Review of Environmental Factors

Site Environmental Management Works, Camellia

(October 2024)

Sydney WATER

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Determination

This Review of Environmental Factors (REF) assesses potential environmental impacts of the site environmental management works required at Devon Street, Rosehill (the proposal), a site recently acquired by Sydney Water. The REF was prepared under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), with Sydney Water both the proponent and determining authority.

The Sydney Water Project Manager is accountable for ensuring the proposal is carried out as described in this REF. Additional environmental impact assessment may be required if the scope of work or work methods described in this REF change significantly following determination.

Decision Statement

The potential construction environmental impacts of the proposal include dust, traffic, noise, and lighting impacts. When the proposed site environmental management works are complete, there is the potential for some minor additional flooding in the area during the predicted maximum flood scenarios. We do not anticipate other impacts from the site when the works are complete. The proposal will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats. Therefore, a Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR) is not required.

Given the nature, scale and extent of impacts and implementation of the mitigation measures outlined in this REF, the proposal is unlikely to have a significant impact on the environment. Therefore, we do not require an Environmental Impact Statement (EIS) and the proposal may proceed.

Certification

I certify that I have reviewed and endorsed this REF, and to the best of my knowledge, it is in accordance with the EP&A Act and the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation). The proposal has been considered against matters listed in section 171 (Appendix A) and the guidelines approved under section 170 of the EP&A Regulation. The information it contains is neither false nor misleading.

Prepared by:	Reviewed by:	Endorsed by:	Approved by:
[redacted]			
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Abbreviations

Term	Definition
1%AEP	1% Annual Exceedance Probability
AHD	Australian Height Datum
ANZG	Australian and New Zealand Guidelines
Approved Methods	*Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*
ARR	Australian Rainfall and Runoff
AZP	Archaeological Zoning Plan
BC Act	*Biodiversity Conservation Act 2016*
BCSEPP	State Environmental Planning Policy (Biodiversity and Conservation) 2021
BDAR	Biodiversity Development Assessment Report
BTEX	Benzene, toluene, ethylbenzene and xylene
CBD	Central Business District
cc	Climate Change
CEMP	Construction Environmental Management Plan
CLM Act	*Contaminated Land Management Act 1997*
CLMP	Contaminated Land Management Plan
COPCs	Chemicals of Potential Concern
Council	City of Parramatta Council
DPHI	Department of Planning, Housing and Infrastructure
EIS	Environmental Impact Statement
ENM	Excavated Natural Material
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	Environmental Planning and Assessment Regulation 2021
EPA	NSW Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESD	ecologically sustainable development
Freeboard	Extra height allowed above a predicted flood height to account for unforeseen factors
GDE	Groundwater Dependent Ecosystem
GPOP	Greater Parramatta and Olympic Peninsula
ICNG	Interim Construction Noise Guideline
LEP	Local Environmental Plan
LGA	Local Government Area

Term	Definition
LNAPL	Light non-aqueous phase liquid
LOS	Level of service (intersection performance)
LTEMP	Long Term Environmental Management Plan
NEPM	National Environmental Protection Measure
NGER	National Greenhouse and Energy Reporting
NVIA	Noise and Vibration Impact Assessment
PAH	Polycyclic aromatic hydrocarbons
PAMU	Parramatta Archaeological Management Unit
PFAS	Polyfluoroalkyl substances
PLR	Parramatta Light Rail
PMF	Probable Maximum Flood
PM	Particulate matter
POEO Act	*Protection of the Environment Operations Act 1997*
RAP	remediation action plan
RCP	Representative Concentration Pathway
REF	Review of Environmental Factors
RHSEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
RRO/RRE	Resource Recovery Order/Exemption
RTA	Roads and Traffic Authority
SIS	Species Impact Statement
SSD	State Significant Development
SSI	State Significant Infrastructure
SWMP	Soil and Water Management Plan
The proposal area	Lot 1 DP1300589
TISEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021
TMP	Traffic Management Plan
TRH	Total recoverable hydrocarbons
TTIA	Traffic and Transport Impact Assessment
VE	Viva Energy
VENM	Virgin Excavated Natural Material
WCM	GPOP Water Cycle Management Project
WRRF	Water Resource Recovery Facility

Executive summary

Sydney Water recently acquired a site at Devon Street within the Camellia-Rosehill precinct. At the time of acquisition, the former site owner was undertaking earthworks to subdivide the site for future industrial uses. Due to Sydney Water's acquisition of the site, those works cannot be completed and exposed material is present which needs to be managed.

Sydney Water proposes to undertake site environmental management works to stabilise and maintain the site until approvals can be obtained for future activities. The works include raising and capping the site, establishing soil and erosion controls, and providing fencing.

The site was used previously for oil refining and was formerly declared a significantly contaminated site. The site has since undergone remediation and declared suitable for commercial/industrial land uses. The site is to be managed under three Long-Term Environmental Management Plans to manage residual contamination.

This Review of Environmental Factors assesses the potential impacts of proposed site environmental management works. The site will be raised about 1.7 metres with approximately 365,000 m^3 of imported natural material. This material will mainly be crushed sandstone from the Eastern Tunnelling Project in Pyrmont. Movement of material will require about 30 truck movements every hour. The proposal would start in mid November 2024 and take about 12 to 18 months to complete.

The potential construction environmental impacts of the proposal include dust, traffic, noise, and lighting impacts. We do not anticipate that these impacts will be significant and can be managed by implementing the mitigation measures identified in the REF. When the proposed site works are complete, there is the potential for some minor additional flooding in the area during a predicted maximum flood event.

Sydney Water has consulted with City of Parramatta Council and other stakeholders about the proposal and has engaged with the local community and businesses.

Given the nature, scale, and extent of impacts the proposal is unlikely to have a significant impact on the environment. Therefore, we do not require an Environmental Impact Statement (EIS) and the proposal may proceed.

In future, Sydney Water plans to develop a new Water Resource Recovery Facility on site, as part of the Greater Parramatta and Olympic Peninsula Water Cycle Management Project, subject to approval. Assessment for this project has commenced under State Significant Infrastructure (SSI-74258485). Information about this project can be found here.

1 Introduction

1.1 Context

Sydney Water provides water, wastewater, recycled water and some stormwater services to over five million people. We operate under the *Sydney Water Act 1994* and have three equal objectives to protect public health, protect the environment and be a successful business.

We are a statutory State-owned corporation and are classified as a public authority, and a determining authority for the proposal under Division 5.1 of the EP&A Act. This REF assesses the potential environmental impacts associated with environmental management works at a new site that Sydney Water has acquired. The REF also identifies mitigation measures that avoid or minimise potential impacts.

In 2018, the Greater Sydney Commission identified the Greater Parramatta and Olympic Peninsula (GPOP) as a key economic growth corridor for Greater Sydney and commenced planning for 170,000 new homes and 210,000 new jobs by 2056. Sydney Water's servicing approach for GPOP includes the proposed construction of a Water Resource Recovery Facility (WRRF) at Lot 1 DP1300589 in Rosehill (the proposal area), subject to a separate future planning approval (SSI-74258485, Greater Parramatta, Olympic Peninsula Water Cycle | Planning Portal - Department of Planning and Environment (nsw.gov.au)).

Sydney Water has recently (May 2024) acquired the proposal area, gaining access to the site in September 2024. The proposal area has previously been used for industrial purposes (primarily oil refining) and was the site of the Clyde Oil Refinery which was decommissioned in 2012. In 2016, the proposal area was declared as significantly contaminated land (Declaration No. 20131110) by the NSW Environment Protection Authority (EPA). The then site owner undertook extensive remediation works under the Western Area Remediation Project (SSD 9302) and three site audit statements were issued by an independent auditor. The site audit statements concluded the site was suitable for commercial / industrial land use subject to the implementation of Long Term Environmental Management Plans (LTEMPs) to manage residual contamination. The significantly contaminated land declaration was repealed in July 2022.

At the time of site acquisition, the then site owner was undertaking subdivision and infrastructure works for an industrial development, under the Central Sydney Industrial Estate and Downer Sustainable Road Resource Centre (SSD 10459). The subdivision works were not finished, and the site has partially completed earthworks. As the new site landowner, Sydney Water intends to undertake some site environmental management works to stabilise and maintain the site until approvals can be obtained for future activities. The site environmental management works include raising and capping the site, establishing soil and erosion controls, and providing fencing as needed. The works will be undertaken work in accordance with the three LTEMPs.

1.2 Proposal background and need

Table 1-1 summarises the proposal need, objectives and consideration of alternatives.

Table 1-1 Proposal need, objectives and consideration of alternatives

Aspect	Relevance to proposal
Proposal need	The proposal will allow Sydney Water to undertake site environmental management works to stabilise and maintain the site until approvals can be obtained for future activities. These works will reduce the need to interact with any residual contamination and reduce the potential risk of pollution entering the surrounding environment.
Proposal objectives	The proposal objectives are to: • Stabilise the site to minimise potential environment and community impacts, until approvals can be obtained for future infrastructure works. • Minimise interaction with, and the potential risk of exposure to residual contaminated material. • Reduce costs of managing contaminated soils and groundwater. The proposal will also raise the site above the 1% Annual Exceedance Probability (AEP) flood level and take advantage of excess capping material available in the market from nearby construction projects.
Consideration of alternatives/options	An options assessment was undertaken to identify the preferred option for the management of contaminated material at the site. Two options were identified and developed in accordance with the project objectives. Both options were subjected to a Multi Criteria Analysis. The options were: • Baseline scenario – this scenario does not involve any capping. For future projects, material on site would be retained as much as possible for re-use. Residual contaminated material would be disposed off-site or treated on site where feasible. • Option 1 – provide a capping layer across the site. Capping would involve importing and spreading capping material. This option provides the opportunity to take advantage of excess material from major construction projects and reduce Sydney Water's contamination risk. Option 1 is the preferred option based on both non-financial and financial criteria because: • Capping is a supported method of soil management under the National Environment Protection Measure (NEPM) Site Contamination (amended 2013).

