

Planning Approval Environmental Review Form

SM-22-00008046

Sydney Metro – Metro Body of Knowledge (MBoK)

Assessment Name:	Eastern Creek Precast Facilities - Addendum Environmental review for additional operational capacity (ECPF_ER06)
Prepared by:	Sydney Metro
Prepared for:	Sydney Metro West tunnelling contractors including WTP, CTP and ETP
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Environmental Review

1. Proposed works and justification

An environmental review is applicable to design changes which are consistent with the conditions of approval and would have negligible impacts on the community and/or the environment. This environmental review is required to demonstrate compliance with the conditions of approval and the environmental impacts in respect of the proposed activity, which are detailed in the Eastern Creek Precast Facility (ECPF) Review of Environmental Factors (REF) and subsequent Addendum Report. A description of activities is listed in Table 1 and an assessment provided in Section 2.

Table 1 Description of proposed works

Description	Overview
Location of works	<p>The Eastern Creek Precast Facilities project (the project) is located in Eastern Creek within the Blacktown City Council local government area (LGA) (refer to figure 1). The project is located on Lenore Drive, Eastern Creek, predominately within lot 31 DP 1264694 (the project site). The project site has access to arterial roads for haulage, is within an area zoned for industrial use and has adequate buffers to residential areas.</p> <p>There are no changes to the project site associated with this Environmental Review.</p>
Scope of works	<p>The REF and REF Addendum for the project assessed and approved the establishment and operation of two separate and adjacent precast facilities on the proposal site, the northern and southern precast facilities. Each precast facility would include:</p> <ul style="list-style-type: none"> • a precast yard including a shed for construction of precast concrete segments and storage laydown areas • boiler, aggregate bins and consumables • office facilities • on-site parking for up to 60 light vehicles <p>The REF acknowledged that the project would operate for an approximate timeframe of four to five years, subject to the delivery strategy and construction program for Sydney Metro West. The REF also acknowledged that the design and layout of the project site is indicative only.</p> <p>The REF anticipated that at any one time, two tunnelling contractors may be required to operate at the site. However, the delivery strategy and construction program for Sydney Metro West has been revised, meaning three separate precast facilities are required to operate concurrently at the site. A previous Environmental Review (ECPF_ER05) considered the operation of a third precast facility at the site during daytime hours, whilst preliminary precast commissioning commenced. However, to improve operational efficiencies once regular segment production commences, this Environmental Review considers operation of the third precast facility during both daytime and out of hours periods, meaning that:</p> <ul style="list-style-type: none"> • a third tunnelling contractor would also be required to operate a third precast facility at the site, resulting in three tunnelling contractors operating concurrently at the site for a period of around five months • the southern precast facility would therefore be split to provide two separate precast facilities, with one contractor continuing to operate the northern site (therefore three precast facilities are proposed to operate concurrently for a period of time). Some construction works for the establishment of the third precast facility would be required (which would be consistent with those works identified in the REF),

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	<p>however these works would be limited to within the existing established site with no additional major civil construction works required</p> <ul style="list-style-type: none"> three precast facilities would be required to operate during both standard and out of hours periods. <p>It is anticipated that this arrangement with three precast facilities in operation would last for a period of around five months.</p>
Justification for works	<p>The proposed change is required to meet the productivity requirements to support the tunnelling contractors for the Sydney Metro West project. The benefit of having additional precast facilities at the existing project site is that it provides greater flexibility to support the delivery strategy of Sydney Metro West. The project has been constructed with sufficient spatial and design requirements for the operation of a third facility, with no additional land required outside the project site identified in the REF.</p> <p>The operation of the third facility will be required 24 hours per day, seven days per week, consistent with the hours assessed in the REF for the approved project. This is required to improve operational efficiencies once regular segment production commences.</p> <p>Operation of the third precast facility during out of hours periods has been justified and assessed in the Operational Noise Impact Assessment (refer to Appendix A).</p> <p>It is anticipated that the proposed change would have negligible environmental impacts than those assessed for the approved project.</p> <p>Any construction works associated with the proposed change would continue to remain consistent with the approved project.</p>
Timeframe for works	<p>The commissioning of the third precast facility commenced in December 2023. The operation of the third precast facility will commence in February 2024.</p> <p>It is anticipated that three precast facilities would be in operation concurrently for a period of around five months concluding in Q3 2024. After this time, two precast facilities would remain in operation until the completion of tunnelling works for Sydney Metro West.</p>

Work hours, workforce and equipment / machinery

No major civil construction works are required for the establishment of the third precast facility. This site was handed over to the third contractor in August 2023. Some works to establish a separate operational plant for concrete segment production would be required however these works are consistent with those identified in the REF and would be undertaken on the already established site. As such, no major civil construction works would be required.

The third precast facility would include:

- A double-sided casting carousel (within a shed)
- Segment storage
- A concrete batching plant
- Boiler, aggregate bins and consumables
- Water management system including water treatment plant
- A laydown/hardstand area
- Offices and site amenities
- Loading and unloading and circulation space for heavy vehicles
- On-site parking for around 30 light vehicles

Heavy vehicles for material deliveries and segment transportation would be consistent with that identified in the REF, with the site access and egress from Lenore Drive and Archbold Road, via the newly constructed Western Access Road (the joint entrance located between the northern and southern facilities) (refer to Figure 2).

The operation of the third facility will commence in February 2024 (once regular segment production commences) and will be required 24 hours per day, seven days per week, consistent with the hours assessed in the REF for the approved project.

In accordance with the Sydney Metro CNVS which applies to the operation of the Eastern Creek Precast Facilities, work generating high noise and/or vibration levels would be scheduled during less sensitive time periods. Operation of the third precast facility during out of hours periods has been justified and assessed in the Operational Noise Impact Assessment (Appendix A).

