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**AIRPORTS (ENVIRONMENT PROTECTION) REGULATIONS
1997
REGULATION 5.09**

AUTHORISATION

***An Authorisation is hereby issued under subregulation 5.09(1) of the
Airports (Environment Protection) Regulations 1997.***

TO: CPB Contractors Ghella Joint Venture

OF: Werrington Park Corporate Centre
WERRINGTON NSW 2747

to discharge treated tunnel construction water from the Station Box and Tunnelling Airport Business Park and Airport Terminal Station sites via a pipeline outlet located on Badgerys Creek adjacent to the Basin 3 discharge point, Western Sydney International (Nancy Bird Walton) Airport in accordance with the Environmental Management Plan (EMP) dated 2 June 2023 submitted in support of the Application accepted on 20 June 2023 subject to the conditions detailed in Appendix A.

The reasons for the decision relating to this authorisation are set out in Appendix B.

A handwritten signature in black ink, appearing to read 'K. Owen'.

Ken Owen
AIRPORT ENVIRONMENT OFFICER
Western Sydney International (Nancy Bird Walton) Airport

Authorisation Number: 01/2023

Date of Issue: 20 July 2023

Note: A person affected by the decision of the Airport Environment Officer (AEO) to grant, refuse or grant conditionally an Authorisation under subregulation 5.09 is entitled to a two-tiered review process. Initially, application may be made to the Secretary of the Department of Infrastructure, Transport, Regional Development, Communications and the Arts to have the decision reviewed. The Secretary either affirms the decision or substitutes his/her decision for the decision reviewed. A person so affected by the decision of the Secretary may then further pursue an application to the Administrative Appeals Tribunal for independent review.

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APPENDIX A

General Conditions

- 1) This Authorisation will begin on 20 July 2023 and end at 5.00pm on 31 October 2024 (Authorisation Period).

Operating Conditions

- 2) An Environmental Management Plan Compliance Report, must be submitted by CPB Contractors Ghella Joint Venture (CPBG) to the AEO for each year that the authorisation is in force, setting out:
 - a. Details of the performance in giving effect to the environmental management plan under sub regulation 5.07(3) of the Airports (Environment Protection) Regulations 1997 (the regulations);
 - b. Details of progress (if any) made in reducing the generation of pollution that is generated in excess of the approved limit, under Schedule 2 of the regulations;
 - c. Any failure to comply with the terms and conditions of the authorisation;
 - d. The volume of the tunnel construction water discharged into Badgerys Creek during the authorisation period;
 - e. Details and evidence of the use of contingency measures in the event of any event of the treatment, management or discharge of the tunnel construction water where it did not meet the conditions of an authorisation;
 - f. Summary of all environmental complaints shall be provided and evidence the complaints have been addressed; and,
 - g. A demonstrated improved compliance with the Schedules of the regulations during the authorisation period.

This condition is considered appropriate as it provides assurance that the pollution emissions of activity for which the authorisation is granted are no more environmentally damaging than would be the case if exact compliance with the accepted limits mention in Schedule 2 of the regulations.

- 3) CPBG must undertake Water Treatment Plants (WTP) performance reporting. CPBG must undertake water quality sampling of all discharges from the WTPs (ABP and ATL as appropriate) and submit to the AEO a WTP Performance Report within 10 business days of each sample result being taken.
 - a. Sampling must be undertaken:
 - i. Daily on the first 3 days of discharges
 - ii. Weekly for the first month of discharges

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- iii. Fortnightly for the first 3 months
 - iv. Monthly for the remaining duration of the authorisation or as otherwise agreed to with the AEO and airport lessee company
- b. The WTP performance report must:
- i. include results of all discharge quality monitoring with a comparison to all contaminants of potential concern listed in Schedule 2, in addition to salinity, phosphorous, ammonia and nitrogen
 - ii. include results of all WTP influent quality monitoring for all contaminants of potential concern listed in Schedule 2, and
 - iii. be provided to the AEO and WSA Environment Manager.

The 10-business day reporting timeframe may be varied to accommodate technical practicalities in consultation with, and the prior agreement of, the AEO.

This condition is considered appropriate as the performance of the WTP is critical to achieving the required levels of contaminants of concern in the discharge water. This condition will provide assurance that the WTP is performing as expected and that levels of contaminants of concern in the discharge water will be within the required limits. This condition is also consistent with that required by the NSW EPA in licencing the applicant's off-airport WTP at Bringelly that discharges into the NSW side of Badgerys Creek.

- 4) Surface water quality monitoring must be undertaken at Badgerys Creek by CPBG. Sampling is to be undertaken during low and high-flow periods on a weekly basis during water treatment plant discharge (in addition to requirements under EMP Element 2: Monitoring Ref 1.3).

- a. Sampling must be undertaken:
- i. Daily on the first 3 days of discharges
 - ii. Weekly for the first month of discharges
 - iii. Fortnightly for the first 3 months
 - iv. Monthly for the remaining duration of the authorisation or as otherwise agreed to with the AEO and airport lessee company.
 - v. At the three sampling locations proposed in the EMP and used for the pre-discharge sampling plus an additional location approximately 50m downstream from the proposed discharge point. These are the minimum required locations and, dependent on the results, additional sampling locations may be required by the AEO.
 - vi. Where exceedances and/or 80% trigger levels are recorded or a trend of upwards results are reported either in CPBG or WSA monitoring, additional monitoring will be required to be reported to the AEO. Any such additional monitoring will be developed in consultation with, and in agreement with the AEO and WSA Environment Manager

The monitoring frequency may be reviewed in consultation with the AEO and the WSA Environment Manager. Increased monitoring frequency may be required by the AEO should results indicate potential for a level of impacts beyond that identified in the application.