Aspect	Relevance to proposal
	• The market opportunity substantially reduces the cost of managing the residual contaminated material, and subgrade preparation. • Capping substantially reduces human exposure to residual contamination (within soil and groundwater) for works onsite and future projects, compared to the baseline scenario. • Capping minimises the volume of contaminated material being sent to landfill and is considered a preferable long-term approach to the management of contaminated material (soil and groundwater). • As well as protecting the site from residual contamination, this option raises the site above the 1% AEP which would be needed for any future Sydney Water infrastructure activities.

1.3 Consideration of Ecologically Sustainable Development

Table 1-2 considers how the proposal aligns with the principles of ecologically sustainable development (ESD).

Table 1-2 Consideration of principles of ecologically sustainable development (ESD)

Principle	Proposal alignment
Precautionary principle - *if there are threats of serious or irreversible environmental damage, lack of scientific uncertainty should not be a reason for postponing measures to prevent environmental degradation. Public and private decisions should be guided by careful evaluation to avoid serious or irreversible damage to the environment where practicable, and an assessment of the risk-weighted consequences of various options.*	The proposal aims to minimise serious or irreversible environmental damage by reducing the risk of pollution entering the surrounding environment and limiting the interaction with residual contaminated material (both soil and groundwater) present within the proposal area. The proposed capping of the residual contaminated material also minimises the scientific uncertainty of environmental impacts during future works.
Inter-generational equity - *the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.*	The proposed site environmental management works will minimise the exposure risks of legacy contamination to future site users and surrounding areas. The capping will also enable future water or wastewater projects, which will be for the benefit of current and future generations.
Conservation of biological diversity and ecological integrity - *conservation of the biological diversity and ecological integrity should be a*	The proposal does not require any vegetation removal and will not significantly impact on biological diversity or impact ecological integrity.

Principle	Proposal alignment
fundamental consideration in environmental planning and decision-making processes.	
Improved valuation, pricing and incentive mechanisms - *environmental factors should be included in the valuation of assets and services, such as 'polluter pays', the users of goods and services should pay prices based on the full life cycle costs (including use of natural resources and ultimate disposal of waste) and environmental goals.*	The proposal will use material sourced from tunnelling projects in Sydney to provide cost efficient use of resources, minimising volumes required to be sent to landfill. This also provides optimum outcomes for the community and environment.

2 Proposal description

2.1 Proposal details

Table 2-1 describes the proposal and Figure 2-1 shows the location and key environmental constraints.

Table 2-1 Description of proposal

Aspect	Detailed description
Proposal description	The proposal involves site environmental management works to stablisise the site by providing a capping layer across most of the site, as well as establishing erosion and sediment controls and fencing. The capping layer will be about 1.7 metres (m) above existing levels. The capping layer will contain approximately 365,000 m^3 of imported natural material. This material will mainly be crushed sandstone originating from the Eastern Tunnelling Project in Pyrmont, and will comprise Virgin Excavated Natural Material (VENM), Excavated Natural Material (ENM) or material approved under a general or specific Resource Recovery Order/Exemption (RRO/RRE) Before capping works start, additional erosion and sediment controls will be established and residual contamination at the surface will be identified and managed. Existing surfaces will be levelled and compacted as a suitable sub-grade surface. Existing basins will be initially retained to capture surface runoff. Capping will occur progressively around the site. The work area will be compacted and stabilised before moving to the adjacent area. As the work progresses any existing basins in the vicinity will be drained (likely to the sewerage network) and then capped. Batters and embankments will be stabilised with soil binder. Some areas of the site will not be capped, including the existing stormwater culvert along the western boundary of the site, and the 1200 mm water reticulation pipeline located within the proposal area. Additional site fencing will be provided as needed. All works will be in accordance with the three LTEMPs which apply to the site.
Location and land ownership	The proposal area includes the whole of Lot 1 DP 1300589, located on the corner of Devon Street and Colquhoun Street, Rosehill. The proposal area is about 22 hectares owned by Sydney Water and is within the City of Parramatta Local Government Area (LGA). It is within an industrial area. Duck River is about 80 m to the south of the site.
Site establishment and access tracks	Site establishment will include: • install environmental controls

Aspect	Detailed description
	• deliver and install site offices and amenities, including temporary utility connections • install security measures e.g. fencing • set up parking areas • install entry and exit gates • designate stockpile locations • set up machinery maintenance and wash down areas • install bunds and fuel storage tanks • take delivery of equipment. The proposal will use existing roads to access the site. We will construct internal haul roads as needed throughout construction.
Ancillary facilities (compounds)	A construction compound will be required to house site sheds, amenities and personnel parking. The compound will be located within the proposal area, with the exact location to be determined by the contractor in consultation with the Project Manager.
Methodology	Following site establishment, the proposal will require: • Survey of the proposal area and surrounding roads and properties. • Site preparation, including remove existing stockpiles, levelling etc. • Remove (or grout) any redundant infrastructure e.g. stormwater or utilities. • Construct haul roads as required. • Import and stockpile approximately 365,000 m^3 of imported VENM, ENM or Material Approved under a general and / or specific RRO/RRE. • Spread and compact imported material to raise site up to 1.7 m above existing level. • Grade final levels from north to south, and away from adjacent properties and drainage areas. • Regular inspections and audits of imported material. • Test material and compaction levels. • Stabilise any areas of concern (embankments and batters) with soil binder. • Manage surface water collected in basins. • Implement environmental controls as needed including dust suppression.

Aspect	Detailed description
Materials/ equipment	Machinery and plant: • Excavators (various sizes) • Haulage trucks (various sizes) • Dozers (various sizes) • Graders • Front end loaders • Compactors • Water carts • Vibratory rollers (pad foot and smooth drum rollers) • Street sweepers • Vacuum trucks • Light vehicles. Materials: • Virgin Excavated Natural Material (VENM) • Excavated Natural Material (ENM) • Material Approved under a Resource Recovery Order/Exemption (RRO/RRE) • Diesel and petrol. Equipment: • Site facilities and amenities • Generators • Pumps (various sizes) • Water filled barriers • Lighting towers.
Work hours	The works will typically take place between 7am to 10 pm weekdays and Saturdays 7 am to 2 pm. However, this REF has assessed works occurring continuously over a 24-hour period. This was to address the range of construction projects where material could be sourced from that also operate continuously. While the works will typically be between 7am to 10pm weekdays and Saturdays 7am to 2pm, works are permitted outside these hours, with the agreement of the Project Manager, Environmental and Community Leads.

Aspect	Detailed description
Restoration	During works the site will be compacted and stabilised, and soil binder will be applied to some areas. On completion of the works additional fencing and controls will be established if needed. The site will then be monitored and maintained in accordance with Sydney Water standard procedures, and the LTEMPs until construction of future infrastructure commences.
Proposal timing	Construction is expected to start mid to late November 2024 and take approximately 18 months. The anticipated completion of the proposal is mid-2026.

2.2 Field assessment area and changes to the scope of work

The proposal shown in this REF is indicative and based on the latest information at the time of REF preparation. The final proposal may change during construction. If changes to the proposal are required, further environmental impact assessment must be prepared in accordance with SWEMS0019.

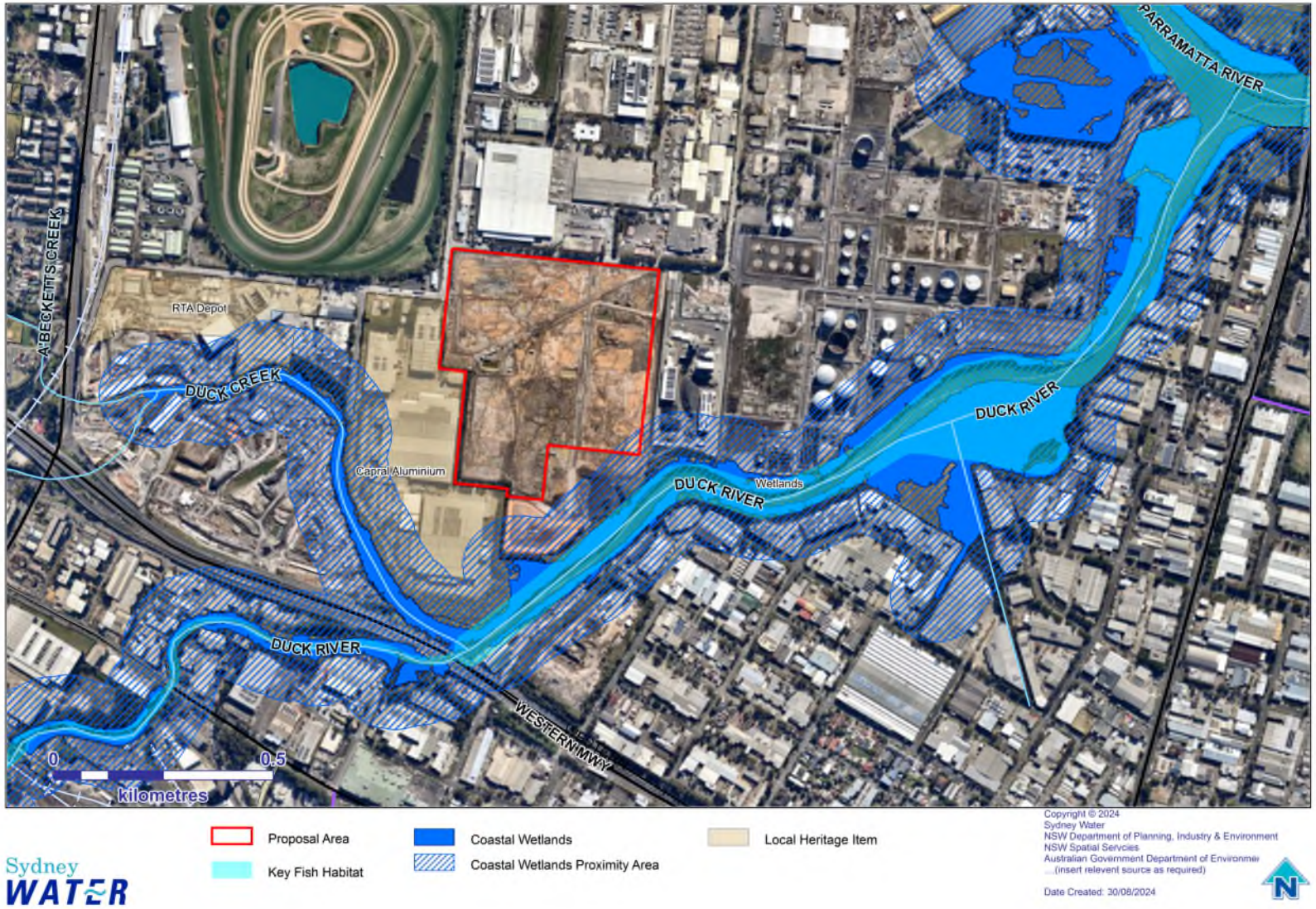


Figure 2-1 Location of proposal and key environmental constraints

3 Consultation

3.1 Our approach

Our approach to community and stakeholder consultation is guided by Sydney Water's community and stakeholder engagement guidelines.

