future sensitive development proposed near the rail infrastructure will be subject to the requirements of Clause 87 of the *Infrastructure State Environmental Planning Policy (I-SEPP)* and will therefore be compatible with the rail use. Because it is likely that the construction and occupation of noise sensitive development near the rail corridor may in some cases precede construction and operation of the rail infrastructure, planning controls should be considered to minimise noise-based land-use conflict under this scenario. Suitable planning controls for sensitive development proposed near stations, the stabling facility and ancillary support buildings should also be considered. Advice on suitable strategies are set out in the *Development near rail corridors and busy roads – interim guideline* (Department of Planning, 2008).

The EPA notes that some aspects of the operational activities on the Western Sydney Airport site are proposed to be assessed against criteria outlined in the *Airports (Environment Protection) Regulations 1997*. The Regulation designates operational rail criteria that differs to that outlined in the RING. While EPA will not have a regulatory role for activities in the Western Sydney Airport site, it is recommended that harmonisation of operational noise objectives be considered so that communities potentially impacted by operational rail noise on the WSA site are treated equitably and fairly.

The EPA supports and recommends the standard approach commonly used in infrastructure planning approvals requiring the preparation of an Operational Noise Review that considers how the project, based on detailed design, will achieve the operational project objectives. The condition should list the policy / guidelines that contain the relevant project objectives. The EPA further recommends that the EPA is a consultation body for the review as it will affect operational project delivery of an activity that EPA will regulate through an environment protection licence (EPL).

## **2. Contamination**

The contamination technical paper (TP8) provides a desktop study that identified over 50 areas that could present potential risk to human health and/or the environment from contamination. **These areas of potential contamination must all be addressed to ensure the site is made suitable for the proposed uses.**

The SEARs requirement to verify the risk of land contamination and identify if remediation of the land is required has only been partly addressed. Further investigations are required to verify the risks from land contamination and determine whether remediation is required

The study area (within the NSW jurisdiction) is extensive and includes 23 kilometres of railway lines, tunnels, a viaduct and new metro stations. As well as this major construction work for the metro line, there are smaller areas of construction for pedestrian and cycle paths, car parks, construction to manage the intersection between the metro and existing infrastructure and environmental protection measures like noise barriers, on site water detention, water quality treatment basins and other drainage works.

Table 5-2, and maps at Appendix A of the TP8 identifies 54 areas of potential environmental concern (AEC) that have been qualitatively ranked according to potential risks from low to high, with detailed site investigations (DSIs) and potential management or remediation flagged for medium to high risk areas of potential concern.

The EIS also identified that the construction activities themselves may result in new soil, surface water or groundwater contamination from spoil management, spills from plant and equipment and contaminated groundwater being extracted or mobilised during dewatering for tunnel construction.

A *Construction Environmental Management Framework* (CEMF) (Appendix F of the EIS) is provided to assist in the development of a Soil and Water Construction Environmental Management Sub-plan (CSWMP). The CEMF aims to address the issues involving risks during construction identified in the Technical Report 8, including the requirement for remedial action plans (RAPs) and an unexpected finds protocol.

The current proposal for engaging a site auditor is only for the areas of concern that have been ranked qualitatively as medium to high risk and where it has been determined a RAP is required. The EPA is concerned that there is potential for work on areas of concern to have no independent oversight, including detailed contaminated land investigations, risk assessments and mitigation measures undertaken during construction.

The EPA considers it prudent to ensure oversight of these activities throughout the entire construction process to ensure that they are managed properly given that within the site as a whole there are high risk areas and as such, contaminated material may move from one area to another, and also given that many of the areas of concern are near residential areas and surface water courses.

Given that further investigation, risk assessments and likely remediation is required as well as mitigation measures during construction to ensure that contamination is appropriately managed, **the EPA recommends that a NSW EPA-accredited site auditor is engaged throughout the duration of the works.**

To demonstrate that a site auditor has been engaged, as part of the RtS, it is **recommended the applicant submit an interim audit advice** from a NSW-accredited site auditor commenting on the nature and extent of the contamination for each area of environmental concern.