- b. The Badgerys Creek surface water quality monitoring reports must include:

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- i. Include results of all discharge quality monitoring with a comparison to all relevant pollutants listed in Schedule 2 including the parameters set out in Schedule 2 1.02 and the table in 1.03, in addition to salinity, phosphorous, ammonia and nitrogen;
- ii. must be provided to the AEO and WSA Environment Manager within two weeks of the sampling date unless otherwise agreed with the AEO.
- iii. At 12 months from the date of discharge beginning this reporting regime will be reviewed by the AEO.

Note: CPBG must comply with the environmental management plan (EMP) submitted with the authorisation application to the AEO on 20 June 2023 (because of regulation 5.11).

This condition is considered appropriate as it will provide assurance that the levels of contaminants of concern being discharged into Badgerys Creek are within the required limits set out in Schedule 2 of the regulations with the exceptions approved by this authorisation.

As well as providing assurance that the discharge water is within the required limits at the discharge point, the scaled sampling frequency will also provide timely warning that exceedances may be occurring with scope for the sampling frequency to be reduced as assurance is confirmed.

- 5) CPBG must undertake visual ecological monitoring of Badgerys Creek to assess any potential impacts to biodiversity that may arise as a result of the discharge of treated tunnel construction water into the watercourse.
 - a. The monitoring must:
 - i. Visually assess any potential impacts to vegetation on either bank of the subject site and in particular to any protected or threatened species, endangered populations, threatened ecological communities or protected species listed under the BC Act and/or the EPBC Act;
 - ii. Visually assess any decline in water quality present within the subject site; and
 - iii. Record any incidental observations of any fauna species present.
 - b. It is expected monitoring will include, but not necessarily be limited to, the following:
 - i. Visual assessment of potential adverse effects on the environment, using biodiversity indicators such as:
 - Vegetation dieback;
 - Eutrophication;
 - Aquatic fauna death and ongoing habitation;
 - Bank erosion or scouring at the discharge point
 - General visual observations of creek health including changes to turbidity as a result of bank erosion; and
 - ii. Attending permanent photo points to collect and compare photos, to identify any subtle changes to the condition of the creek vegetation
 - c. The monitoring is to be conducted:

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- i. In Badgerys Creek at the pipeline discharge point and downstream to the Basin 1 surface water monitoring location on Badgerys Creek.
 - ii. Monthly for 12 months from the start of discharge. At 12 months from the date of discharge beginning, the monitoring regime may be reviewed in consultation with the AEO and WSA Environment Manager.
- d. A visual ecological monitoring plan must be developed in consultation with and the agreement of the AEO and WSA Environment Manager.
- e. The results of the monitoring must be provided to the AEO and the WSA Environment Manager within two weeks of the inspection date and include appropriate mitigation measures as required. The two-week reporting timeframe may be varied to accommodate technical practicalities in consultation with, and the prior agreement of, the AEO.

This condition is considered appropriate as it will provide assurance as to whether the actions being taken by the applicant for the discharge of the tunnel construction water into Badgerys Creek are not more environmentally damaging than would be the case if exact compliance with the accepted limits mentioned in Schedule 2 were achieved (REG 5.07(3)(a)).

- 6) CPBG must undertake a daily visual inspection of the discharge pipe/Badgerys Creek tie-in for the first month of operation. Weekly inspections are required thereafter until the conclusion of discharge activities. Inspection reports are to be provided to the WSA Environment Manager.

This condition is considered appropriate as it will provide assurance that the discharge of tunnel construction water into Badgerys Creek is not resulting in any erosion or scouring of the creek bank potentially releasing additional sediment load into the creek. The scaled sampling frequency will provide timely warning that such bank erosion and scouring may be occurring with scope for the inspection frequency to be reduced as assurance is confirmed.

- 7) The authorisation limit for level of salinity in the WTP effluent to be discharged to Badgerys Creek is:

- a. Salinity – 8,200mg/L

The authorisation limit for salinity in the WTP effluent at discharge reflects the CPBG application conclusion that, based on modelling, this limit will result in the salinity of Badgerys Creek returning to ambient levels by approximately 50m downstream of the discharge point.

Should water quality monitoring indicate an exceedance of the authorisation limit for salinity, including not returning to ambient levels by 50m downstream of the discharge point, CPBG must cease discharge of the treated tunnel construction water to Badgerys Creek immediately and notify the AEO in accordance with regulation 5.18. Discharge to Badgerys Creek must not recommence until rectification occurs to comply with the authorisation.

This condition is considered appropriate as it will provide assurance that the levels of salinity in the tunnel construction water being discharged into Badgerys Creek are within the required limits as proposed by the applicant, based on relevant modelling and assessments undertaken to support the authorisation application and expected to be achieved by the implementation of the EMP. The authorisation provides specific limits for levels of salinity in the WTP effluent to be discharged to Badgerys Creek regardless of ambient levels. Exceedance of these limits would be a failure to comply with condition of authorisation as set out in regulation 5.18. The

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applicant's EMP makes provision for ceasing discharge in the event of authorisation criteria not being met.