Stakeholder and community engagement is a planned process of initiating and maintaining relationships with external parties who have an interest in our activities. Community and stakeholder engagement:

- enables us to explain strategy, policy, proposals, projects or programs
- gives the community and stakeholders the opportunity to share their knowledge, issues and concerns
- enables us to understand community and stakeholder views in our decision-making processes alongside safety, environment, economic, technical and operational factors.

Where our work impacts the community, we consult affected groups throughout the planning and delivery of the proposed work. This includes engaging the broader community and stakeholders during plan or strategy development or before making key decisions. The nature, scale and extent of the proposal's potential impact has been evaluated in this REF.

3.2 Community consultation and notifications

Engagement with the community and local businesses has taken place and will be ongoing to provide information about the proposal. To date, community engagement and notification for the proposal has included:

- Sending out notification for the broader GPOP Water Cycle Management Project (WCM), including notifications for investigation works
- Door knocking business in the area as well as phone calls and emails to understand traffic impacts for local businesses
- Establishing a Sydney Water Talk page with a project fact sheet, map and feedback tools
- Community hotline and project inbox
- Sending out a project introduction notification for start of work for the site environmental management works

Feedback received from the community/businesses has primarily related to discussion on traffic in the area and alternative routes, and identification of local cafes. A notification letter for the start of work will also be distributed about 7 days before works start.

3.3 Stakeholder consultation

Sydney Water has undertaken consultation and engagement about the proposal and future project with the following stakeholders:

- City of Parramatta Council
- Australian Turf Club
- Department of Planning, Housing and Infrastructure (DPHI), Industry and Infrastructure Assessments
- Sydney Metro
- Parramatta Light Rail
- Transport for NSW
- VE Properties
- Local businesses including cafes, concrete suppliers and industrial complexes.

Feedback received during consultation and engagement is summarised in Table 3-1.

Table 3-1 Summary of stakeholder feedback received on the proposal

Stakeholder feedback	Sydney Water response
City of Parramatta Council	
Raised concerns about stormwater and flooding, noting that the area can be subject to major flooding. Noted the potential for the raised site to increase flooding within the area by diverting flood waters around the site. Particularly identified flooding potential in Devon Street, Colquhoun Street, Unwin Street, the Rosehill Gardens Racecourse, adjacent commercial and industrial properties and the Metro. Also noted the raised site would affect flooding in major events.	Sydney Water noted that the results from the modelling show there will be minimal impact to surrounding properties in the 1% AEP. In the Probable Maximum Flood (PMF) scenario assessed (which included allowance for climate change), the results show an increase in flooding to some of the streets (including Devon, Colquhoun and Unwin Streets), however noted that these areas are already subject to flooding in the PMF, and the increase was considered minor. The results also show impacts in the PMF to the Metro (further details below in Metro section).
In relation to flooding, questioned the use of the Metro model and the results presented for the two main flood scenarios discussed (1% AEP and PMF). Requested additional scenarios to be modelled. Also noted that climate change is likely to increase flooding in the area and that this needs to be assessed.	Sydney Water discussed different flood models with Parramatta City Council. At the time of assessment, the new Council model was not available for use, and Sydney Water considered the Metro model with some updates the most suitable. Sydney Water will provide detail on the flood impact assessment and model to Council. For the future project, Sydney Water will continue to discuss the flood modelling and assessment and modelling with Council.

Stakeholder feedback	Sydney Water response
In relation to stormwater, noted that there is an existing overland flow and flooding issue. Raised concerns that the project would remove an existing drainage channel on the western boundary, and a planned stormwater drainage system through the site which would manage overland flow and may have removed some of the flow from the depression in Devon Street.	In response to feedback from Council, Sydney Water agreed to retain the existing drainage channel on the western boundary of the site for these works. This channel will not be capped as part of the proposal. However, Sydney Water noted that this area will need to be used for the future project. Sydney Water and Council discussed options for this, including culverts underneath an access road or parking area for the future WRRF. Council noted that if culverts are proposed, Council's position is to model these as being blocked for the purposes of the flood modelling. In relation to the planned stormwater drainage through the middle area of the site, Sydney Water noted that this was part of the previous landowner's project and understands that there may be future infrastructure proposed adjacent to the site, which could accommodate additional stormwater drainage. Sydney Water also noted that modelling undertaken indicated the proposed drainage system may not have resolved Devon Street flooding.
Raised concerns about traffic and the impact this would have on an already congested area. Particularly noted Colquhoun Street and Grand Parade. Noted preference for 24 hour construction to minimise impacts of congested daytime traffic, and shorten duration of construction.	Sydney Water acknowledged the existing congestion in the area and additional potential impacts of traffic as a result of the proposal. Sydney Water noted that the assessment is based on 30 truck movements per hour (or 1 truck movement every 2 minutes) and that different route options have been identified to spread and mitigate the traffic, including Grand Parade/James Ruse and Unwin/Wentworth Streets (when available). The assessment has allowed for 24 hour construction, however notes that the hours may be limited to 7am-10pm due to limits from the site of the source material. The assessment noted minimal impacts from the additional traffic.
Noted other works and activities in the area including PLR and Metro and potential interfaces with these projects and cumulative impacts, including traffic.	Sydney Water acknowledge these other activities and that engagement with these stakeholders continues. This includes management potential cumulative impacts, particularly relating to traffic and timing of works.
Expressed concerns about raising the site and capping as a means of managing residual contamination, and the potential for starting a precedent with this in the precinct. Also questions if the site could be raised to just the 1%AEP rather than to the 1.7m proposed. Noted other sites have removed the contaminated material to appropriate landfills and replaced it with clean fill.	Raising the site has multiple benefits. These include: • stabilising the site and limiting potential interaction with residual contamination until future approvals are obtained and construction commences, and • raising it above the 1% AEP flood level, which is the design standard for Sydney Water infrastructure which must continue to operate in a flood event, to protect homes and the environment.

Stakeholder feedback	Sydney Water response
	The height of 1.7 m was selected as it raises the site above the 1% AEP and will allow future works at the site (both construction and operational) to build and maintain pipes and other infrastructure without the risk of interacting with contamination. The timing of the works uses excess material from the construction of major tunnelling projects in Sydney, reusing what might otherwise become waste. Removing the residual contamination and replacing it with clean material would require substantial truck movements (in the order of double what is currently proposed) and was the least preferred option on a cost comparison. Sydney Water is a public authority funded by customers within Sydney and is obliged to adopt a prudent approach. The assessment showed there would be minimal impacts from raising the site and the proposal was considered cost effective and an efficient reuse of resources.
Discussed matters relating to the future project, including public access to Duck River, potential for the project to affect the line of sight to the river and Council's funding relating to lighting and access. Council also discussed priorities for protecting Parramatta River quality, existing and future swim sites, water sensitive urban design, green space and access. Also noted other projects and in the area and plans to coordinate these.	The site acquired by Sydney Water does not have direct connection to Duck River. Sydney Water is developing a reference design for the GPOP WCM project, including a WRRF at the site. That project will be assessed as a State Significant Infrastructure project and would be approved by the Minister for Planning. This includes consideration of water quality, the swim sites and place and design. Sydney Water has noted the matters raised by Council and will continue to work with Council to help achieve the vision for the Camellia-Rosehill precinct, including project coordination where possible.
Australian Turf Club	
Discussed operational matters including times the horses sleep, train, and race. Questioned if the proposal would increase existing traffic delays around Grand Parade and Colquhoun Street.	The noise assessment undertaken for the proposal identified potential impacts to the horses sleep at night. The noise assessment suggested alternative access routes (Colquhoun Street and Grand Parade) to avoid impacts. Representatives from the Australian Turf Club noted that the Metro project has installed sound proofing and avoiding Unwin Street is not required. During 24-hour construction, if Unwin Street is used, Sydney Water will consult with the Australian Turf Club to confirm there are no impacts at the stables from the proposal.
Discussed the future project relating to where pipeline infrastructure might be located within the Rosehill Gardens Racecourse.	Sydney Water will continue to discuss future pipeline infrastructure with the Turf Club during development of the GPOP WCM project and will aim to avoid or minimise impacts within their property,

Stakeholder feedback	Sydney Water response
DPHI, Industry and Infrastructure assessment	
Both assessment teams questioned Sydney Water's plans regarding the existing SSD approvals for the site obtained by the previous landowner. The Industry assessment team provided assistance with the Long Term Environmental Management Plans.	Sydney Water noted that it will obtain its own approvals and does not plan to interact with the existing SSD consents issued to the previous landowner. Sydney Water's activities will be conducted in accordance with the three LTEMPs for the site.
Sydney Metro West	
Raised concerns about the potential impact of the proposal on the freeboard that Metro has allowed in the PMF for this stage of their project, which is the Metro design standard for its infrastructure. Metro provided information relating to their project and approvals, including traffic, timeframes, and information about the area.	The flooding assessment showed that at Metro's nearby site, the Clyde Stabling Yard and Maintenance facility, there may be some impact to Metro's freeboard in the PMF (plus climate change) scenario as a result of the proposal. Freeboard is the extra height allowed above a predicted flood height to account for unforeseen factors. Metro noted that the freeboard may reduce during the next phase of their project and is considering the impact. Sydney Water will continue to work with Metro on this matter.
Parramatta Light Rail	
Feedback related mainly to the future project, including requirements for works around their infrastructure and pipeline alignment plans.	Sydney Water will continue to engage with Parramatta Light Rail on the GPOP WCM project as it develops.
Transport for NSW	
Discussed traffic routes, projects and congestion within the area. TfNSW noted that 24 hour construction and a shorter construction period is preferable, subject to approvals at the material receival site.	The Contractors will submit a Traffic Management Plan to TfNSW for review before construction. Sydney Water will continue to engage with TfNSW for this work and as the GPOP WCM project develops.
VE Properties	
Sydney Water has acquired the site from VE Properties. VE Properties noted that they plan to modify their existing approvals to reflect the adjustment to their land area/property.	Sydney Water will continue to work with VE Properties on the proposed modification of their approvals.
Local businesses	
A café located in the adjacent Goodman Building provided support on the proposed works.	Sydney Water will continue to update adjacent properties as the proposal progresses.