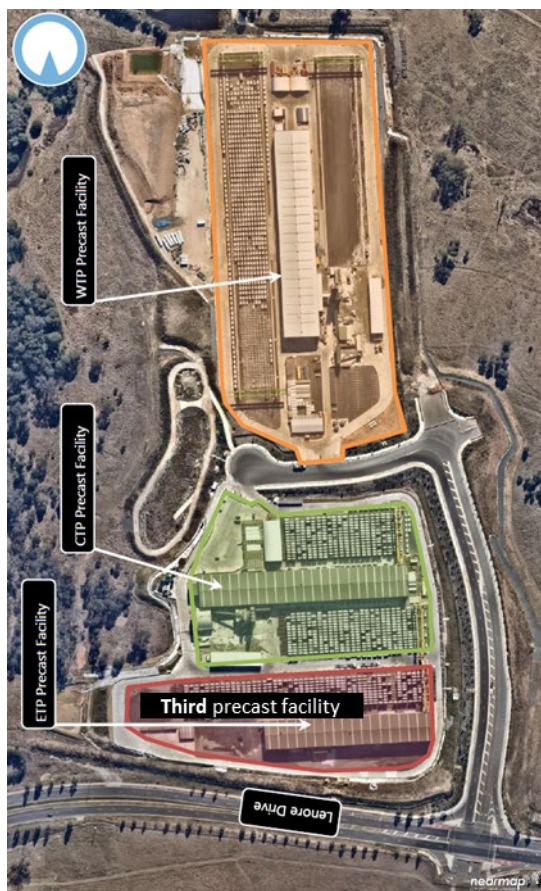


Figure 1 Location of the project

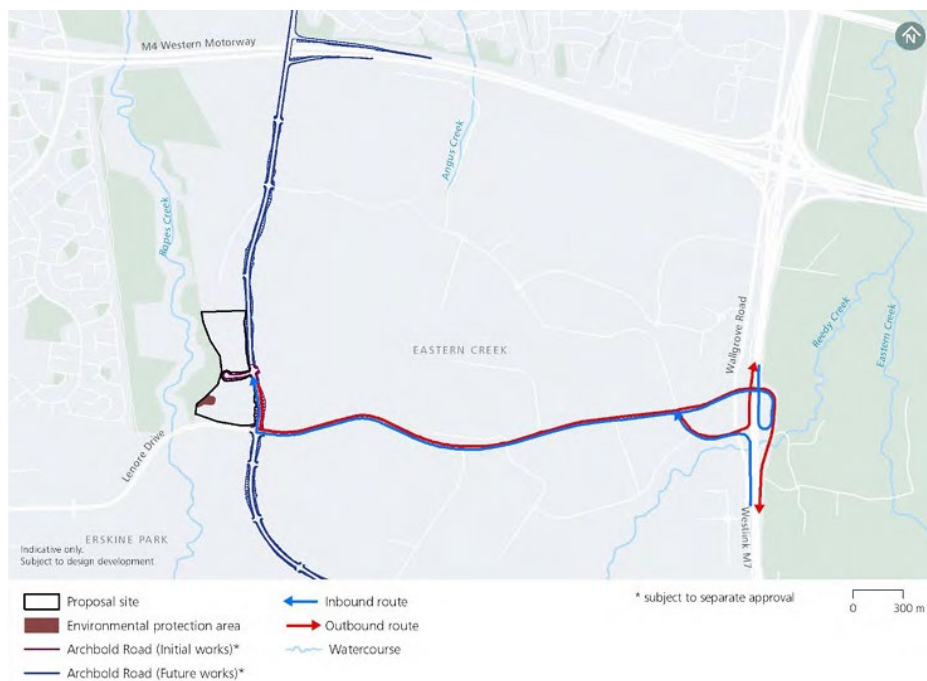


Figure 2 Haulage route for the project

2. Environmental review

The following table provides a risk review of the potential environmental impacts of the proposed works.

Table 3 Environmental review

Environmental review	Yes / No	Description of impacts (including consideration of safeguards required by the Approved Project)
Is the proposal to take place outside of the construction footprint of the project	No	The proposal does not involve changes to the approved project footprint.
Is the location of works within the existing EPL premise boundary	Yes	The Eastern Tunnelling Package Contractor has amended the Environment Protection Licence (EPL) to include the southern facility of the project.
Will the works take longer than 2 weeks to complete.	Yes	Commissioning for the third precast facility commenced in December 2023. The operation of the third precast facility is expected to commence in February 2024. All three precast facilities would operate concurrently for a period of around five months. After this time, the site would resume to operating two precast facilities.
Does the work require OOHW approval	No	The third facility at the project site would be operational during daytime hours and out of hours. Out of hours operation would be required to improve operational efficiencies once regular segment production commences. This Environmental Review (ECPF_ER06) and the Operational Noise Impact Assessment (Renzo Tonin, 2024, refer to Appendix A) assess 24-hour, 7 day per week operation of the third facility and conclude that the impacts are consistent with those in the REF. As such, no additional OOHW approval is required.
Will the works impact an EEC or threatened species	No	Nil – no vegetation removal or trimming is required for the establishment of the third precast facility.
Will works impact on native vegetation	No	Nil – no vegetation removal or trimming is required for the establishment of the third precast facility.
Will the works impact on habitat trees	No	Nil – no vegetation removal or trimming is required for the establishment of the third precast facility.
Will clearing of non EECs or ground disturbance be of High / moderate condition vegetation. What is the area of impact	No	Nil – no vegetation removal or trimming is required for the establishment of the third precast facility.
Will the works result in medium / high noise or vibration impacts Will noise and vibration impacts on sensitive receivers be greater than that predicted in the EIA	No	Existing noise levels in the area are generally controlled by road traffic noise from distant major roads, including the M4 Motorway and Great Western Highway, along with industrial noise from the surrounding existing industrial/commercial facilities. The nearest residential receivers are located about 375 metres west of the site in Erskine Park. A small number of commercial receivers are in this catchment at the Erskine Park Shopping Centre. The REF identified the operation of the project should be undertaken with consideration of the Noise Policy for Industry (NPfI) (EPA, 2017). The NPfI describes 'trigger levels' which inform the noise level at which feasible and reasonable noise management measures should be considered. The REF assessment concluded that the concurrent operation of two precast facilities would comply with all relevant noise