8) The authorisation limits for levels of nitrogen, phosphorous and ammonia in the WTP effluent to be discharged to Badgerys Creek are:

- a. Nitrogen – 2,400µg/L
- b. Phosphorous 100µg/L
- c. Ammonia - 900µg/L

The authorisation limits for nitrogen, phosphorous and ammonia in the WTP effluent to be discharged to Badgerys Creek are based on the upper limits of these contaminants predicted in the CPBG application. The application also states these levels are also below the ambient levels for these contaminants in Badgerys Creek

Should water quality monitoring indicate an exceedance of any of these authorisation limit for nitrogen, phosphorous and ammonia, CPBG must cease discharge of the treated tunnel construction water to Badgerys Creek immediately and notify the AEO in accordance with regulation 5.18. Discharge to Badgerys Creek must not recommence until rectification occurs to comply with the authorisation.

This condition is considered appropriate as it will provide assurance that the levels of nitrogen, phosphorous and ammonia in the tunnel construction water being discharged into Badgerys Creek are within the required limits as proposed by the applicant, based on relevant modelling and assessments undertaken to support the authorisation application and expected to be achieved by the implementation of the EMP. The authorisation provides specific limits for levels of nitrogen, phosphorous and ammonia in the WTP effluent to be discharged to Badgerys Creek regardless of ambient levels. Exceedance of these limits would be a failure to comply with condition of authorisation as set out in regulation 5.18. The applicant's EMP makes provision for ceasing discharge in the event of authorisation criteria not being met.

9) The authorisation limit for the discharge rate of the WTP effluent to be discharged to Badgerys Creek is:

- a. Total outflow rate - 6.6 L/s

This authorisation limit is based on the anticipated total effluent discharge rate for the reasonable worst-case scenario provided in the CPBG authorisation application.

Should the WTP effluent discharge rate exceed this authorisation limit, CPBG must cease discharge of the treated tunnel construction water to Badgerys Creek immediately and notify the AEO in accordance with regulation 5.18. Discharge to Badgerys Creek must not recommence until rectification occurs to comply with the authorisation.

This condition is considered appropriate as it will provide assurance that the volume of tunnel construction water being discharged into Badgerys Creek is within the maximum expected total outflow rate as proposed by the applicant in the authorisation application and expected to be achieved by the implementation of the EMP.

10) Should the stream flow rate in Badgerys Creek fall to a no-flow state or to a rate below the low flow conditions assumed for the Salinity Dilution Multivariate Assessment, CPBG must cease discharge of the treated tunnel construction water to Badgerys Creek immediately and notify the AEO in accordance with regulation 5.18. Discharge to Badgerys Creek must

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not recommence until Badgerys Creek stream flow rates return to a level within the modelling parameters.

This condition is considered appropriate as it will provide assurance that tunnel construction water is not discharged into Badgerys Creek when the creek flow rate is below the low flow conditions assumed for the Salinity Dilution Multivariate Assessment and therefore resulting in a greater environmental impact than expected.



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APPENDIX B

Airport (Environment Protection) Regulations 1997 - Part 5, Division 2, Reg 5.07 - Application for authorisation

Applicant: CPB Contractors Ghella Joint Venture (CPBG)

Tunnel construction water release to Badgerys Creek

Airports (Environment Protection) Regulations Division 2 - Assessment - Airport
Environment Officer (AEO) for Western Sydney International (Nancy Bird Walton) Airport,
Ken Owen

20 July 2023

STATEMENT OF REASONS (required by regulation 5.10(2))

Background

CPB Ghella Joint Venture (CPBG) has submitted an application for authorisation to discharge treated tunnel construction water (a mixture of intercepted groundwater and tunnelling process water) from the Sydney Metro Western Sydney Airport (SMWSA) rail tunnels construction on the Western Sydney International (Nancy Bird Walton) Airport (WSI) via a pipeline to Badgerys Creek.

The CPBG application stated the release of this treated tunnel construction water is likely to result in waters immediately downstream of the Badgerys Creek discharge location exceeding the Airports (Environment Protection) Regulations 1997 Schedule 2 Water pollution- accepted limits for salinity, nitrogen and phosphorus as set out in Schedule 2 clause 1.02(4).

The applicant has claimed the discharge of tunnel construction water on the Airport site is essential and unavoidable. It is likely to result in water pollution on the Airport site.

The application provides proposed authorisation limits for salinity in the discharge water and has provided an environmental management plan (EMP) which describes how CPBG will manage the discharge water to ensure the proposed authorisation limits are not exceeded. Authorisation limits for nitrogen, ammonia and phosphorus have not been proposed by the applicant as the levels of these contaminants in the discharge water, while above the AEPR limits, are expected to be below the ambient levels in Badgerys Creek.

The authorisation has been requested until 31 October 2024.

Evidence upon which the decision is based and findings

The findings throughout my statement of reasons are based upon the following evidence.