3.4 Legislative requirements

Sydney Water must consult with councils and other authorities for work in sensitive locations or where the work may impact other agencies' infrastructure or land. This is specified in Part 2.2 of the State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP) and includes matters such as public safety issues, temporary works on council land, and full or partial road closures of council managed roads. For the proposal, the relevant requirements are:

2.10 Consultation with councils—development with impacts on council-related infrastructure or services

(1) This section applies to development carried out by or on behalf of a public authority that this Chapter provides may be carried out without consent if, in the opinion of the public authority, the development—

(a) will have a substantial impact on stormwater management services provided by a council, or

(b) is likely to generate traffic to an extent that will strain the capacity of the road system in a local government area, or

…

(2) A public authority, or a person acting on behalf of a public authority, must not carry out development to which this section applies unless the authority or the person has—

(a) given written notice of the intention to carry out the development (together with a scope of works) to the council for the area in which the land is located, and

(b) taken into consideration any response to the notice that is received from the council within 21 days after the notice is given.

2.12 Consultation with councils—development with impacts on flood liable land

(2) A public authority, or a person acting on behalf of a public authority, must not carry out, on flood liable land, development that this Chapter provides may be carried out without consent and that will change flood patterns other than to a minor extent unless the authority or person has—

(a) given written notice of the intention to carry out the development (together with a scope of works) to the council for the area in which the land is located, and

(b) taken into consideration any response to the notice that is received from the council within 21 days after the notice is given.

The flooding and traffic assessments found that the proposal would cause minimal impacts and did not trigger the consultation requirements under Part 2.2 of the SEPP. However, Sydney Water will provide Council with a copy of the REF, flooding assessment and flood model for review, and will continue to engage with Council on relevant matters as the project progresses. Other matters for consultation identified in Part 2.2 of the TISEPP are identified in Appendix B.

4 Legislative requirements

Sydney Water is the proponent and determining authority for the proposal under the EP&A Act. The proposal does not require development consent and is not classified as State significant infrastructure. The site was the subject to two former development consents (SSD-9302 and SSD-10459). These consents were obtained by the former landowner and Sydney Water will not be continuing the developments proposed under either development consent. Therefore, Sydney Water will not be using or relying on either SSD-9302 or SSD-10459. The proposal is also unrelated to SSI-74258485 the GPOP WCM Project, which is for the future WRRF and associated infrastructure.

We have assessed this proposal under Division 5.1 of the EP&A Act. This REF has concluded that the proposal is unlikely to have a significant impact on the environment. The following environmental planning instruments (Table 4-1) and legislation (Table 4-2) are relevant to the proposal. Table 4-2 also documents any licences and permits required, and the timing and responsibility for obtaining them.

Table 4-1 Environmental planning instruments relevant to the proposal

Environmental Planning Instrument	Relevance to proposal
Parramatta Local Environmental Plan 2023 (Parramatta LEP)	The proposal is located on land zoned Heavy Industrial (E5). The objectives of this zone are to: • provide areas for industries that need to be separated from other land uses • ensure the efficient and viable use of land for industrial uses • minimise any adverse effect of industry on other land uses • encourage employment opportunities • allow a wide range of industrial uses serving the Six Cities Region • preserve opportunities to create future foreshore access on contaminated land not suitable for public access. Water supply systems are prohibited in this zone. Sewerage systems and environmental management works would be permitted with consent. The planning certificate for the site, issued under section 10.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) notes the land is subject to an environmental management plan to manage contamination issues and is within a 'flood planning area'. These environmental constraints are addressed in Section 5.2.1 and 5.2.2. respectively. The proposal is also on land mapped as acid sulphate soils class 4. Under Parramatta LEP, development consent is required for works more than 2 metres below the natural ground surface, or

Environmental Planning Instrument	Relevance to proposal
	works by which the water table is likely to be lowered more than 2 metres below the natural ground surface. The proposal does not involve works 2 m below the natural ground surface or lowering the water table. Section 5.12 of Parramatta LEP states that the LEP '*does not restrict…the carrying out of any development, by or on behalf of a public authority, that is permitted to be carried out with or without development consent… under the State Environmental Planning Policy (Transport and Infrastructure) 2021*'. In addition, s.1.9 notes that the Plan *is subject to the provisions of any State environmental planning policy that prevails over this Plan as provided by section 3.28 of the Act.* The proposal is development without consent to be undertaken by a public authority (Sydney Water) under the provisions of the TISEPP and therefore, development consent from Parramatta City Council is not required.
State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP)	Sydney Water has recently acquired the proposal area for future use, a water resource recovery facility, subject to separate approvals. Water reticulation infrastructure is also present within the proposal area. The TISEPP provides for certain activities to be undertaken by public authorities without the need to obtain development consent from Council. The proposed works involve site environmental management works, including capping the site to minimise disturbance of the residual contamination. Environmental management works are defined under s.2.3 of the TISEPP as '*works for the purpose of avoiding, reducing, minimising, or managing the environmental effects of development*'. Section 2.126(2) of the TISEPP permits development by or on behalf of a public authority for a sewage treatment plant (a type of sewerage system) without consent on land in a prescribed zone. The proposal is in land zoned Heavy Industrial, which is a 'prescribed zone' (s.2.125). Section 2.159 permits development by or on behalf of a public authority for the purpose of water reticulation system without consent on any land. Water reticulation systems are a type of water supply system, which require authorisation under the *National Parks and Wildlife (NPW) Act 1974* if the works are on land reserved under that Act). Environmental management works are permitted in connection with both infrastructure types; a sewerage system (s.2.126(10)(i)) and water supply systems (s.2.159(6)(k)).

Environmental Planning Instrument	Relevance to proposal
	As Sydney Water is a public authority and the works are not on land reserved under the *National Parks and Wildlife Act 1974*, the proposal is permissible without development consent.
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BCSEPP)	**Water catchments (Chapter 6)** Chapter 6 of the BCSEPP relates to Water catchments. The proposal area is within the Sydney Harbour Catchment, a regulated catchment area. Under this SEPP, certain matters must be considered before consent for a proposal is issued. Section 5 and Appendix C of this REF assess potential environmental impacts on water quality and quantity, aquatic ecology, flooding, access, cultural heritage, flora and fauna, and scenic quality. This assessment confirmed that potential impacts are minimal and meet the requirements of Part 6.2 of the SEPP. Separately, Part 6.3 of the BCSEPP also applies as the proposal area is on land within or abutting the mapped Harbour Foreshores and Waterways Area. The required general considerations provided in s 6.28 of the SEPP are addressed in Appendix D of this REF. No other parts of the BCSEPP apply to the proposal.
State Environmental Planning Policy (Resilience and Hazards) 2021 (RHSEPP)	**Coastal Management (Chapter 2)** As shown in Figure 2-1 a small portion of the site is within an area mapped as "proximity area for coastal wetlands" under the RHSEPP and the wetlands adjacent to Duck River are about 80 m from the site. The portion of the proposal area mapped as a proximity area has been previously cleared of vegetation. Despite the previous clearing and disturbance, we have considered the following requirements (identified in s 2.8 of the RHSEPP) for the proposal: *a) the biophysical, hydrological or ecological integrity of the adjacent wetlands, and* *b) the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland.* The proposal will not impact on any mapped coastal wetlands, including the biophysical, hydrological or ecological integrity of the adjacent wetlands, nor the quantity and quality of surface and groundwater flows. Section 6 includes further information as well as mitigation measures to prevent impacts to coastal wetlands.

Environmental Planning Instrument	Relevance to proposal
	Remediation of Land (Chapter 4) Chapter 4 of the RHSEPP relates to the remediation of land and specifies when consent is or is not required for remediation of contaminated land. The chapter also requires that a remediation work meet certain standards and notification requirements. *remediation* (is defined in section 4.3 of the SEPP) means— *(a) removing, dispersing, destroying, reducing, mitigating or containing the contamination of any land, or* *(b) eliminating or reducing any hazard arising from the contamination of any land (including by preventing the entry of persons or animals on the land).* The proposal area was previously contaminated and contains some residual contamination. However, ongoing remediation of the site is not required, and the proposal does not trigger Chapter 4 of this SEPP. The proposal involves placing material on the site, which will limit future interaction with residual contamination, however it is not considered a remediation activity.

Table 4-2 Consideration of key environmental legislation

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
Protection of the Environment Operations Act 1997 (POEO Act)	The proposal is not associated with the construction and operation of the future sewage treatment plant (WRRF), which will be subject to separate approvals. The proposal is not considered "waste disposal (application to land)" under Schedule 1. Section 39(2)(e) excludes the application of VENM from this activity. VENM accepted by the proposal will be required to meet the definition of VENM under Schedule 1 of the POEO Act and the considerations required by the NSW EPA. The proposal will also involve the application of ENM and other recovered materials suitable for reuse in accordance with a specific resource recovery order (RRO) and relevant resource recovery exemptions (RRE) e.g.	An Environmental Protection Licence is not required, however all material transported to the site must meet the requirements of the Act for VENM or relevant RRO/RREs for ENM.	- Contractor When accepting material to site.