	<p>objectives at all receivers under neutral weather conditions during day, evening and night periods.</p> <p>The REF also assessed the potential impacts of the project during noise-enhancing weather conditions which would apply during the evening and night time periods during autumn and winter only, such as wind or temperature inversions (including wind conditions from the site towards receivers). The REF determined that during the evening and night time period with noise enhancing weather conditions, the approved project would comply with all relevant noise objectives at all receivers. The REF established (in accordance with the NPfl) a project trigger level of 42 decibels (dBA) at the nearest residential receivers during day time, evening and night time periods. The REF assessed with two precast facilities operating simultaneously:</p> <ul style="list-style-type: none"> • a predicted noise level of 39dBA during the day at these receivers and 38dBA during the evening and night time, (therefore being compliant with the project trigger levels). • during noise enhancing weather conditions, a predicted noise level of 40dBA during the evening and 42BA during the night time at these receivers (therefore also being compliant with the project trigger levels). <p>An Operational Noise Impact Assessment (ONIA) (Renzo Tonin, 2024, refer to Appendix A) has been prepared which predicts the additional noise from a third precast facility operating simultaneously during the day, evening, and night time periods with the existing two facilities. It is expected that adding one extra noise source to the existing base of two equivalent noise sources would cumulatively increase overall industrial noise from the site by a maximum of 2 dBA. The level of potential increase in noise level would vary, being closer to 2 dBA at the receivers to the south of the residential area west of the precast facilities, and 1 dBA at receivers to the north of the residential area and closer to the northern precast facilities.</p> <p>The assessment concluded that three precast facilities operating concurrently would continue to meet the trigger level determined by the REF during the day period, and would be 2 dBA above the trigger level during the evening and night periods during the autumn and winter noise enhancing weather conditions. This assumes a worst-case scenario where all three facilities are operating at peak capacity.</p> <p>However, as identified in the ONIA and the NPfl, a 1 to 2dBA increase of noise would result in negligible residual noise level impacts as the exceedances would not be discernible by the average listener. It would therefore be expected that any increase in total noise would be negligible.</p> <p>The ONIA also considered that during the five-month period where all three facilities are operational concurrently, peak operating capacity would be staggered meaning that at any given time the cumulative operating capacity of the three sites is estimated to be less than 100%. Therefore, the residual noise increase during the evening and night from the operation of the third precast facility would be closer to 0 dBA.</p> <p>The ONIA also concluded that predicted maximum noise levels from operation of the three precast facilities during the night period are below the NPfl goals for sleep disturbance during standard conditions and within 1 dBA of the noise goals under noise enhancing weather conditions. The risk of sleep disturbance is therefore considered negligible.</p> <p>Feasible and reasonable noise mitigation would continue to be implemented for the project including:</p>
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		<ul style="list-style-type: none"> noise testing of significant items of plant and equipment implementation of noise barriers or enclosures for noisy equipment such as noise compressors where feasible and reasonable noise verification monitoring at the most affected residential receiver locations to confirm noise levels. <p>In addition, on 16 October 2023 and 1 November 2023, attended noise monitoring was undertaken at the nearest residential receivers for the project at night-time, to verify the noise outputs of two precast facilities operating simultaneously. The monitoring results indicated that the works at the precast facilities were not audible, with the noise monitoring results observing key noise inputs only from distant traffic, wind, dog barks etc.</p> <p>Traffic for the precast facilities would continue to access the site from Lenore Drive and Archbold Road, and generally travel east to access the M7 Motorway via existing busy arterial roads through commercial/industrial areas. As such, even with the additional movements required for the third facility during a 24 hour operational period no additional adverse noise impacts from traffic at sensitive receivers are expected. The proposed change would not result in any additional operational traffic noise impacts to residential receivers.</p> <p>In conclusion, the operation of a third precast facility would likely result in negligible cumulative operational noise impacts.</p>
Will the works result in medium/ high air quality impacts	No	<p>The REF identified that the potential air quality impacts and dust impacts associated with operation of the proposal would be low and manageable with the implementation of standard mitigation measures identified below. Airborne hazardous materials do not impose a risk during operation. Key dust generating processes such as concrete batching would be mostly enclosed within the facility and exposed and disturbed areas would be managed in accordance with AQ2. To mitigate dust impacts during operation, mitigation measure AQ2 from the approved project requires the following best-practice dust management measures to be implemented during operation:</p> <ul style="list-style-type: none"> ensure that loads are covered and that haulage vehicles are cleaned to remove any loose debris before leaving the site regularly wet-down exposed and disturbed areas including stockpiles, especially during dry weather position long-term stockpiles away from surrounding receivers regularly inspect and where necessary clean sealed haulage roads to remove tracked materials. <p>Plant and equipment would be maintained in a proper and efficient manner. Visual inspections of emissions from plant would be carried out as part of pre-acceptance checks.</p>
Will the activity be located adjacent to or in close proximity to sensitive receivers	No	<p>Operation of a third precast facility in this area would be temporary, and consistent with the approved project. Views of the approved project site would be experienced briefly from vehicles travelling along Lenore Drive and pedestrians and cyclists along the adjacent shared path, along this road. Therefore, the works would not result in impacts to sensitive receivers.</p> <p>No further impacts to sensitive receivers are anticipated and no further mitigation measures are required to be implemented.</p>
Would there be additional impact from what was predicted in the EIS on an	No	<p>No further impacts on Aboriginal and Historic heritage are anticipated for the operation of the third precast facility, as the facility would be established on land already established and developed under the approved project.</p>