I have considered the following documents provided by the Applicant:

- (a) Water Discharge Application for Authorisation, Western Sydney International (Nancy Bird Walton) Airport, Sydney Metro Western Sydney Airport Station Boxes and Tunnelling Works, Rev 1, dated 2 June 2023;
- (b) On-Airport Water Treatment Plant Discharge Environmental Management Plan, Sydney Metro Western Sydney Airport Station Boxes and Tunnelling Works, Rev 1, dated 2 June 2023;
- (c) Sydney Metro Western Sydney Airport Station Boxes and Tunnelling Works – Baseline Aquatic Ecology Survey, November 2022;
- (d) Badgerys Creek Aquatic Ecology Technical Memo, May 2023;
- (e) Eastern Long-necked Turtle in Badgerys Creek (Email), May 2023;
- (f) Salinity Dilution Multivariate Assessment;
- (g) Environment Protection Licence (EPL 21672) issued to CPBG by the NSW EPA
- (h) Baseline Groundwater Report (Project Wide) Sydney Metro Western Sydney Airport Station Boxes and Tunnelling Works, Rev A, dated 2 June 2023; and
- (i) Responses to requests for further information;
- (j) Response to the draft authorisation conditions

I have also considered the written submission from WSA Co Limited (WSA) that was made in response to the advertisement of the Application under Reg 5.08 and the response from an independent Subject Matter Expert (SME) engaged to provide technical advice to support my assessment of the application.

The effect of an authorisation is that an operator of an undertaking at an airport will be taken to comply with its general duty to avoid polluting at the airport (as set out in reg 4.01) despite generating pollution that exceeds pollution limits set out in the Schedules or local standards (see reg 4.02), provided they are acting consistently with the authorisation.

Further, in accordance with reg 7.04, where an action is authorised by an authorisation, an AEO cannot make an environment protection order (EPO) under reg 7.01(1) or reg 7.03(1) that relates to the action, or thing for which an authorisation has been granted that would be inconsistent with the authorisation. However, the AEO may make an EPO under reg 7.06 directing the holder of an authorisation to comply with a condition of the authorisation, including by taking a particular action to minimise the generation of pollution.

Reg 5.07 Process for issuing an authorisation

Authorisation Application

CPBG has submitted an application for authorisation to discharge treated tunnel construction water (a mixture of intercepted groundwater and tunnelling process water) from the Sydney

Metro Western Sydney Airport (SMWSA) rail tunnels construction on the Western Sydney International (Nancy Bird Walton) Airport (WSI) via a pipeline to Badgerys Creek.

CPBG has advised the release of this treated tunnel construction water is likely to result in waters immediately downstream of the Badgerys Creek discharge location exceeding the Water pollution - accepted limits for salinity, nitrogen and phosphorus as set out in Schedule 2 clause 1.02(4) of the regulations.

CPBG has claimed the discharge of tunnel construction water on the Airport site is essential and unavoidable. It is likely to result in water pollution on the Airport site.

The application provides proposed authorisation limits for salinity in the discharge water and has provided an environmental management plan (EMP) which describes how CPBG will manage the discharge water to ensure the proposed authorisation limits are not exceeded. Authorisation limits for nitrogen, ammonia and phosphorus have not been proposed by the applicant as the levels of these contaminants in the discharge water, while above the AEPR limits, are expected to be below the ambient levels in Badgerys Creek.

The authorisation has been requested up to October 2024

I consider that the requirements of reg 5.07(1) and reg 5.07(2) have been satisfied.

Reg 5.07(3) Supporting Documentation

The application includes an EMP which the applicant expects will ensure that pollution emissions overall are not more environmentally damaging than would be the case if exact compliance with the accepted limits mentioned in Schedule 2 of the regulations were achieved.

The EMP outlines the objectives and targets to be achieved and details five elements (Training; Monitoring; Reporting; Auditing, review & procurement; and Relevant SMWSA CEMP requirements) setting out how the EMP will be implemented.

In my view, CPBG's application is supported by an EMP which, together with the additional information provided on 19 June 2023, sets out actions CPBG proposes to take over the period of the authorisation that will ensure that pollution emissions not more environmentally damaging than would be the case if exact compliance with the accepted limits mentioned in Schedule 2 were achieved. Accordingly, I find that reg 5.07(3) has been satisfied.

Reg 5.07(4) Request for Additional Information

My review of the authorisation application submitted on 31 March 2023 identified (reg 5.09). a need for further information that was reasonably necessary to determine the application.

I sent a request for further information (RFI), to CPBG on 28 April 2023. This request for further information sought CPBG's response to issues identified by a review undertaken by:

- an independent SME engaged to support me in assessing the application; and
- WSA (the airport lessee company) during the public notification period.

CPBG provided additional information in response to the RFI on 19 June 2023.

I sent a further RFI by email to CPBG on 22 June 2023. This additional information was forwarded to me on 23 June 2023.

I took the information I received from the RFIs into account in making this decision.

Reg 5.08 Certain applications to be advertised

To ensure adequate consultation, certain applications for authorisation must be advertised and written submissions on the application invited. Such authorisations include those that will be in force for periods in excess of 90 days, authorisations that will have a significant adverse material impact on another person, and authorisations that will fail to comply with a pollution standard frequently, repeatedly or for protracted periods. For these reasons, CPBG was required to advertise the application for authorisation.

The application was advertised in the Sydney Morning Herald and Daily Telegraph on 31 March 2023, which included the information required by reg 5.08(2). Interested parties were invited to request a copy of the application, the supporting environment management plan, and make a written submission to the AEO.

I consider that reg 5.08 has been satisfied.

Reg 5.09 Determination of the Application

In considering the application, I have taken into account each matter set out in reg 5.09(2). My reasoning on each matter is below.

Reg 5.09(2)(a) - Any reasonable alternative actions available to the applicant to achieve the object of the proposed action, including the possibility that the undertaking concerned could be carried out in a different place;

CPBG has stated there are no reasonable alternative actions available for the disposal of the tunnel construction water.