Legislation	Relevance to proposal	Permit or approval	Timing and responsibility
	Excavated Natural Material Order 2014 and Excavated Natural Material Exemption of 2014.		
Contaminated Land Management Act 1997	The site is subject to a site audit statement because of previous contamination of the site (see Section 5.2.1.).	No additional approvals needed. The LTEMPs for the site will be adhered to.	-
Fisheries Management Act 1994	The proposal will not require any works within the nearby mapped Key Fish Habitat, Duck River.	NA	-
Water Act 1912/ Water Management Act 2000	The proposal area is located in the Sydney Basin Central Groundwater Source. The proposal does not require any dewatering of groundwater.	NA	-
Biodiversity Conservation Act 2016 (BC Act)	The proposal has the potential to generate noise and vibration and will involve work at night-time. Due to the number of sightings and the presence of camps nearby the potential impacts of the proposal on the Grey-headed Flying-fox (a Vulnerable species under the Act) were considered in a Test of Significance (see Section 6). This test concluded that a significant impact on the Grey-headed Flying-fox is not likely to result from the proposal and further assessment is not required.	NA	-
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	A Significant Impact Criteria assessment was also prepared for the Grey-headed Flying-fox (Vulnerable) (see Section 6). This assessment concluded that a significant impact would not result from the proposal. No other Matters of National Environmental Significance will be impacted by the proposal. Referral to the Commonwealth Department of Environment, Climate Change and Water is not required.	NA	-

5 Environmental assessment

Section 5.1 describes the existing environment and assesses direct and indirect impacts of the proposal, during the proposed works and once these works are completed. It also identifies mitigation measures to minimise impacts. The mitigation measures will be incorporated into contract documents and a Construction Environmental Management Plan (CEMP) prior to starting work.

5.1 Existing environment

The proposal area is located approximately 16 kilometres (km) west of the Sydney Central Business District (CBD), in Rosehill. Currently, the proposal area is surrounded by industrial and commercial development, with the Downer Sustainable Road and Resource Facility to the east and Rosehill Industrial Estate to the west. Non-industrial or green space areas are limited, except for Rosehill Gardens Racecourse to the northwest and Duck River to the south.

Several major projects are planned or under construction within the precinct, to support the future redevelopment of the precinct. These transport projects include:

- Sydney Metro West (section between Westmead and The Bays). Project construction is currently underway for the Clyde Stabling yard including tunnel dive sites located to the west of the proposal area (about 450m).
- Parramatta Light Rail, Stage 1. This project is currently undergoing commissioning. The Parramatta Light Rail Stabling and Maintenance facility was recently constructed to the north of the proposal area (about 500m).

Significant transport infrastructure is also located in the surrounding area including the M4 Western Motorway (to the south), James Ruse Drive (to the west). The nearest residential properties are located approximately 460 m to the southeast of the proposal area with additional residents located 875 m to the west and northwest.

The proposal area is located on a floodplain at the confluence of the alluvial corridors of the Duck and Parramatta Rivers. The proposal area has previously been extensively disturbed and filled to a relatively flat site which ranges from 2 – 4 m Australian Height Datum (AHD) in elevation. The proposal area is underlain by alluvial sediments and slopes gently towards Duck River located to the south of the proposal area. Duck River flows in a southwest to northeast direction until reaching Parramatta River.

The proposal area was previously part of the Clyde Refinery which was in operation from 1918 to 2012. Soils and groundwater were contaminated from these operations and from former historical land uses surrounding the site. The site has since undergone extensive remediation works under the Western Area Remediation Project (SSD 9302). The site's former declaration as significantly contaminated land (in 2016, Declaration No. 20131110) was repealed in July 2022. Since then, preparatory site works have been undertaken to support an industrial subdivision under the Central Sydney Industrial Estate and Downer Sustainable Road Resource Centre (SSD 10459). Most of

the proposal area has been previously cleared. Some vegetation remains onsite, within and adjacent the drainage channel on the western boundary.

Figure 5-1 Surrounding development

5.2 Environmental aspects, impacts and mitigation measures

5.2.1 Topography, geology and soils

Existing environment and potential impacts

The long term and historic use of the proposal area for petroleum refinery operations resulted in contamination of the soils and groundwater at levels that warranted regulation. In 2016, the proposal area was declared significantly contaminated land under the *Contaminated Land Management Act 1997* (CLM Act).

Previous investigations have identified the following Chemicals of Potential Concern (COPCs) across the proposal area:

- Asbestos
- Polycyclic aromatic hydrocarbons (PAH)
- Total recoverable hydrocarbons (TRH)
- Hexavalent chromium
- Lead
- Benzene, toluene, ethylbenzene and xylene (BTEX)
- Naphthalene
- Light non-aqueous phase liquid (LNAPL)
- Polyfluoroalkyl substances (PFAS).

The site has since been remediated by the previous landowner in accordance with a remediation action plan (RAP) to address human health and ecological risks. The RAP and associated remediation works were endorsed by an EPA accredited independent site auditor via site audits under the CLM Act. In 2022, the declaration of significantly contaminated land was repealed for the site by the EPA.

Three site audit statements were issued by the site auditor, designating the site suitable for commercial / industrial land use. Legacy (or residual) contamination is required to be managed in accordance with the LTEMPs which are associated with the land titles for the site.

At the time of site acquisition, the former landowner was undertaking land modification earthworks under their approvals for the Central Sydney Industrial Estate and Downer Sustainable Road Resource Centre (SSD 10459), to subdivide the site for future industrial uses. Due to the acquisition, these works cannot be completed and exposed material is present which needs to be managed to prevent material moving offsite.

To manage the site and exposed material, the proposal will cap and stabilise the site. Some minor interaction with residual contamination (asbestos) present in the top 1 m soil layer across the site may be required. Asbestos will be managed in accordance with an Asbestos Management Plan for the works.

A geotechnical assessment was undertaken by Jacobs for the proposal, informed by historical and Detailed Site Investigations (DSI) (Jacobs, 2024). Geotechnical investigation results determined that the ground conditions were fill, typically comprising clay or sandy clay, with construction debris, rock gravel and cobbles lain in an uncontrolled manner, and with shallow sandy gravel in some locations. The fill was underlain by alluvium (comprising clay and silty clay), residual soil (clay), underlain by siltstone/interlaminated siltstone and sandstone. The investigation found the ground conditions were over consolidated and did not comprise any weak or soft soils which were unlikely to be compressed during capping works. The DSI also identified that some of the groundwater within the site remains contaminated. Groundwater is further discussed in Section 5.2.2.

The proposal area has been mapped as Class 4 acid sulphate soils and has a moderate salinity potential (Jacobs, 2024).

During construction we will import, and stockpile virgin excavated natural material (VENM), excavated natural material (ENM) or material issued under an RRO/RRW. We will also spread and compact this material to provide a capping layer of about 1.7 m above existing ground level, across most of the proposal area. To avoid any additional contamination, imported material will not be accepted onsite unless the conditions in the relevant NSW EPA RRO and RRE are adhered to.

The proposal has the potential to mobilise soil, which includes soils that contain residual contamination if not appropriately managed. This could cause sedimentation and water quality issues in Duck River. Environmental controls (including the mitigation measures identified below) will be implemented to prevent offsite movement of material. Monitoring will also be undertaken, in accordance with the LTEMPs for the site.

The proposal will ensure that disturbance to residual contamination is limited, reducing the potential to impact the surrounding land and waterways.

Mitigation measures

With the implementation of the mitigation measures below, impacts to topography, geology and soils can be adequately managed, and residual impacts are expected to be minor.

Table 5-1 Environmental mitigation measures — topography, geology and soils

Mitigation measures
The Contractor to ensure imported material is Virgin Excavated Natural Materials (VENM) or meets a relevant NSW EPA Resource Recovery Order and Resource Recovery Exemption or is a commercially supplied material that is not waste. If using materials that are subject to a NSW EPA Resource Recovery Order/Exemption the Contractor must ensure imported material is not accepted onsite unless the conditions in that Order/Exemption are strictly adhered to.
The Contractor is to prepare a Spoil and Stockpile Management Plan which identifies how the spoil will be managed from its source to the site and then placed / compacted on site. The Spoil and Stockpile Management Plan is required to manage excavations, spoil movements (including an import register), spoil classifications, stockpiles on site and capping material being imported to site. This will include detail on: • exact location of stockpiles, and location outside flood area, away from watercourses or drainage lines

Mitigation measures

- minimising stockpile size
- managing height and slopes of stockpiles and batters
- preventing mixing of imported material with existing material which may contain residual contamination
- consideration of future maintenance
- capping
- erosion and sediment control
- restoration.

The Spoil and Stockpile Management Plan will be approved by the Sydney Water Project Manager in consultation with the Environmental Representative and Contamination and Hazardous Materials team.

Prevent sediment moving offsite in accordance with Managing Urban Stormwater, Soils and Construction, Volume 1 and 2A (Landcom 2004 and DECC 2008). Measures could include (but not limited to):

- divert surface runoff away from disturbed soil and stockpiles, where possible
- install sediment and erosion controls before construction starts
- inspect controls at least weekly and immediately after rainfall
- rectify damaged controls immediately
- install controls to avoid mud tracking onto local roadways
- remove controls once surfaces have been stabilised, including removing trapped sediment in drainage lines.

The adopted measures will be documented in a Soil and Water Management Plan (SWMP) prepared by the contractor, which will be adhered to during construction. The SWMP will also include:

- An Acid Sulphate Soils Management Plan
- Any actions for the Contractor required under the groundwater monitoring plans (see Section 5.2.2).

Ensure working areas are progressively stabilised (via compaction). Soil binder to be applied to any areas of concern (eg embankments and batters).

Stop work during heavy rainfall or in waterlogged conditions when there is a risk of sediment loss off site.

The Contractor is responsible for monitoring adverse weather conditions and ensuring adequacy of erosion and sediment controls to ensure that the sedimentation of surrounding waterways does not occur.