Aboriginal / Historic heritage site as a result of the works		
Are works within 10m of a watercourse	No	<p>No watercourses are located within 10 metres of the location of works. Lenore Drive crosses Ropes Creek approximately 500 metres to the west of the entrance to the project site. As the site has already been filled and levelled as part of the approved project, no change in runoff rates, volumes and durations of flow, to flow regimes in Ropes Creek are anticipated. Further, the site would include the provision of appropriate on-site stormwater detention/ flood detention facilities and drainage infrastructure in accordance with the conditions of approval. All water management infrastructure would be designed to meet the pollutant reduction targets to improve the water quality of discharges from the site when compared to pre-development flows.</p> <p>The proposed change would include an additional water treatment plant. In accordance with the approved project, water use targets would support the sustainability principles for Sydney Metro, including the requirement to identify and implement opportunities for treatment and reuse on the site, including water from concrete batching and casting facilities.</p> <p>The water treatment plant would be designed so that prior to discharge (if required), wastewater would be treated to a level that is compliant with the EPL.</p> <p>No further impacts on soils and water are anticipated and no further mitigation measures are required to be implemented.</p>
Are works in an area of known contamination	No	<p>The site has been established on land already established and developed under the approved project. Whilst the site was developed on areas on known contamination as identified in the REF, the proposed change would not require any additional ground disturbance. The proposed change therefore would not increase the potential contamination impacts identified in the REF.</p>
Will the works result in temporary or long-term traffic impacts	No	<p>Access to the project is via the signalised Archbold Road and Lenore Drive intersection, the first stage of the Archbold Road, and Western Access Road located between the northern precast facility and the southern precast facilities.</p> <p>The designated haulage routes to be used by heavy vehicles for the operation of the third precast facility are consistent with those as shown in the REF for the approved project, being M7 Motorway/ Wallgrove Road, Old Wallgrove Road, Lenore Drive, Archbold Road and Western Access Road (refer to Figure 2).</p> <p>No heavy vehicles are anticipated to travel to/from west of the precast facility through Erskine Park.</p> <p>The REF anticipated that 12 heavy vehicles (i.e. 24 heavy vehicle movements) would be required, per facility, per hour, between 7.00 am to 6.00 pm. This equates to 48 vehicle movements for the project as a whole (with 24 exits and 24 entries), per hour. Six heavy vehicles / 12 movements (per facility) per hour would be required between 6.00 pm to 7.00 am.</p> <p>The additional traffic movements associated with the proposed change have been included and assessed in the Eastern Creek Precast Facility Construction Traffic Management Plan (JCG JV, 17 July, 2023) and would require:</p> <ul style="list-style-type: none"> an additional 12 heavy vehicles per hour (i.e. 24 movements) between 6.00 am to 6.00 pm for the third precast facility an additional six heavy vehicles (i.e. 12 movements) per hour between 6.00 pm and 6.00 am

	<ul style="list-style-type: none"> around an additional 60 light vehicles for workers entering and exiting the project site for both day and night time shifts (likely between 5:30am and 6am, and 5:30pm and 6pm) per day an additional five light vehicles per hour between 6.00 pm and 6.00 am and eight light vehicles per hour between 6am and 6pm <p>This would result in some additional construction traffic on the approved haulage route. The REF anticipated that the peak year for operational activity would be 2026. The Traffic and Transport Assessment prepared to support the REF (Jacobs, 2020) therefore assessed the impacts of heavy vehicles associated with the operation of the project during the year 2026. This assessment assumed a forecast background traffic growth to establish a 'future year base model' in accordance with the <i>Traffic Modelling Guidelines</i> (Roads and Maritime, 2013). The operation of three precast facilities at the site would only occur from February 2024 to mid 2024, when the background traffic volumes would be lower than those predicted for 2026.</p> <p>In general, the lower the traffic volume through an intersection, the better the intersections along the haul routes would perform. This Environmental Review has considered 2023 traffic counts (SCATS data) at four of the key intersections which were predicted to perform at a level of service of C or D with the operation of the project (based on The Traffic and Transport Assessment (Jacobs, 2020)), with SCATS detector data over a one week period in October 2023, which includes some traffic generated by the two precast facilities currently operating. These intersections are:</p> <ul style="list-style-type: none"> Old Wallgrove Road / Lenore Drive / Telopea Place Old Wallgrove Road / Mini Link Road M7 Motorway southbound ramps / Wallgrove Road / Old Wallgrove Road M7 Motorway northbound ramps / Wallgrove Road / Mini Link Road. <p>This assessment considers if the additional heavy vehicles associated with the third facility would further impact intersection and traffic performance during peak hours than those identified in for the approved project. The peak traffic periods represent a worst-case scenario as during these periods the road network experiences the maximum background traffic demand and the available spare capacity of the road network is at its most limited.</p> <p>The traffic modelling in the REF indicates that in 2026 with the operation of the project, the majority of intersections would continue to perform at the same level of service with or without operational vehicles associated with the proposal (refer to Table 8-13 of the REF). These intersections were identified with a level of service D (operating near capacity) or better, with and without the approved project in operation. The Old Wallgrove Road / Lenore Drive / Telopea Place intersection would experience a decrease in level of service in the morning peak hour from C to D in 2026, however this is associated with a two second increase in average delay, which is considered negligible change in delay.</p> <p>When comparing the 2026 predictions for operation of the proposal with the 2023 SCATS detector data, the traffic volumes for these four intersections are overall 9% lower in the AM peak and 27% lower in the PM peak than what was predicted in the REF. This data has therefore confirmed that the background traffic volumes are less than those predicted for 2026 with the operational of the proposal (refer to Table 2).</p>
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Table 2 Intersection comparison between REF operational assessment (2026 forecast) and SCATS detector data (2023)

Intersection	REF operational assessment 2026 ¹		2023 SCATS Data ²	
	AM	PM	AM	PM
Old Wallgrove Road / Lenore Drive / Telopea Place	2,500	2,530	2488	2036
Old Wallgrove Road / Mini Link Road	2,480	2,210	2217	1538
M7 Motorway southbound ramps / Wallgrove Road / Old Wallgrove Road	3,530	3,470	3260	2661
M7 Motorway northbound ramps / Wallgrove Road / Mini Link Road	2,940	3,990	2481	2598

1. Considers with operation of the proposal predicted in year 2026 (Jacobs, 2022)

2. SCATS detector data (average weekday peak hour extracted for one week in October 2023)

An additional 12 heavy vehicles (or 24 heavy vehicle movements) and the additional light vehicles required (particularly during shift change times) would not be greater than the forecast 2026 intersection performance with operation of the proposal.

The proposed additional vehicles constitute less than 1% of the peak hour traffic volumes at these four intersections along the approved haulage route. These additional vehicles are equivalent to less than one heavy vehicle movement for each two minute period, which would likely be equivalent to less than one additional heavy vehicle movement per signal phase and such variability in additional traffic volume would not alter the current intersection operation. Additional light vehicle traffic through the intersections in the network peak hours would be negligible having regard to the around five month period of concurrent operation of all three precast facilities.