CPBG advised in the application they had considered a number of options for managing and treating the water resulting from tunnelling and station box excavation activities. While water treatment plants are an efficient method of treating water, they do not automatically treat salinity and nutrient removal. The methodologies assessed prior to determining the preferred groundwater treatment method included:

- Reverse osmosis
- Ion exchange
- Trade waste
- Evaporation ponds
- Boiling off water to leave a salt residue
- Beneficial reuse
- Wetland treatment
- Reinjection to the aquifer

The application provided a summary of the assessment of each of these options and concludes each of the alternatives would have an equal or greater impact in regard to environmental, social and economic aspects and therefore were not considered to be viable alternatives. I did not identify any other viable options that ought to have been assessed, and I considered the assessment of the alternative options in the application to be adequate.

I further considered the nature of the project (a 23km new metro rail line between St Marys and Bringelly which includes 3.3km of twin rail tunnels within the airport site; 3km of twin rail tunnels between the airport site and Bringelly (Aerotropolis); and two new metro stations on the airport site) precludes the possibility that the undertaking concerned could be carried out in a different place.

I consider that reg 5.09(2)(a) has been satisfied.

Reg 5.09(2)(b) - Whether the applicant has taken all reasonably available measures to avoid, or minimise, the need for an authorisation;

The CPBG application states:

As a result of the tunnelling and station box excavation activities, CPBG will be intercepting volumes of groundwater from within the project footprint, which will be mixed with clean process water and sent to a Water Treatment Plant (WTP) for treatment and removal of contaminants prior to being discharged from the plant. A 1.3km pipeline will be installed which runs from the WTP at ABP, through to ATL where it will connect with the ATL WTP water and then along road LAR12, through the permanent stockpile placement area and along the swale fence to a creek tie-in adjacent to Sediment Basin 3.

The application also states:

Impacts to water quality in receiving waterways from discharge of tunnel effluent have been addressed through the WTP being designed to improve water quality for a range of contaminants of concern prior to discharge into receiving waterways to mitigate risks from poor water quality. The wastewater treatment processes used to improve tunnel effluent from construction activities include:

- *Primary solids removal*
- *Flocculation / coagulation*
- *Media filtration*
- *Breakpoint chlorination and dechlorination*
- *Activated carbon filtration / adsorption*
- *pH correction*

Due to limitations in treatment technologies, it is not feasible or practical to reduce the elevated salinity and concentrations of total nitrogen and nitrate. The result is that the project will have initial dilution through the WTP and further potential dilution to address these elements at the creek. This decision was determined after an assessment of alternative outcomes and risk assessments applied to those alternatives.

The application has also considered using saline elevated water for process water and use in activities or operations which would otherwise use potable water such as dust suppression on the WSI site. However, I considered there are limitations to this utilisation of saline water in terms of the volume of water that can be used this way and potential impacts on the soil from saline water over a long-term. Therefore, this option alone would not negate the need for an authorisation.

Based on this information, I found the application demonstrates CPBG to have 'taken all reasonably available measures to avoid, or minimise, the need for [an] authorisation' and *formed a view that reg 5.09(2)(b) has been satisfied.*

Reg 5.09(2)(c) - All reasonably likely consequences of the proposed action in relation to the health, safety of any person and the environment.

The application identified the following water quality objectives in Table 9 Water Quality Objectives:

- Visual amenity
- Primary contact recreation
- Secondary contact recreation
- Aquatic foods (cooked)
- Irrigation water supply
- Livestock water supply
- Drinking water supply

The application considered the risk to the first six objectives to be very low as a result of the proposed WTP treatment processes, while the drinking water supply objective was not considered relevant. The application also noted there were no water access licences within Badgerys Creek.

With respect to the protection of aquatic ecosystems objective, the application has provided information regarding the expected effects of the discharge of treated tunnel water to Badgerys Creek and protection of aquatic ecosystems. Documents provided included:

- Sydney Metro Western Sydney Airport Station Boxes and Tunnelling Works – Baseline Aquatic Ecology Survey, November 2022
- Badgerys Creek Aquatic Ecology Technical Memo, May 2023
- Eastern Long-necked Turtle in Badgerys Creek, May 2023
- Salinity Dilution Multivariate Assessment.

The CPBG application states that modelling results demonstrate that salinity concentrations return to close to ambient conditions within 50 metres of the discharge point (median and 20th percentile flow scenarios). It also notes that, while there may be some shift in macroinvertebrate assemblages and fish in this section of the creek, salinity concentrations are not expected to have an impact on aquatic and riparian vegetation which are generally more tolerant than aquatic fauna. Also based on the modelling outcomes and the likely tolerance of aquatic communities in Badgerys Creek, the application states it is anticipated that the tunnel construction water discharges are unlikely to have an impact on aquatic ecology beyond 50 meters of the discharge point.

The application also concludes that given that predicted effects to salinity are unlikely to exceed 2,355 mg/L under the average ambient flow conditions in Badgerys Creek and worst-case scenario discharges from construction water treatment plants, the applicant expects that pollution emissions overall are not more environmentally damaging than would be the case if exact compliance with the accepted limits noted in Schedule 2 of the regulations was achieved.

The Badgerys Creek Aquatic Ecology Technical Memo, May 2023 concludes:

- The aquatic ecology of three sites on Badgerys Creek were assessed on 11 May 2023. Sites displayed similar aquatic and riparian habitat characteristics, and water

quality. Dissolved oxygen (DO) was uniformly low, and turbidity and conductivity (as a proxy for salinity) uniformly high. These sites are considered unlikely habitat for native fish which is supported by the fish trapping data.