Project-specific conditions are recommended as follows:

1. All contaminated land work and reporting must be undertaken or reviewed by a Contaminated Land Consultant certified under either the Environment Institute of Australia or New Zealand's "Certified Environmental Practitioner" (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia "Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme.
2. For every area of environmental concern that requires a **Detailed Site Investigation Report**, it must be prepared and submitted to the Secretary for information following the completion of **Detailed Site Investigations**.

The report must be prepared in accordance with relevant guidelines made or approved by the EPA under section 105 of the *Contaminated Land Management Act 1997* (NSW).



Nothing in this condition prevents the proponent from preparing individual Detailed Site Investigation Reports for separate sites.

3. Should remediation be required to make land suitable for the final intended land use, a **Remedial Action Plan** must be prepared in accordance with relevant guidelines made or approved by the EPA under section 105 of the *Contaminated Land Management Act 1997* and must include measures to remediate the contamination at the site to ensure the site will be suitable for the proposed use when the **Remedial Action Plan** is implemented. The **Remedial Action Plan** must be submitted to the Planning Secretary for information prior to undertaking remediation.

The **Remedial Action Plan** must include measures to remediate the contamination at the site to ensure the site will be suitable for the proposed use and detail how the environmental and human health risks will be managed during the disturbance, remediation and/or removal of contaminated soil/sediment or groundwater.

Nothing in this condition prevents the preparation of individual **Remedial Action Plans** for separate sites.

4. Prior to commencing remediation, **Section B Site Audit Statement** must be prepared by a NSW EPA-accredited Site Auditor that certifies that the **Remedial Action Plan** is appropriate and that the site can be made suitable for the proposed use. The **Remedial Action Plan** must be implemented and any changes to the **Remedial Action Plan** must be approved in writing by the NSW EPA accredited Site Auditor.

The **Section B Site Audit Statement** must be submitted to the Planning Secretary before the remediation commences.

Nothing in this condition prevents the Proponent from engaging the Site Auditor to prepare individual Site Audit Statements for separate sites.

5. A **Section A1 or Section A2 Site Audit Statement** (accompanied by an Environmental Management Plan) and its accompanying **Site Audit Report**, which state that the contaminated land disturbed by the work has been made suitable for the intended land use, must be submitted to the Planning Secretary and Council after remediation and prior to the commencement of operation of the infrastructure.

Nothing in this condition prevents the Proponent from obtaining Section A Site Audit Statements for individual parcels of remediated land.

Contaminated land must not be used for the purpose approved under the terms of this approval until a **Section A1 or Section A2 Site Audit Statement** is obtained which states that the land is suitable for that purpose and any conditions on the **Section A Site Audit Statement** have been complied with.

6. An **Unexpected Finds Procedure for Contamination** must be prepared before the commencement of work and must be followed should unexpected contamination or asbestos (or suspected contamination) be excavated or otherwise discovered. The procedure must include details of who will be responsible for implementing the unexpected finds procedure and the roles and responsibilities of all parties involved.
7. The **Unexpected Finds Procedure for Contamination** must be implemented throughout construction.
8. The **Soil and Water Construction Management Plan** must:

- (a) be prepared, or reviewed and approved, by a consultant certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme.
- (b) be reviewed and certified appropriate by a NSW EPA accredited Site Auditor.

Construction must not commence until the **Soil and Water Construction Management Plan** and the **Section B Site Audit Statement** certifying the appropriateness of the Soil and Water Construction Management Plan for Contamination have been approved by the Planning Secretary

### 3. Water Quality

The Water Quality technical paper (TP6) does not provide enough information to determine how, or whether, water quality objectives will be met, as required by the SEARs. The report states that stormwater, wastewater and intercepted groundwater would either be directed to one of seven treatment plants or to On Site Detention basins (OSD) prior to discharge to the environment.

The technical paper states that 'off-airport' water discharged from the project would *contribute towards* achieving ANZECC guideline water quality trigger values for physical and chemical stressors for slightly to moderately disturbed ecosystems or meet any water quality criteria determined in consultation with NSW EPA where an EPL is required, or for 'on-airport' in consultation with Western Sydney Airport. The EPA considers that contributing towards achieving ANZECC guideline values is inadequate, and that there is not enough detail regarding:

- the types and quantities of pollutants that could be discharged
- the potential impacts of those discharges
- whether all reasonable and practical measures to avoid or minimise water pollution have been implemented.