Therefore, the impacts on nearby intersections would remain consistent with those identified in the REF for the approved project. All intersections are therefore predicted to operate at a level of service better than D, consistent with the assessment in the REF.

The other intersections in the REF assessment were predicted to operate at a level of service with spare capacity (level of service A and B) and given the background traffic volumes being lower than predicted for 2026 with the operation of the project, these intersections would unlikely be further impacted by the proposed change.

There would be no further impact on parking and property access, public transport or active transport as a result of the proposed change.

Will the works result in visual impacts to sensitive receivers

No

The visual impacts associated with a third precast facility would be negligible, given the built elements required at the site such as an additional shed and hard stand area would remain generally consistent with that identified in the REF and Addendum Report for the project. Views from this location would be experienced briefly from vehicles travelling along Lenore Drive, and also from users of the adjacent shared path, along this road. Therefore, the works would not result in impacts to sensitive receivers. No further visual impacts are anticipated and no further safeguards are required to be implemented.

Will the works involve significant earthworks

No

No significant earthworks are required for the proposed change.

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3. Recommendation

Based on the above assessment, and with reference to the Review of Environmental Factors, Addendum Report and Determination Report, including the conditions of approval and associated CEMP and plans, it is recommended that:

✓	The proposed design/construction change is consistent with the Review of Environmental Factors, Addendum Report and Determination Report including the conditions of approval, has negligible impacts on the community and environment and no further assessment is required.
	The proposed design/construction change is likely to be consistent with the Review of Environmental Factors, Addendum Report and Determination Report, however more than a negligible impact on the community and environment may result and further assessment in the form of a Planning Approval Consistency Assessment form is required to be completed and submitted to the Planning team for the proposed design/ construction change.
	The proposed design/ construction change is not substantially the same as the Review of Environmental Factors, Addendum Report and Determination Report and is considered a radical transformation. A new planning pathway should be considered.

4. Certification

The above information provides a true and fair review of the proposed works.

Prepared by (signed):



Date: 2/02/2024

Name: Jessie Strange

Position: Senior Manager Planning Approvals, Sydney Metro


5. Endorsement

I have reviewed the above review and provide the following endorsement:

✓	The proposed design/construction change is consistent with the Review of Environmental Factors, Addendum Report and Determination Report, has negligible impacts on the community and environment and no further assessment or modification of the planning approval is required.
	The proposed design/construction change is likely to be consistent with the Review of Environmental Factors, Addendum Report and Determination Report, however more than negligible impacts are expected on the community and environment and further assessment is required.
	The proposed design/construction change constitutes a project modification and requires further assessment and approval.

This endorsement is conditional on the following:

1. All works will be carried out in accordance with the Review of Environmental Factors, Addendum Report and Determination Report and the Project Conditions of Approval.
2. All works will be carried out in accordance with the approved Construction Environmental Management Plan and any relevant sub plans.
3. Verification noise monitoring identified in Section 5 of the Operational Noise Impact Assessment (Renzo-Tonin, 2024) provided in Appendix A must be undertaken.

Signed:	
Endorsed by:	Ben Armstrong
Date:	2 February 2024

Appendix A – Operational Noise Impact Assessment

30 January 2024

TM372-02-1-05F02 SMW-ETP_ONR-PCF (r4)

John Holland CPB Contractors Ghella Joint Venture

Level 6, 60 Union Street

Pymont NSW 2009

SYDNEY METRO WEST - EASTERN TUNNELLING PACKAGE - Eastern Creek Precast Facility - Operational Noise Review

1 Introduction

Sydney Metro West Eastern Tunnelling Package (ETP) (the Project) is Stage 2 of the planning approval for Sydney Metro West a new 24-kilometre metro line that will connect Greater Parramatta with the Sydney CBD via stations at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pymont, and Hunter Street (Sydney CBD). The ETP project comprises all major civil construction work including station excavation (at Pymont and Hunter Street Station (Sydney CBD) construction sites) and tunnelling between The Bays and Sydney CBD. Stage 1 of the Sydney Metro West comprises of Sydney Metro West Central Tunnelling Package (CTP), between The Bays and Sydney Olympic Park and Sydney Metro West Western Tunnelling Package (WTP), between Sydney Olympic Park and Westmead.

Two adjacent precast facilities have been constructed to support the construction of the Sydney Metro West CTP and WTP. The precast facilities manufacture the precast concrete segments for the purpose of lining the Sydney Metro West tunnels up to 24 hours per day, seven days per week. A portion of the CTP precast facility has been handed over to the Sydney Metro West ETP contract, John Holland CPB Contractors Ghella Joint Venture (JCG JV) for the manufacture of segments for the ETP tunnels.

A Review of Environmental Factors (REF) was prepared by Sydney Metro in November 2020 [1] and approved in March 2021 [2]. The aim of this assessment is to show that the operation of the ETP Eastern Creek Precast Facility (ECPF) meets the requirements of the Noise Policy for Industry (NPfI)[3], and the REF and Determination Report.