- Discharges to Badgerys Creek have several pathways through which aquatic ecology could be impacted. Increased salinity could impact aquatic ecology however background levels of salinity in Badgerys Creek are high (2200-2300 mg/L) and the aquatic ecology of Badgerys Creek is likely adapted to these elevated levels. Local macroinvertebrate assemblages reflect these physical conditions with all sites displaying SIGNAL2 scores indicative of moderate to severe pollution. Few pollution tolerant taxa (EPT) were present. The modelled results indicate salinity concentrations return to close to ambient conditions with 50m of the discharge point (median and 20th percentile flow scenarios). Based on this information and the likely tolerance of aquatic communities in Badgerys Creek it is anticipated that discharges from the Project are unlikely to have an impact on aquatic ecology beyond this point. Some localized impacts may be seen, most likely within 0-20m of the discharge point.
- The impact of increased nutrients was unable to be quantified with the available data, however, with regular monitoring, the risk to aquatic ecology was thought to be low.
- Discharges from the Project have the potential to alter hydrology in Badgerys Creek with effluent more than doubling flows across all modelled scenarios. Additional flows can cause erosion and bank scour however the banks were witnessed to be well held together and covered by riparian vegetation. There is little evidence of scour even after the recent high flow events at the start of 2023. Additional flows are likely to be within the local hydrographic range and the risk of erosion or scour is assumed to be low.
- Overall, the risk of Project discharges to the aquatic ecology of Badgerys Creek is low. It must be noted that this assessment is based on a single sampling event with associated limitations.

I noted that the Technical memo findings corroborate the position expressed in the application.

I am of the view that given the low risks identified, a single sampling event was considered reasonable. I am also of the view that, the applicant's EMP and the authorisation conditions requiring comprehensive monitoring and assurance to be satisfied, and overall there was an adequate consideration of all likely consequences.

I am satisfied that all likely consequences of the proposed action in relation to the health, safety of any person and the environment has been considered.

I consider reg 5.09(2)(c) has been satisfied.

Reg 5.09(2)(d) - The period of time for which authorisation would, practically, be required;

The period of authorisation will be up to 31 October 2024. The need for the authorisation will cease at the completion of the Station Box and Tunnelling works associated with the Sydney Metro WSA project.

Accordingly, I consider under reg 5.09(2)(d) that this factor weighs in favour of granting the authorisation.

Reg 5.09(2)(e) - The adequacy of the environment management plan under reg 5.07(3) and the likelihood of the plan being realised;

The applicant's EMP has outlined the objectives and targets. It also identifies how the five elements (Training, Monitoring, Reporting, Auditing, review & improvement and Relevant SMWSA CEMP requirements and how each will be addressed by CPBG) of the plan will be implemented. Annexure A identifies contingency measures to address potential risks.

The initial review of the EMP identified deficiencies particularly with respect to the management of the risk of no or very low water flow in Badgerys Creek resulting in a concentration of highly saline discharge water being concentrated at the discharge location and subsequently flushed down stream at the next rainfall event and information as to the location of the proposed monitoring locations and evidence to provide assurance that the proposed monitoring frequencies are adequate.

These issues were addressed in the further information provided by the applicant's on 20 March 2023 in response to my RFI. A key mitigator will be the ability of the applicant to cease discharge should any issues such as an increase in salinity of discharge water above the modelled levels arise and disposal of the tunnel construction water will cease until the matter is rectified.

The EMP states that CPBG has developed an approved On-Airport Environmental Compliance Plan. which has addressed the relevant monitoring requirements from the suite of CEMPs developed as a requirement of the Airport Plan (2021). This compliance document has been included in the EMP.

I consider, under reg 5.09(2)(e), that on balance the EMP is adequate, and that CPBG is likely to carry out the actions set out in the EMP. To the extent there were deficiencies in the EMP, these deficiencies will be mitigated/managed by the imposition of conditions. This weighs in favour of granting the authorisation.

Reg 5.09(2)(f) - Whether the need for an authorisation is to enable remedial work to be carried out on existing airport-sourced pollution;

The authorisation relates to existing airport-sourced pollution in the form of groundwater that exceeds the limits for salinity, nitrogen and phosphorous. The causes of the pollution are unrelated to any on-airport construction activities including the Sydney Metro tunnelling works. The need for the authorisation is not to enable remediation work therefore this sub regulation is considered not relevant to this application

I have determined that this factor is not relevant to the decision as the authorisation does not relate to existing airport-sourced pollution. Therefore, I have not placed any weight on this factor.

Reg 5.09(2)(g) - Whether grant of the authorisation would be consistent, or inconsistent, with the objectives and proposed measures set out in the draft, or final, environment strategy, as the case may be;

The is aspect is addressed under reg 5.09(2A) Paragraph (2)(g) which applies to consideration of an application relating to Sydney West Airport before the first final master plan comes into force for that airport as if:

- (a) the words “the objectives and proposed measures set out in the environment strategy” were omitted from that paragraph; and
- (b) the words “an airport plan for the airport” were substituted.

WSI has an Airport Plan in force, the most current variation of which is the September 2021 update. Section 3.11 of the Airport Plan sets out the conditions to be complied with in relation to the Airport Stage 1 Development and the Rail Development. Section 3.11.6 of the Airport Plan contains Rail Conditions. Condition 39 of the Airport Plan requires that the Rail Authority must not:

- (a) commence Rail Construction Works until all of the Rail CEMPs specified in paragraph (2) have been prepared and approved in accordance with this condition; or
- (b) carry out any Rail Development inconsistently with any of the approved Rail CEMPs.