Depending upon the proposed discharge quality, additional treatment measures may be required, such as alteration of the water treatment plant design, increased basin storage, or capture and offsite disposal.

#### Pollutants and the level of treatment

The EIS found areas of high and medium risk of contaminated lands, poor groundwater quality and high salinity within the construction footprint. Construction activities including groundwater interception during tunnelling, disturbance of contaminated soils during earthworks, and the management of contaminated stockpiles and spoil present a significant risk to waterways if not appropriately managed. The water quality technical paper has not demonstrated that proposed management and treatment measures are appropriate for the level of contamination that may be encountered.

The groundwater technical paper (TP7) indicates that the groundwater quality within the project area is poor, with high salinity concentrations (up to 33,000  $\mu\text{S}/\text{cm}$ ) which significantly exceeds the ANZECC (2000) guidelines (125 to 2,200  $\mu\text{S}/\text{cm}$ ). NSW coastal rivers are typically in the range 200–300  $\mu\text{S}/\text{cm}$ .

Groundwater monitoring indicated maximum concentrations for some pollutants that significantly exceed the ANZG (2018) trigger values for 95% species protection including ammonia 12,500  $\mu\text{g}/\text{l}$  (900 $\mu\text{g}/\text{l}$ ), nitrate 4,000 $\mu\text{g}/\text{l}$  (500 $\mu\text{g}/\text{l}$ ), phosphorus 680  $\mu\text{g}/\text{l}$  (50 $\mu\text{g}/\text{l}$ ) and metals including aluminium 2,400  $\mu\text{g}/\text{l}$  (55 $\mu\text{g}/\text{l}$ ), cobalt 497 $\mu\text{g}/\text{l}$  (1 $\mu\text{g}/\text{l}$ ), copper 37  $\mu\text{g}/\text{l}$  (1.4  $\mu\text{g}/\text{l}$ ) and zinc 33  $\mu\text{g}/\text{l}$  (8  $\mu\text{g}/\text{l}$ ).

Medium to high risk areas of contaminated land were identified throughout the project area. Contaminants present could include fuels and lubricants, solvents, acids, heavy metals, ash, dumped waste and various agricultural chemicals (such as pesticides and herbicides).

Impacts to water quality are generally proposed to be managed by either Water Treatment Plants (WTPs) (discharge quality unspecified) or Onsite Detention Basins (OSD) (discharge quality unspecified). It is unclear whether the sediment basins will be receiving contaminated sediment and runoff as it is unclear where runoff is directed to a basin and where it is directed to a WTP.

The identified water quality impacts and proposed mitigation measures associated with contaminated sediment and groundwater is lacking detail, with a focus on the *'implementation of standard erosion and sediment control mitigation measures in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 and 2'*. **Standard erosion and sediment controls based on *Managing Urban Stormwater Soils and Construction Volume 1* (the Blue Book) are not be adequate for managing the potential water pollution impacts associated with contaminated areas. The Blue Book only provides erosion and sediment practices and principles relevant to the management of uncontaminated sediment for short-term urban subdivision land disturbances.**

### Onsite detention basins

Limited information has been provided for the surface bioretention and OSD basins. The water quality technical paper states *'No aspect of the construction to materially adversely affect existing water quality in receiving waters to a minimum 0.5 EY storm event or in line with the 'Blue Book''*.

It is unclear how this relates to the 'Blue Book' sediment basin sizing based on 5-day rainfall depths (as required by the SEARs). No details on the basins overflow frequency, duration, volume and discharge quality under a range of scenarios (including typical and worst case) is provided.

If the basins are likely to contain runoff from contaminated lands, the basins will need to be sized (where possible) appropriate to the potential risk and duration of use or captured for treatment at one of the Water Treatment Plants or off-site disposal facility.

### Water Treatment Plants

The proposed water treatment plants will use 'clarifiers, tanks, filters and chemicals' to treat the water until it 'meets the requirements for discharge or reuse'. **As the EIS has not adequately characterised the potential influent quality, it is unclear if proposed water treatment plants are capable of treating the saline and/or potentially contaminated water encountered during construction and operation. The EPA strongly recommends that discharge criteria be characterised as part of the environmental impact assessment process, prior to approval, to ensure that all water treatment technology can be designed and sized appropriately.**

It is also unclear if any chemical additives (coagulants, antifoulants etc) will be discharged from the plant. The EIS has not clearly committed to considering discharges to receiving waters with a 'slightly to moderately disturbed' level of protection.