Prevent sediment/soil movement offsite. Sweep up any sediment/soil transferred off site immediately and before rainfall.

A construction Contamination Management Plan and an Asbestos Management Plan must be prepared by a suitably qualified person as part of the CEMP and reviewed/endorsed by Sydney Water's Environmental Representative in consultation with internal contamination experts including the appointed site auditor. The Contamination Management Plan must identify as a minimum:

- the type and location of known/potential contamination
- land-owner notification requirements

Mitigation measures

- management requirements (waste minimisation, waste segregation and classification)
- reuse, offsite recycling and/or disposal measures
- any stop-works provisions for unexpected contamination (including notifying Sydney Water's Environmental Representative).

The Asbestos Management Plan must also be reviewed by Sydney Water's Safety Representative for the proposal.

A post-construction Contaminated Land Management Plan (CLMP) must be prepared by a suitably qualified person prior to completion of the proposal. The plan must be reviewed by Sydney Water's internal contamination experts. The plan must identify the type and location of contamination, risk mitigation measures such as location, type and extent of capping layers (if applicable) and the required ongoing management measures.

Undertake all site works in accordance with the existing Long-Term Environment Management Plans (LTEMPs). The LTEMPs should be incorporated into the CEMP and CMP and all site personnel should be inducted into the LTEMP. Ensure required notification requirements are complete before undertaking works (eg SafeWork NSW).

5.2.2 Water and drainage

Existing environment and potential impacts

Surface Water

Duck River is located approximately 80 m south of the proposal area and flows to the northeast before reaching Parramatta River. From the confluence with Duck Creek (about 400 m from the site), Duck River is mapped as Key Fish Habitat and bordered by mapped coastal wetlands. A small portion of the 'Coastal Wetlands Proximity Area' is mapped within the site. The Sydney Metro West project includes works to Duck Creek within their site.

A channel which drains into Duck River is located along the western boundary of the proposal area. This drainage channel conveys stormwater from the western area of the site, as well as Unwin Street and Colquhoun Street. Material will not be placed over this channel during the capping works, however it is noted that in the longer term, this area will be needed for future activities and an alternative solution will be required. A stormwater pipe has been installed, but not connected by the previous site owners. The stormwater pipe runs north-south along most of the site. As this stormwater pipe has not been connected and cannot be without significant relocation of the existing watermain within the site, capping material will be placed over this pipe.

The site contains previously established drainage basins which will need to be emptied as the works progress. There is the potential for this surface water to be contaminated and testing will be undertaken. The water will be directed to the sewer network (as trade waste) or removed by tanker and disposed to a licensed facility.

The proposal will change the surface topography of the site and subsequently drainage patterns. The proposed batters are shown in Figure 5-2 with the landform of the site provided in Figure 5-3. Drainage channels with suitable erosion protections will be provided around the site to ensure that surface water flows are contained within the site and can be treated before discharge to Duck

River. The site, especially batters, will be treated with soil binder to minimise potential water quality impacts to Duck River associated with runoff.

During construction, the movement of material across the site has the potential to create dust and expose soils to erosion risks, which may lead to increased sedimentation in Duck River. The works could also potentially impact water quality from the interaction of surface water with contaminated soils, or leaks of fuel, hydraulic fluid from plant, or from other materials required during construction.

The works and site will be managed and appropriate safeguards to prevent erosion, sedimentation, and other water quality impacts to Duck River will be implemented.

Safeguards will also be implemented to ensure the appropriate handling and storage of fuels and chemicals and any hazardous materials required for construction. This will include containing materials in appropriately bunded areas within construction compounds and in small volumes. Refueling activities will be restricted to bunded areas.

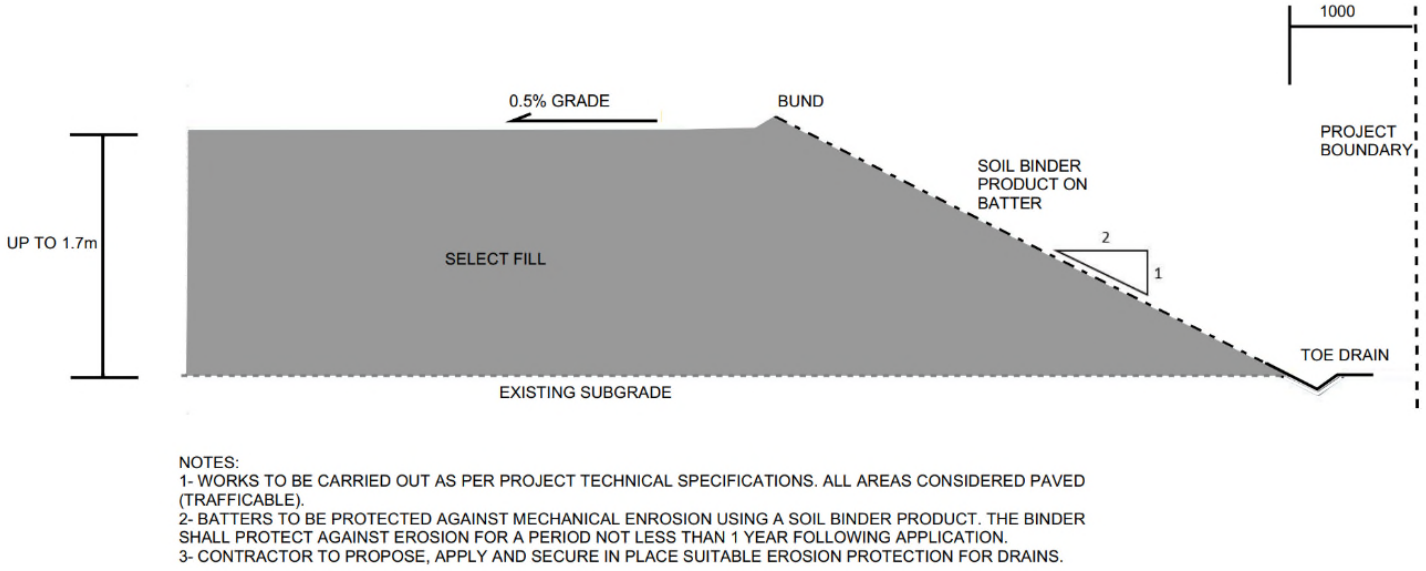


Figure 5-2 Proposed design of batters

Figure 5-3 Proposed landform design

Flooding

Most of the Rosehill – Camellia peninsula is situated on flood prone land affected by the PMF. The site is located on the southern side of the peninsula, adjacent to Duck River, and the full site is affected by the PMF. In the 1% AEP flood, the northern portion of the site is affected by overland flooding from Unwin Street, Colquhoun Street and Devon Street, while the western and southern fringes of the site are affected by mainstream flooding from Duck River in addition to overland flooding. Flooding has the potential to increase movement of spoil offsite during construction. The implementation of safeguards will ensure that the active worksites are prepared for the onset of wet weather.

A Flood Impact Assessment has been prepared for the proposal (Jacobs, 2024). The purpose of the assessment was to identify current flood behavior and assess if the proposed 1.7 m capping layer would affect flood patterns within the area.

The *Flood Risk Management Manual* (the Manual) (NSW Government, 2023) provides approaches for floodplain modelling and management of flood risks in NSW. The Manual specifies that any new developments within flood prone lands needs to be assessed cumulatively to ensure that it will not substantially impact on existing development. However, no specific criteria relating to flood impacts are provided in the Manual. The assessment adopted the following criteria when considering impacts:

- No additional private properties would be impacted by flooding up to and including the 1% AEP event as a result of the proposal.
- The proposal would not worsen existing flooding patterns in the surrounding area during the:
    - The 1% AEP event
    - The PMF event.

The term ‘not worsen’ was considered a maximum increase of 10 mm in the 1% AEP event, which is consistent with the threshold on other major development projects. For the PMF, a review of increased flood risk to sensitive properties and to emergency access routes was undertaken.

The assessment included review of other existing and available flood studies in the area. The existing hydraulic modelling associated with the Sydney Metro West project (GLC, 2023) and the Parramatta Light Rail (Stage 1) was adopted to assess flood impacts of this proposal. At the time of the assessment, Parramatta City Council’s flood modelling was not available.

The main causes of flooding within the proposal area are due to mainstream flooding, where the water levels rise in the nearby Duck Creek, A’Becketts Creek and Duck River (in major events). It is also due to overland flooding from local stormwater runoff. The assessment undertaken used separate mainstream and overland models to assess flood impacts associated with the proposal.

The mainstream assessment used a TUFLOW model which represents the floodplain areas with a two-dimensional, two metre grid. Model terrain was represented based on ground elevations and included site information, surveyed using LiDAR from 2019. The overland flood model established a TUFLOW “rain on grid” to better represent the small and relatively flat terrain.

The 2019 LiDAR information was used as this provides a base case prior to material being moved around on site associated with SSD-9302 and SSD-10459. Additional LiDAR was used for the neighbouring and recently built Downer Rosehill Sustainable Road Recovery Centre (Downer Site) to appropriately show current overland flow behaviour. The Parramatta Light Rail site was also updated from the 2019 LiDAR. Terrain for the Metro West sites was obtained from the GLC (2023) flood model as it represented the built condition for those sites.

The parameter values within the existing model (GLC, 2023) including those for hydraulic roughness were considered appropriate for the urban area and the guidelines. The 1% AEP and PMF mainstream events were simulated. PMF modelling included considerations for climate change (cc) consisting of sea level rise. The guidance on climate change impact to PMF flows from Australian Rainfall and Runoff (ARR) 2019 was current at the time of the flood study, whereby no increase to PMF flows was recommended by those guidelines. Sydney Water notes that's the ARR was updated in late August and includes guidance on climate change, including increased rainfall intensity for all storm events. This guidance will be considered in subsequent modelling runs, however they are not expected to affect the results for the 1% AEP for this proposal. As the additional modelling results become available, Sydney Water will discuss them with Council and other stakeholders.