2 Project overview

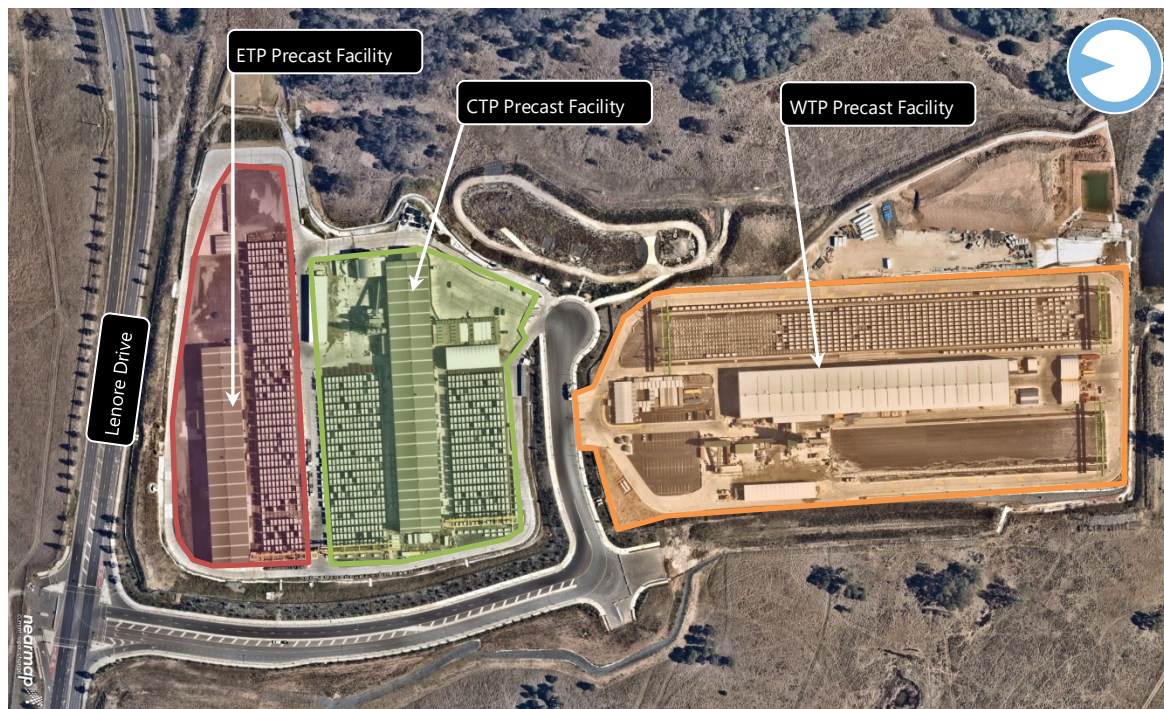
2.1 Location

Sydney Metro West ETP, CTP and WTP ECPF site is located to the north of Lenore Drive, Eastern Creek (31/ DP1264694) in the Blacktown City Council local government area. The Project site is identified as 'ETP Precast Facility' in Figure 2.1.

The site is bounded by undeveloped land zoned for future industrial use.

Vehicular access to the site from the local road network is available from the M7 Motorway, Lenore Drive and a newly constructed access road built to provide access to the future industrial use sites. There are no residential receivers along the vehicle route to/from the site.

Figure 2.1: Overview of Sydney Metro West ETP, CTP and WTP Precast Facilities at Eastern Creek



2.2 Project operations

The REF assessed impact from two precast facilities (northern and southern) proposed to operate for four to five years to manufacture segments for the Sydney Metro West project. Both the northern and southern facilities were assumed to be running concurrently, 24 hours per day, seven days per week. Vehicle access was assumed to be along the eastern side of the site, with a joint entrance located between the northern (WTP) and southern (CTP) facilities.

The REF identified the following key noise generating areas:

- Segment precast factory, which included an enclosed concrete batching plant and precast carousel
- Segment storage in the precast yard, which included loading of segments for delivery to the respective Tunnel Boring Machine (TBM) tunnel support sites
- External equipment.
- The REF found that no operational mitigation measures for the two precast facilities were required as operational noise levels were expected to comply with the NPfl requirements.

The ETP site comprises the southern portion of the southern facility assessed in the REF. This site was designed and constructed by the CTP contractor and handed over to the ETP contractor in August 2023. The ETP contractor has constructed a new concrete batching plant on the site to allow segments to be manufactured at this site. The key noise generating components of the ETP site are consistent with those assumed for the REF.

2.3 Project hours

ETP production is due to commence on 19 February 2024, from this date the ETP precast facility hours of operation are proposed to be 24 hours a day, Monday to Sunday as described in the REF to accommodate segment production, maintenance, deliveries, and rectifications outside of typical segment production hours, and in the event that segment production is increased to accommodate TBM progress in the tunnels. In accordance with the Sydney Metro CNVS which applies to the operation of the ECPF, work would be during the standard daytime working hours where feasible and reasonable. If work is required outside of standard daytime working hours, work generating high noise and/or vibration levels would be scheduled during less sensitive time periods.

Noting that the REF has assessed production at the ECPF out of hours, the CTP and WTP precast facilities also require periods where operation is required up to 24 hours a day, Monday to Sunday.

3 Site and surrounding land use

The Project site is located to the north of Lenore Drive, Eastern Creek (31/ DP1264694) in the Blacktown City Council local government area. The Project site is identified as 'ETP Precast Facility' in Figure 2.1.

As noted in the REF, directly to the north and east, the Project site is bounded by undeveloped land zoned for future industrial use. Further to the north of the site, beyond the M4 Western Motorway, is the existing Business Development Area at Minchinbury. Further to the east of the Project site is the existing Bingo Eastern Creek Recycling Facility and the wider Eastern Creek Industrial Precinct. To the south and south east of the Project site there is a zoned public recreation area and an electrical substation (respectively). The Project site is bounded by Ropes Creek and riparian vegetation on the western boundary.

The nearest residential area is Erskine Park, located to the west of Ropes Creek about 375 metres from the Project site. Another residential area is located about 2 kilometres north east of the site, north of the M4 Western Motorway and to the east of Archbold Road, Minchinbury.

There are no heritage-listed items within 2 kilometres of the Project site.

The nearby noise sensitive receivers are presented in APPENDIX B.

4 Operational noise review

The REF found that predicted noise levels from two precast facilities operating on site to the nearest affected receivers to the east of the precast facilities were up to $L_{Aeq(15min)}$ 39 dB(A) during the day period and up to $L_{Aeq(15min)}$ 42 dB(A) during the evening and night period, taking into consideration noise enhancing weather conditions. The predicted noise levels comply with the Project Noise Trigger Level of 42dB(A) identified in the REF for the day, evening and night period, in accordance with the EPAs Noise Policy for Industry [3].

Assuming similar operating conditions for the ETP precast facility, the estimated increase in noise from the operation of the ETP facility in addition to the CTP and WTP precast facilities is up to 2 dB. The level of potential increase in noise level would vary, being closer to 2 dB(A) at the receivers to the south of the residential area west of the precast facilities and closer to the ETP facility, and 1 dB at receivers to the north of the residential area and closer to the CTP and WTP facilities.

On this basis, noise from the three precast facilities operating concurrently would continue to meet the Project Noise Trigger Level of 42dB(A) identified in the REF during the day period, and would be within 2 dB(A) of the Project Noise Trigger Level under noise enhancing weather conditions during the evening and night. Note that, from the REF, noise enhancing weather conditions do not apply during the day.