### Leachate Management

Spoil from tunnelling and earth work activities will be stockpiled in temporary stockpiles, and permanently placed within the 'Permanent Spoil Placement Area' inside the footprint of Western Sydney Airport. The water quality technical paper does not address the potential for contaminated leachate generated during both temporary and permanent spoil placement.

## Section 45 POEO Act

It should also be noted that section 45 of the *Protection of Environment Operations Act 1997* (POEO Act) sets out the matters the EPA must consider when making licensing decisions, including:

- the pollution caused or likely to be caused by the carrying out of the activity or work concerned and the likely impact of that pollution on the environment
- the practical measures that could be taken to prevent, control, abate or mitigate that pollution, and to protect the environment from harm as a result of that pollution
- in relation to an activity or work that causes, is likely to cause or has caused water pollution the environmental values of water affected by the activity or work, and the practical measures that could be taken to restore or maintain those environmental values.

**The information required to address the SEARs is directly relevant to EPA's consideration of the relevant licensing matters under section 45 of the POEO Act; the EPA will require this information in relation to any environment protection licence application associated with construction of the project.**

## Recommendation

**The EPA recommends the Response to Submission includes information to address the environmental assessment requirements, including in particular:**

1. **A Water Quality Impact Assessment to determine the potential impact of the proposed discharges to waterways.** The assessment should include at a minimum:
  - characterise the contamination risk, groundwater and surface water quality at each site to inform the selection of appropriate water treatment processes and/or basin sizing
  - detail the proposed wastewater treatment technology/sediment basin sizing/pollution mitigation measures and the pollutants being treated for each discharge point. The rainfall event that each sediment basin and erosion controls measures will be designed to capture should also be identified
  - detail expected plant and/or basin discharge water quality under typical and worst-case conditions
  - identify and estimate the quality and quantity of all pollutants that may be introduced into the water cycle at each discharge point. This should include but is not limited to:
    - heavy metals
    - hydrocarbons
    - polycyclic aromatic hydrocarbons
    - pesticides
    - volatile and semi-volatile organic compounds
    - polychlorinated biphenyls
    - hydrogen sulphide
    - total suspended solids/turbidity
    - pH
    - electrical conductivity
  - assess the potential impact of discharges on the environmental values of the receiving waterway, including typical through to worst-case scenarios, with reference to the relevant guideline values consistent with the National Water Quality Guidelines;
  - where a mixing zone is required, demonstrate how the National Water Quality Guideline criteria for relevant chemical and non-chemical parameters are met at the edge of the initial mixing zone of the discharge
  - demonstrate that all practical and reasonable measures to avoid or minimise water pollution and protect human health and the environment from harm are investigated and implemented.
2. **Clarification on how temporary spoil stockpiles, permanent spoil placement areas and associated leachate and runoff will be managed to ensure appropriate management and mitigation measures are implemented to avoid polluting waters.**

## Errors in the TP6

The EPA notes errors in the guideline values listed throughout water quality technical paper (TP6) (such as Table 2.1).

- The guideline values for chlorophyll-a, total phosphorus, total nitrogen and pH are incorrect (see lowland rivers explanatory note 'd' and 'm' under Table 3.3.1 of the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC 2000).
- For 'off-airport' sites, the project has adopted the ANZG (2018) default trigger values for 95 percent species protection in slightly to moderately disturbed ecosystems, however it should be noted that the equivalent protection level for toxicants that bioaccumulate is 99 percent.
- The EIS incorrectly states that for 'on-airport' waterways, the *Airports (Environment Protection) Regulations (AEPR)* 1997 water quality limits are more stringent than the ANZECC(2000)/ANZG (2018) guidelines, however the EPA notes several AEPR limits (arsenic, chromium, copper and nickel) exceed the ANZG (2018) trigger levels for 95 percent species protection.