The application notes these conditions in section 2.1. It further notes the Sydney Metro WSA Soil and Water CEMP details all the Sydney Metro WSA soil and water management objectives. The EMP specifically references the Sydney Metro Soil and Water CEMP and Biodiversity CEMP.

I consider, for the purposes of 5.09(2A) Paragraph (2)(g), that granting the authorisation would be consistent with the objectives and proposed measures set out in the Western Sydney Airport – Airport Plan September 2021, and that this weighs in favour of granting the authorisation.

Reg 5.09(2)(h) - Whether grant of the authorisation would have a significant impact on the interests of another person;

The application has identified the proposed discharge of tunnel construction water as having an environmental impact on water quality in Badgerys Creek for a distance of approximately 50m downstream of the proposed discharge point with expectation that the salinity, nitrogen and phosphorous levels will return to ambient levels by this point.

The applicant has advised the proposed discharge of tunnel water is not expected to have an adverse impact on the ecology of either Badgerys Creek or the adjacent riparian corridor.

The application also states there were no water access licences within Badgerys Creek.

The discharge pipe outlet design and location have been determined to avoid the risk of bank erosion or scouring on either side of Badgerys Creek.

Based on my consideration of the information provided in the application and the supporting information, I accept the applicant’s statements indicating that granting the authorisation is not expected to have a significant impact on the interests of another person.

Accordingly I consider, for the purposes of reg 5.09(2)(h), that granting the authorisation is not expected to have a significant impact on the interests of another person. Therefore, I consider that this factor weighs in favour of granting the application.

Reg 5.09(2)(i) – If, under regulation 5.08, a submission is made about the application – the submission;

Advertising of the application for an authorisation has been made in accordance with reg 5.08.

One submission was received expressing concerns about the applicant's proposal. This submission was received from WSA and was provided to the applicant for a response to the issues raised.

The issues raised by WSA were essentially seeking further information to support the applicant's assessments and conclusions regarding:

Discharge of treated water; assessment of alternative options; baseline environmental conditions, predicted effects on receiving waterways and review of these against the AEPR. The dilution modelling, ecological assessment and were largely consistent with the further information requested from the applicant by me.

WSA feedback on the applicant's response to their submission set out summary of what WSA considered outstanding information and provided recommendations of conditions relating to these and other perceived impacts from the discharge of tunnel construction water to Badgerys Creek.

WSA recommendations relating to the CPBG application (Recommendations have been numbered by me for ease of reference)

- 1. Condition of approval should be reliant on the flow rates / volumes within the creek and an appropriate mitigation response developed by the Contractor.*
- 2. WSA recommends a baseline / benchmark of ecology prior to discharge beginning. Additionally, monthly monitoring of ecology to be completed from discharge point to Basin 1 surface water quality monitoring location.*
- 3. WSA requests the methodology for survey to be submitted for review and comment.*

Recommendations 1-3 are included in the authorisation conditions

- 4. Contractor to undertake monthly monitoring for evidence of eutrophication in Badgerys Creek and down stream at South Creek. Signs of eutrophication are to be included into weekly/monthly inspections with appropriate mitigation measures.*

This recommendation has been considered and monitoring of Badgerys Creek for eutrophication downstream to Elizabeth Drive has been included in the conditions. Monitoring downstream at South Creek is not considered appropriate as this location is outside the airport site and the tunnel construction water being discharged at the airport site will be adequately monitored.

- 5. Undertake ecology surveys along the creek from the point of discharge to Basin 1 surface water monitoring location. Additionally, sample water quality in South Creek for impacts.*

This recommendation has been considered and ecological surveys of Badgerys Creek from the point of discharge to Basin 1 surface water monitoring location has been included in the

conditions. Monitoring downstream at South Creek is not considered appropriate as this location is outside the airport site and the tunnel construction water being discharged at the airport site will be adequately monitored.

6. *Baseline survey of the sediments to assess heavy metal contamination load prior to starting discharge.*
7. *Final survey of the sediments to assess heavy metal contamination load after discharge works complete.*

Recommendations 6 and 7 been included in the conditions.

8. *Daily inspection of the tie in for the first month of operation. Weekly inspections thereafter until conclusion of works. Reports are to be provided to the WSA Environmental Manager.*

This recommendation has been included in the conditions

WSA recommendations relating to the CPBG Environment Management Plan (EMP)
(Recommendations have been numbered by the me for ease of reference)

1. *Hold Points in relation to dewatering activities need to be clearly defined in site work method statements and included the training.*

The applicant's EMP has identified training regarding Hold Points will be undertaken through induction presentations and records maintained in an induction records and Hold Points register consistent with the On-Airport Environmental Compliance Plan. This is considered appropriate.