A change in noise level of 2 dB(A) which results in an exceedance of the Project Noise Trigger Level of up to 2 dB(A) would not be discernible by the average listener and therefore would not warrant receiver-based treatments or controls. The changes to the operation of the site as a result of the ETP facility are unlikely to be noticeable at the nearest affected receivers. In accordance with the NPfI (Table 4.1) the significance of the residual noise level from the addition of the ETP Precast Facility to the existing CTP and WTP facilities is assessed as negligible.

The above assessment assumes the worst case scenario that the three precast facilities are operating at peak capacity at the same time. Due to the staging of the CTP, WTP and ETP packages, peak operating capacity of the precast facilities will be staggered. The cumulative operating capacity of the three sites is expected to be typically less than 100% at any time. Therefore, it is unlikely that the 'worst case' predictions would regularly be realised during the evening and night of combined operation of the CTP, WTP and ETP precast facilities. Rather, it is expected that operational noise generated by the combined precast facilities would generally be in line with Project Noise Trigger Levels.

Predicted maximum noise levels from the precast facilities during the night period are below the NPfl noise goals for sleep disturbance during standard conditions and within 1 dB(A) of the noise goals under noise enhancing conditions. Consequently, the risk of sleep disturbance is considered negligible.

Verification noise monitoring would be undertaken to confirm that noise levels are within the PTNLs, as outlined in Section 5.

5 Verification noise monitoring

Attended noise monitoring is to be undertaken to verify that noise levels resulting from the operation of the ETP precast facility concurrent with the WTP and CTP facilities (where practicable) are in accordance with the levels predicted in this report, as noted in Table 1.

Table 1: Nominated verification monitoring locations

Type of monitoring	NCA/ Receiver type	Nominated receiver address
Attended	NCA01/ Residential	4 Cetus Place, Erskine Park
Attended	NCA01/ Residential	58 Weaver Street Erskine Park
Attended	NCA01/ Residential	6 Weaver Street Erskine Park

Noise monitoring will be completed in publicly accessible areas on or near the nominated receivers, typically at ground floor level. Where measured noise levels are above the predicted noise levels and above the PNTLs, an investigation of the exceedance will be undertaken to determine the cause and ensure all reasonable and feasible mitigation measures to reduce noise levels to within the PTNLs are being implemented. Works will be modified if deemed reasonable and necessary and further validation monitoring undertaken to verify noise levels.

Document control

Date	Revision history	Non-issued revision	Issued revision	Prepared	Instructed	Reviewed / Authorised
30.11.2023	Initial issue	0	1	T. Gowen	-	M. Tabacchi
15.12.2023	Updated for 24/7 operation	-	2	T. Gowen	-	M. Tabacchi
12.01.2024	Respond to SM comments	-	3	T. Gowen	-	M. Tabacchi
30.01.2024	Minor edits	-	4	T. Gowen	-	M. Tabacchi
File Path: R:\AssocSydProjects\TM351-TM400\TM372 mt SMW - Eastern Tunnelling Pkge\1 Docs\05 PRECAST\TM372-02-1-05F02 SMW-ETP_ONR-PCF (r4).docx						

Important Disclaimers:

The work presented in this document was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian/New Zealand Standard AS/NZS ISO 9001.

This document is issued subject to review and authorisation by the suitably qualified and experienced person named in the last column above. If no name appears, this document shall be considered as preliminary or draft only and no reliance shall be placed upon it other than for information to be verified later.

This document is prepared for the particular requirements of our Client referred to above in the 'Document details' which are based on a specific brief with limitations as agreed to with the Client. It is not intended for and should not be relied upon by a third party and no responsibility is undertaken to any third party without prior consent provided by Renzo Tonin & Associates. The information herein should not be reproduced, presented, or reviewed except in full. Prior to passing on to a third party, the Client is to fully inform the third party of the specific brief and limitations associated with the commission.

In preparing this report, we have relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, we have not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate, or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

We have derived data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination and re-evaluation of the data, findings, observations and conclusions expressed in this report.

We have prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

The information contained herein is for the purpose of acoustics only. No claims are made and no liability is accepted in respect of design and construction issues falling outside of the specialist field of acoustics engineering including and not limited to structural integrity, fire rating, architectural buildability and fit-for-purpose, waterproofing and the like. Supplementary professional advice should be sought in respect of these issues.

External cladding: No claims are made and no liability is accepted in respect of any external wall and/or roof systems (eg facade / cladding materials, insulation etc) that are: (a) not compliant with or do not conform to any relevant non-acoustic legislation, regulation, standard, instructions or Building Codes; or (b) installed, applied, specified or utilised in such a manner that is not compliant with or does not conform to any relevant non-acoustic legislation, regulation, standard, instructions or Building Codes.

References

- [1] Sydney Metro 2020 Sydney Metro West Eastern Creek Precast Facilities – Review of Environmental Factors, November 2020
- [2] Sydney Metro 2021 Sydney Metro West Eastern Creek Precast Facilities – Review of Environmental Factors Determination Report, March 2021
- [3] NSW Environment Protection Authority (2017), *Noise Policy for Industry* (NPfI)

APPENDIX A Glossary of terminology

The following is a brief description of the technical terms used to describe noise to assist in understanding the technical issues presented.

Adverse weather	Weather effects that enhance noise (that is, wind and temperature inversions) that occur at a site for a significant period of time (that is, wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of the nights in winter).
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Assessment period	The period in a day over which assessments are made.
Assessment point	A point at which noise measurements are taken or estimated. A point at which noise measurements are taken or estimated.
Background noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L90 noise level (see below).
Decibel [dB]	The units that sound is measured in. The following are examples of the decibel readings of every day sounds: 0dB The faintest sound we can hear 30dB A quiet library or in a quiet location in the country 45dB Typical office space. Ambience in the city at night 60dB CBD mall at lunch time 70dB The sound of a car passing on the street 80dB Loud music played at home 90dB The sound of a truck passing on the street 100dB The sound of a rock band 115dB Limit of sound permitted in industry 120dB Deafening
dB(A)	A-weighted decibels. The A- weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter.
dB(C)	C-weighted decibels. The C-weighting noise filter simulates the response of the human ear at relatively high levels, where the human ear is nearly equally effective at hearing from mid-low frequency (63Hz) to mid-high frequency (4kHz), but is less effective outside these frequencies.
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Impulsive noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.
L _{Max}	The maximum sound pressure level measured over a given period.