Historic water quality data from a range of projects (1997 onwards) concluded the existing water quality of the entire project environment is not currently meeting the ANZG or AEPR guideline values. No data has been provided for Blaxland Creek or Claremont Creek. The EPA notes that data collected in 1997-1999 may not be representative of current conditions.

The technical paper states that site specific trigger values (SSTVs) should be considered for the project, and presents the Interim Western Sydney International SSTVs, which were derived from nine months of 'baseline' data collected in 2016. If site-specific guideline values are developed, these should be derived consistent with the national Water Quality Guidelines, including being based on the 80<sup>th</sup> percentile of 24 months of representative data from an appropriate slightly disturbed reference site.

### **The EPA recommends:**

1. **the Response to Submissions adopts the appropriate ANZG (2018) guideline values for slightly to moderately disturbed ecosystems;**
2. where APER water quality limits are higher than the ANZG (2018) guideline values, **the more conservative ANZG (2018) values should be adopted;** and
3. if site-specific guideline values are developed, these should be derived consistent with *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, including being based on the 80<sup>th</sup> percentile of 24 months of data from an appropriate slightly disturbed reference site.

The proposed water quality monitoring program has not been provided, with the EIS indicating that the program would be developed in consultation with Western Sydney Airport, NSW EPA and relevant sections of DPIE and local councils.

To ensure appropriate monitoring is completed **the EPA recommends the following conditions of approval are included:**

1. Prior to construction, the proponent should develop a **Surface and Groundwater Monitoring Program** in consultation with NSW EPA, which includes but is not limited to:
  - a. water quality monitoring locations
  - b. analyte list and sampling frequency for each monitoring location
  - c. sampling method for each location
  - d. the method of analysis as per Approved Methods for the Sampling and Analysis of Water Pollutants in NSW, (2004) and practical quantitation limit
  - e. timing and frequency information for each sampling regime. Sampling should be carried out with a frequency commensurate with risk and stage of operation (including verification monitoring during water treatment plant commissioning)

2. The applicant develops a **Trigger Action Response Plan (TARP)** which includes contingencies to identify and manage any unpredicted impacts and their consequences to ensure corrective actions are implemented.
3. If site-specific guideline values are developed, they are to be consistent ANZG 2018. The reference sites should be representative of a slightly disturbed condition.

#### 4. Hydrogeology

##### Groundwater use

The report notes that groundwater is not extensively used the area. There are 13 supply wells, listed on the National Groundwater Information System, that are located in the study area – two of which are for commercial or industrial supplies, and the remainder for general household supply (e.g. garden watering).

##### Baseline groundwater monitoring data

Information presented in the groundwater technical paper (TP7), reveals that groundwater quality monitoring along the alignment of the proposed metro infrastructure was restricted to samples taken over a 7-month timeframe – between September 2019 and April 2020. A review of the provided monitoring bore locations and data reveal that there have been 37 bores drilled along the proposed metro alignment specifically for the project since July 2019. However, the groundwater quality monitoring results were provided from only seven of those bores in the EIS – all of which are situated between St Marys Station and just south of the M4 Motorway.

The 7-month timeframe does not adequately establish a suitable baseline. This limited dataset is acknowledged in the technical report which states '*at many groundwater monitoring locations only a short period of data was available at the time of writing the EIS*'. The proponent has proposed to continue water level and comprehensive water quality monitoring. The EPA is satisfied with the proposed monitoring objectives and seeks to have this extended to any additional monitoring bores to be drilled prior to commencement of construction.

**The EPA requires the proponent provide updated baseline groundwater monitoring results as part of the Response to Submissions. This information is to be assessed collaboratively to inform the final design and construction assessment.**

##### Groundwater Management Program

The EPA acknowledges the commitment to a Groundwater Monitoring Program with the inclusion of recent, updated and continuing monitoring rounds and details. The Groundwater Monitoring Program will need to be reviewed and endorsed prior to commencement of construction.

**The EPA recommends the proponent prepare and provide a Water Management Plan, Groundwater Monitoring Program (including ongoing updates to the baseline data, Trigger Action Response Plans and Mitigation Measures Plan) to the EPA for assessment prior to the commencement of construction and operation of the project in conjunction with a submitted Groundwater Monitoring Program for the project.**