The critical storm events and durations which produced peak flood levels around the site were analysed. Again, the critical durations and associated conditions were similar to those provided in the existing model (GLC, 2023) so these too were adopted without change (see **Table 5-2**).

Table 5-2 Adopted mainstream flood scenarios

Flood Event	Storm Event		
	Duration	**Temporal Pattern (TP)**	**Tailwater Boundary**
1% AEP	3 hour	TP05	Mean High Water Spring Tide (MHWS) 0.675m AHD
	6 hour	TP09	MHWS 0.675m AHD
PMF	120 min*	TP04	1% AEP 1.45m AHD
	120min* (+ climate change, CC)	TP04	1% AEP CC 2.34m AHD
	180 min*	TP04	1% AEP 1.45m AHD
	180 min* CC	TP04	1% AEP CC 2.34m, AHD

**Critical events for Duck River and Duck Creek around the site and other key sites including Metro West.*

For this study, the Duck River PMF was simulated for the flood impact assessment as it resulted in the maximum flood levels and afflux in the vicinity of the proposal area. The model was tested using the Parramatta River PMF and found that potential flood impacts in the vicinity of the

proposal area were smaller than the PMF event for the Duck River. This was because there were no significant levels of active flow from the Parramatta River interacting with the proposed capping. The proposal area would mainly be affected by backwater flooding from the Parramatta River.

The overland flood model used the same terrain data as the mainstream model, which is based largely on the 2019 LiDAR data. Roughness values were also applied with reference to aerial imagery. Simulations were run to determine the critical storm events. The overland flood model and simulated critical storm events are summarised in **Table 5-3**.

Table 5-3 Adopted overland flood scenarios

AEP	Critical Duration (mins)	TP
1%	15	TP5
1%	120	TP6
1%	180	TP7
1%	180	TP8

Figure 5-4, Figure 5-5 and Figure 5-6 show the flood extents for the baseline and existing scenarios.

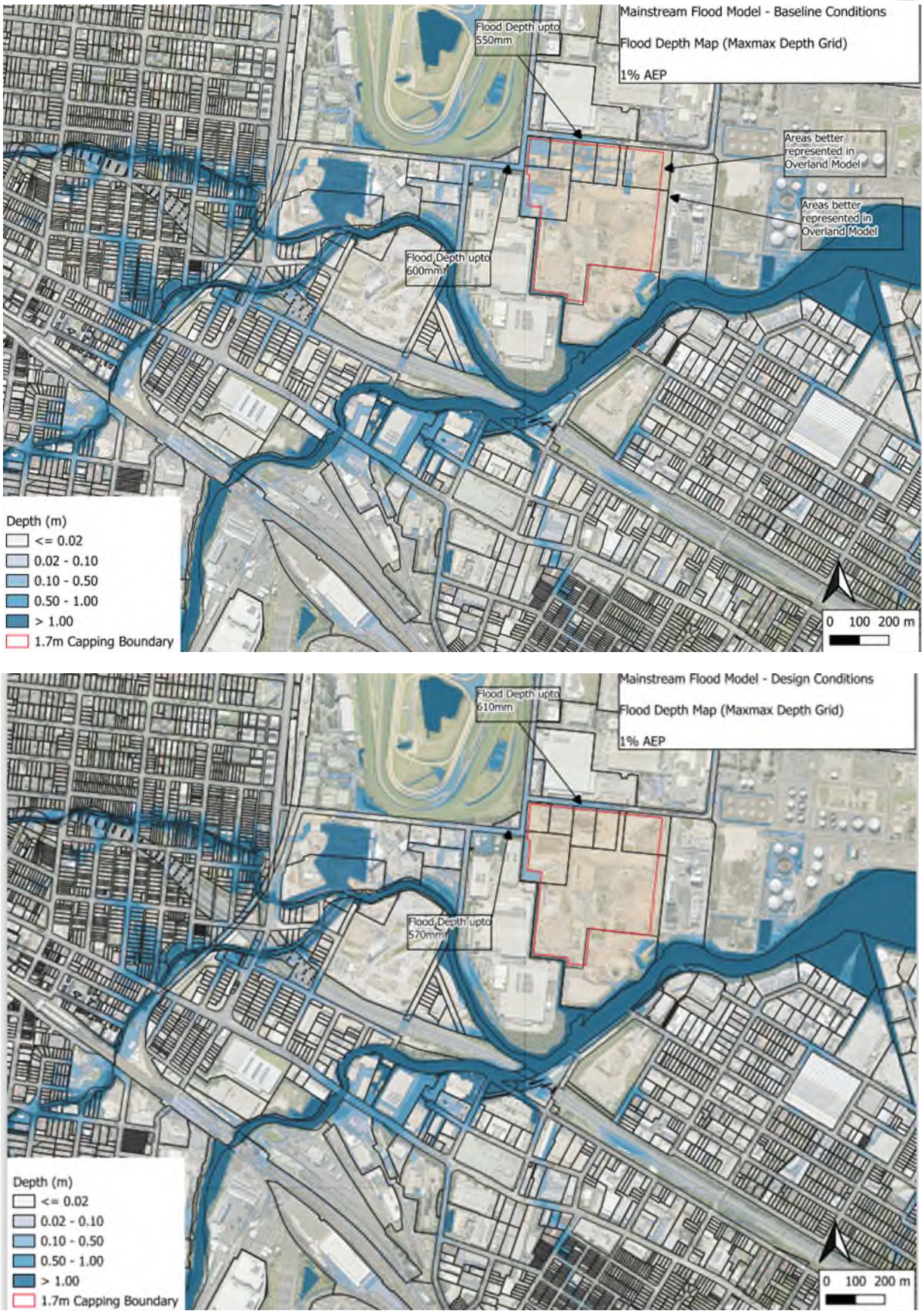


Figure 5-4 1% AEP flood extents in baseline and proposed conditions – Mainstream model

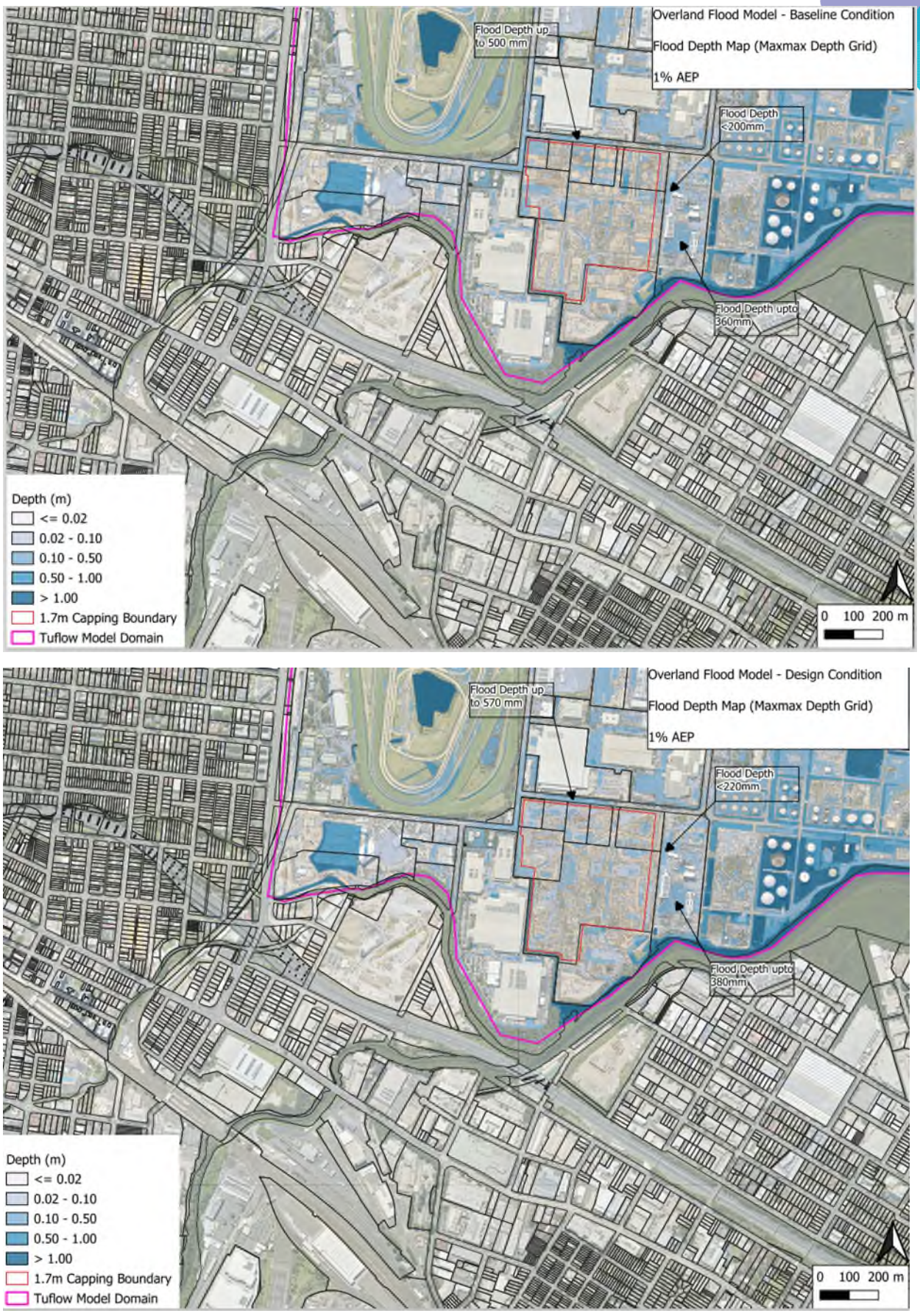


Figure 5-5 1% AEP flood extents in baseline and proposed conditions – Overland model