L_{Min}	The minimum sound pressure level measured over a given period.
L_1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L_{10}	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L_{90}	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L_{90} noise level expressed in units of dB(A).
L_{eq}	The “equivalent noise level” is the summation of noise events and integrated over a selected period of time.
Reflection	Sound wave changed in direction of propagation due to a solid object obscuring its path.
SEL	Sound Exposure Level (SEL) is the constant sound level which, if maintained for a period of 1 second would have the same acoustic energy as the measured noise event. SEL noise measurements are useful as they can be converted to obtain L_{eq} sound levels over any period of time and can be used for predicting noise at various locations.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound absorption	The ability of a material to absorb sound energy through its conversion into thermal energy.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power.
Tonal noise	Containing a prominent frequency and characterised by a definite pitch.

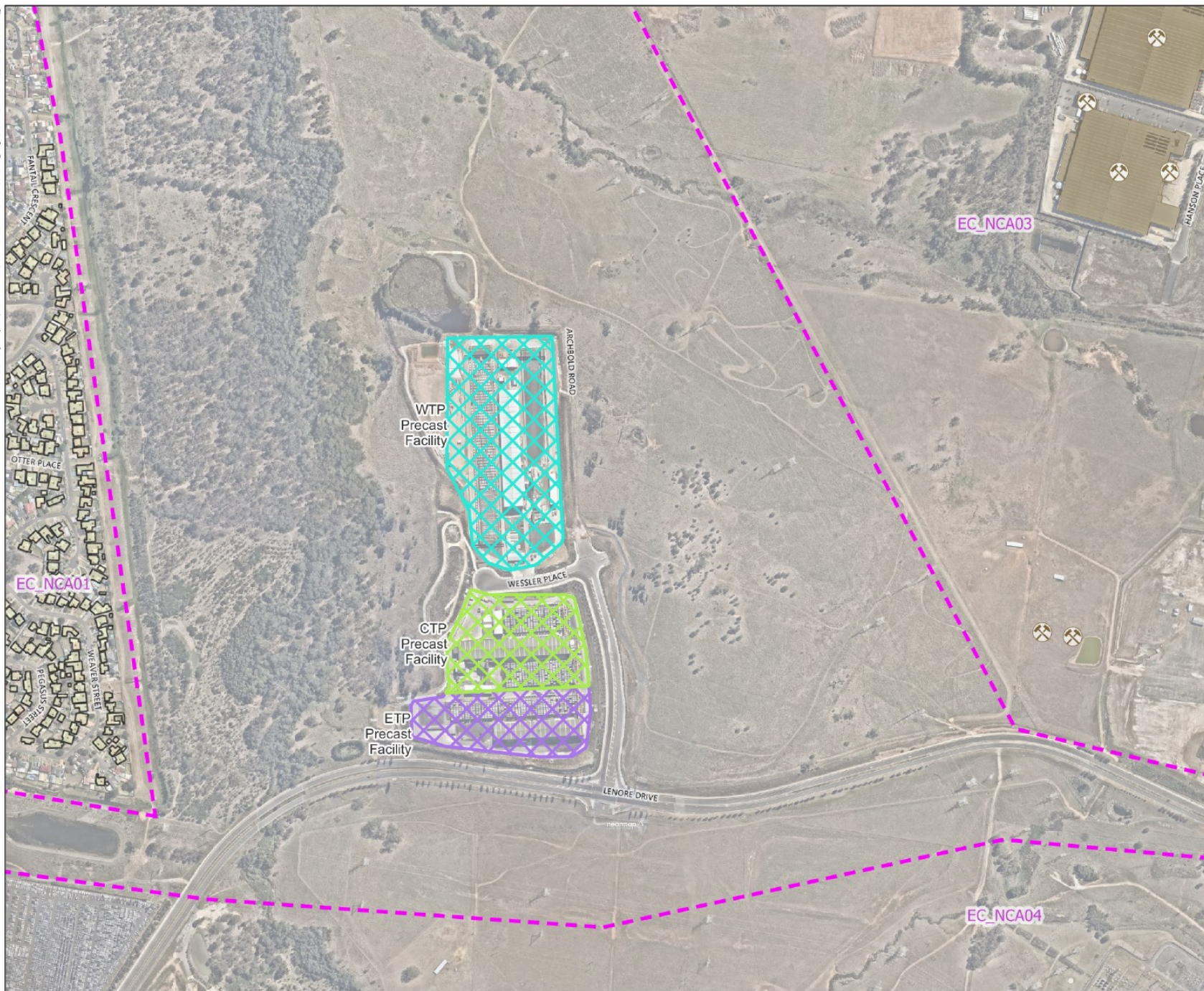
APPENDIX B Site location, nearby noise sensitive receivers and land uses

750 m

500

250

0



LEGEND

Noise Sensitive Receivers

- | | | | |
|--|--------------------|--|------------------------|
| | Residential | | Educational |
| | Mixed use | | Theatre/Auditorium |
| | Commercial | | Cinema |
| | Industrial | | Laboratory |
| | Hotel/Motel/Hostel | | Flight simulator |
| | Medical facility | | Horse Stable/Animal I |
| | Place of Worship | | Recreational - Passive |
| | Community centre | | Recreational - Active |
| | Recording studio | | Other |
| | Library/Museum | | Heritage |

Project Precast Facilities

- ETP Precast Facility
- CTP Precast Facility
- WTP Precast Facility



REV	BY	DATE	DESCRIPTION	APPROVER
10	SS	25/10/23	Prepare figures	TG
A3	Original		Co-ordinate System: MGA Zone 56	

0 100 200 300 400 m

1:6,000 At A3

NOTE: Do not scale from this drawing.

CLIENT

EASTERN TUNNELLING PACKAGE
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SYDNEY METRO WEST

Precast Facilities
Landuse, Worksites and NCAs

Sheet 1 of 1