2. *Monitoring parameters and timing needs to be clearly defined within a program based on risk. Testing for all AEPR parameters should be undertaken prior to the first discharge and during the first 2-4 weeks to ensure water quality is as predicted in Authorisation application.*

Testing for all relevant AEPR Schedule 2 parameters have been included in the pre-discharge and initial water quality sampling conditions

3. *Where exceedances and/or 80% trigger are recorded or a trend of upwards results is reported, either in WSA or CPBG monitoring, additional monitoring should be undertaken by CPBG.*

Requirements for undertaking additional testing as required by me have been included in the conditions

4. *Dissolved oxygen and coliforms should be part of the standard testing suite in addition to pH, salinity, turbidity and nutrients.*

Dissolved oxygen and coliforms are indicators of adverse chemical effect identified in Schedule 2 of the AEPR and have been included in the conditions

5. *Monitoring of flow rates for compliance against levels outlined in the Authorisation need to occurs.*

Monitoring of Badgerys Creek flow rates has been included in the conditions.

6. *It is requested the annual monitoring; compliance report and data be provided to WSA for information.*
7. *It is requested that monthly monitoring, compliance report and data to be provided to WSA for information.*

Provision of all required monitoring, compliance reporting and data to WSA has been included in the conditions.

I am satisfied that CPBG has generally addressed the issues raised within the WSA submission. Where WSA considered some matters needed additional information to fully address WSA provided a number of recommendations to address these relating to these and other perceived impacts from the discharge of tunnel construction water to Badgerys Creek. These recommendations have been included in the authorisation conditions as appropriate. Therefore, having regard to the submission and CPBG's responses, the AEO considers that this factor does not weigh against granting the authorisation.

Reg 5.09(2)(j) - Any other matter that the AEO considers to be relevant.

I had regard to the Western Sydney Airport Environmental Impact Statement 2016 (WSA EIS) and the Sydney Metro Western Sydney Airport Environmental Impact Assessment 2020 (SMWSA EIA). The CPBG authorisation application is consistent with the obligations under both the WSA EIS and SMWSA EIA.

I also had regard to the Environment Protection Licence (EPL 21672) issued to CPBG by the NSW EPA to permit similar discharge of tunnel construction water from the off-airport Bringelly site into Badgerys Creek upstream of the proposed on-airport discharge point. I noted the discharge limits and monitoring requirements imposed by the NSW EPA.

I also sought an independent review of the CPBG application by a SME. The initial independent review identified similar concerns to those raised by me and in the submission from WSA. As with the WSA comments, the CPBG response was referred back to the SME reviewer for comment.

This subsequent review stated:

Overall, the review found:

- *comments had been addressed satisfactorily - in some cases, we have recommended minor non-critical changes/additions*
- *the second ecology survey provided some strong evidence to indicate that there wouldn't be adverse impacts to aquatic fauna and flora through the proposed discharge*

The applicant was given an opportunity to comment on the draft conditions and provided a response on 18 July 2023. Following my consideration of the applicant's response, I still considered it appropriate to grant the authorisation with conditions.

Accordingly, I consider the above additional factor weighs in favour of granting the authorisation.

Reg 5.09(3) When considering whether a conditional authorisation is appropriate, the AEO must:

- (a) Take into account any commitment that the applicant has given to prevent or minimise pollution of the kind to which the authorisation will apply; and
- (b) Prefer, if practicable, a decision that will promote improved compliance by the applicant with these Regulations after the authorisation, if granted, ceases to have effect.

For the purposes of reg 5.09(3)(a), I consider that CPBG has demonstrated a commitment to minimise pollution through the implementation of the EMP supporting the application. The EMP states the implementation measures include the following elements:

- Element 1: Training – All staff, employees and contractors will actively drive continuous improvement in the environmental performance of the SBT works
- Element 2: Monitoring - All staff, employees and contractors will actively drive compliant environmental performance of the SBT works
- Element 3: Reporting - All staff, employees and contractors will actively drive compliant environmental performance of the SBT works
- Element 4: Auditing, Review and Improvement – We will continually improve our environmental systems and environmental performance by monitoring and reviewing their effectiveness
- Element 5: Relevant SMWSA CEMP requirements (Annexure C).

For the purposes of reg 5.09(3)(b) I note the period for which the authorisation is applied for ends on 31 October 2024. By this time the tunnelling works being undertaken by the contractor will have been completed and the need for the authorisation will cease—therefore there is limited scope for any decision to promote improved compliance by the applicant with the regulations after the authorisation ceases to have effect.

After taking account of the matters required by reg 5.09(3), I still concluded some conditions on the approval are appropriate, for the following reasons:

- The applicant's assessment of likely environmental impacts used appropriate modelling based on assumptions including expected pollutant levels in the discharge water, likely flow rates in Badgerys Creek and calculated dilution rates. Should the modelling assumptions not be fully realised when the discharge activity commences the outcomes may not be consistent with those stated in the application. The conditions imposed on the authorisation have a strong focus on timely monitoring and reporting to provide assurance the modelled outcomes are achieved, and if not, to allow for mitigation measures to be implemented before an adverse environmental outcome result.
- I am of the view that the applicant's EMP was deficient in some aspects of the proposed monitoring and reporting, particularly that the scope of proposed monitoring was too limited and the monitoring and reporting frequencies were not likely to

identify any adverse trends in a timely manner. These deficiencies are addressed by the conditions.

Conclusion and Decision

Taking into account the analysis above and the regulatory matters required to be considered under the AEPR, I have decided, on balance, that factors supporting the grant of the authorisation outweigh considerations against granting the authorisation.

Further, the I have decided, having regard to the considerations set out above, that it would be appropriate to grant an authorisation subject to appropriate conditions.

A handwritten signature in black ink, appearing to read 'K. Owen', with a horizontal line extending to the right.

Ken Owen

Airport Environment Officer for Western Sydney International (Nancy Bird Walton) Airport