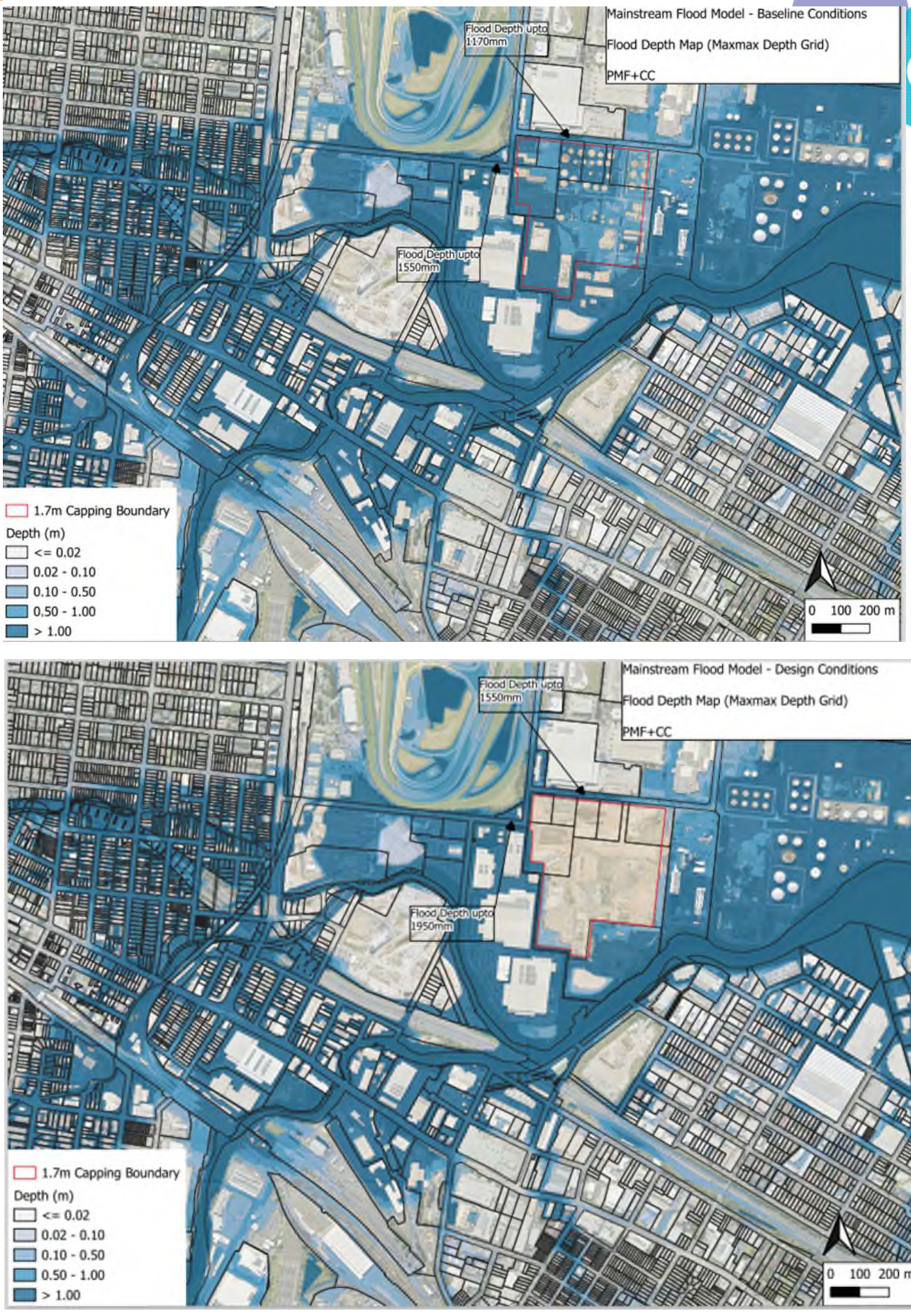


Figure 5-6 PMF flood extents in baseline and proposed conditions

Within the model runs for the proposal the following drainage management solutions were included:

- the overland flow path on the western boundary is maintained (ie no capping), with approximately 200-300mm lowering of ground levels from 2019 LiDAR site baseline terrain.
- 3x 600 drainage pipes from Unwin Street through the proposal area were included as these have replaced the 1200mm x 450mm box culvert and 900mm pipe (in series) in the baseline case.

The changes in flood levels resulting from the proposal are shown in Table 5-4 and provided in Figure 5-7.

Table 5-4 Impact of capping on the 1% AEP flood levels

Location	Model	Existing Flood Depth (m)	Flood depth on completion of the proposal (m)	Changes in 1% AEP flood levels (m)
Unwin Street and Colquhoun Street	Mainstream and Overland	0.60	0.57	-0.03
Western boundary of proposal area	Overland	0.2 – 0.3	0.2 – 0.35	From +0.17 to -0.2m (within drainage channel)
Devon Street	Overland	0.5	0.6	0.07
Downer site	Overland	0.18 – 0.28	0.2 – 0.3	0.02
Properties to the East	Overland	0.58	0.6	0.02
Metro West	Mainstream	Varies, generally up to 0.2m	Varies	0
Rosehill Gardens Racecourse	Mainstream	Varies. Up to 0.2m on track, exceeds 2m in drainage areas.	Varies	Localised changes of +0.02 to -0.02.

Some properties to the east of the proposal area experience reductions in 1% AEP flood levels. The Downer site and two other buildings experience increases of approximately 0.02 m. This increase while higher than the threshold was not considered a material change as it did not change the flood risk of these industrial properties.

Devon Street, north of the proposal area experienced an increase of 0.07 m, however, this is limited to the depression in the roadway. This increase does not change accessibility as the road is already impacted by flood flows in the baseline case (to depths of approximately 0.5 m). Access to the area is still available via alternative routes which are not flooded during the 1% AEP.

Properties in the north are not impacted by higher flood levels. In the 1% AEP there are no impacts to the Metro West facilities or areas surrounding Duck River.

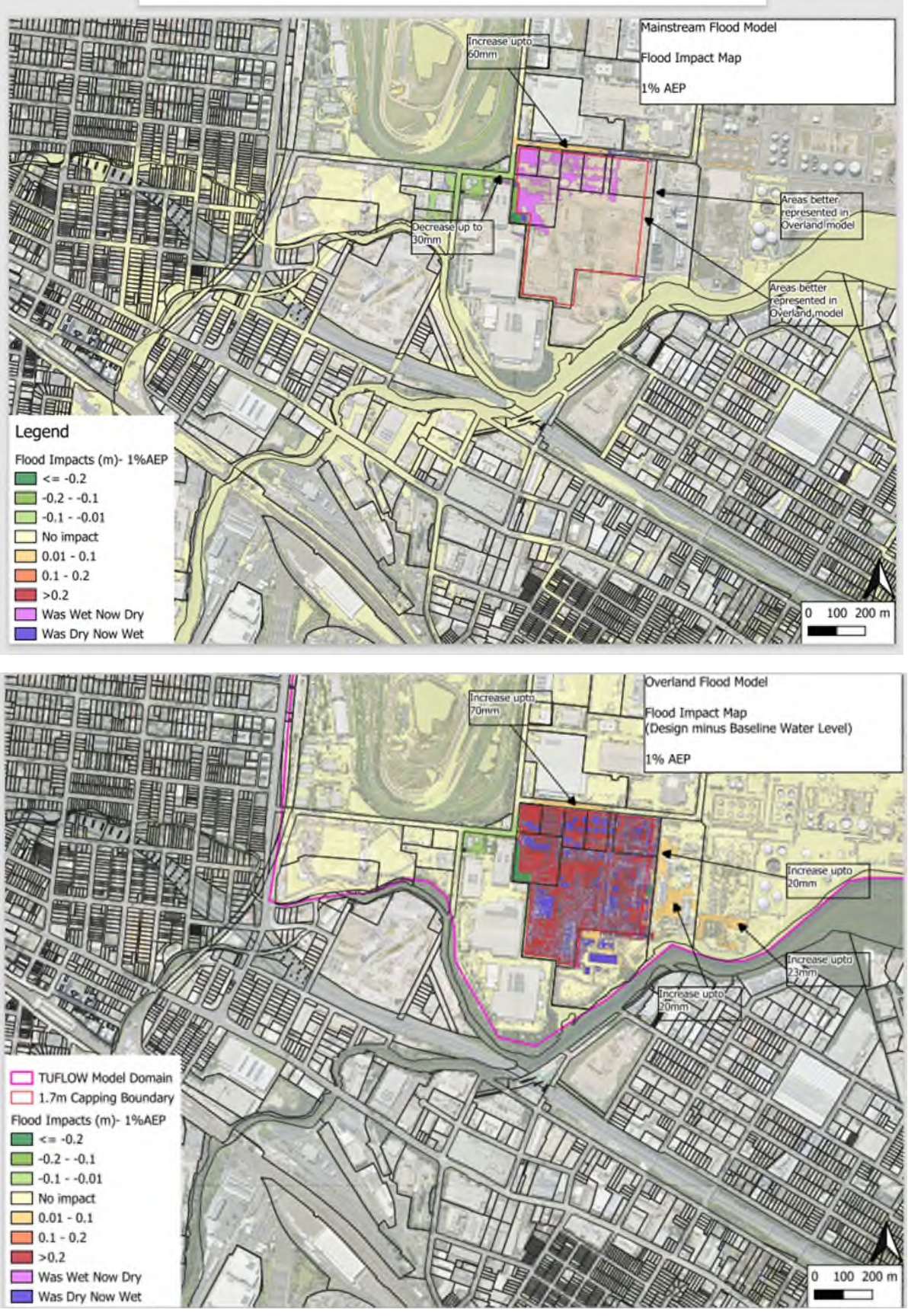


Figure 5-7 Flood impact map showing changes to flood levels (1% AEP)

The changes to PMF flooding levels are shown in Table 5-5 and Figure 5-8.

Table 5-5 Impact of capping on the PMF levels

Location	Model	Existing flood level (m)	Flood level on completion of the proposal (m)	Changes in PMF (m)
Rosehill Services Facility (NE corner)	Mainstream	6.736	6.752	0.016
Rosehill Services Facility (NW corner)	Mainstream	6.352	6.522	0.17
Metro West - Clyde Tunnel	Mainstream	7.149	7.174	0.025
Metro West – Clyde Stabling and Maintenance Facility	Mainstream	6.13 – 7.10	6.29 – 7.13	0.05 – 0.16

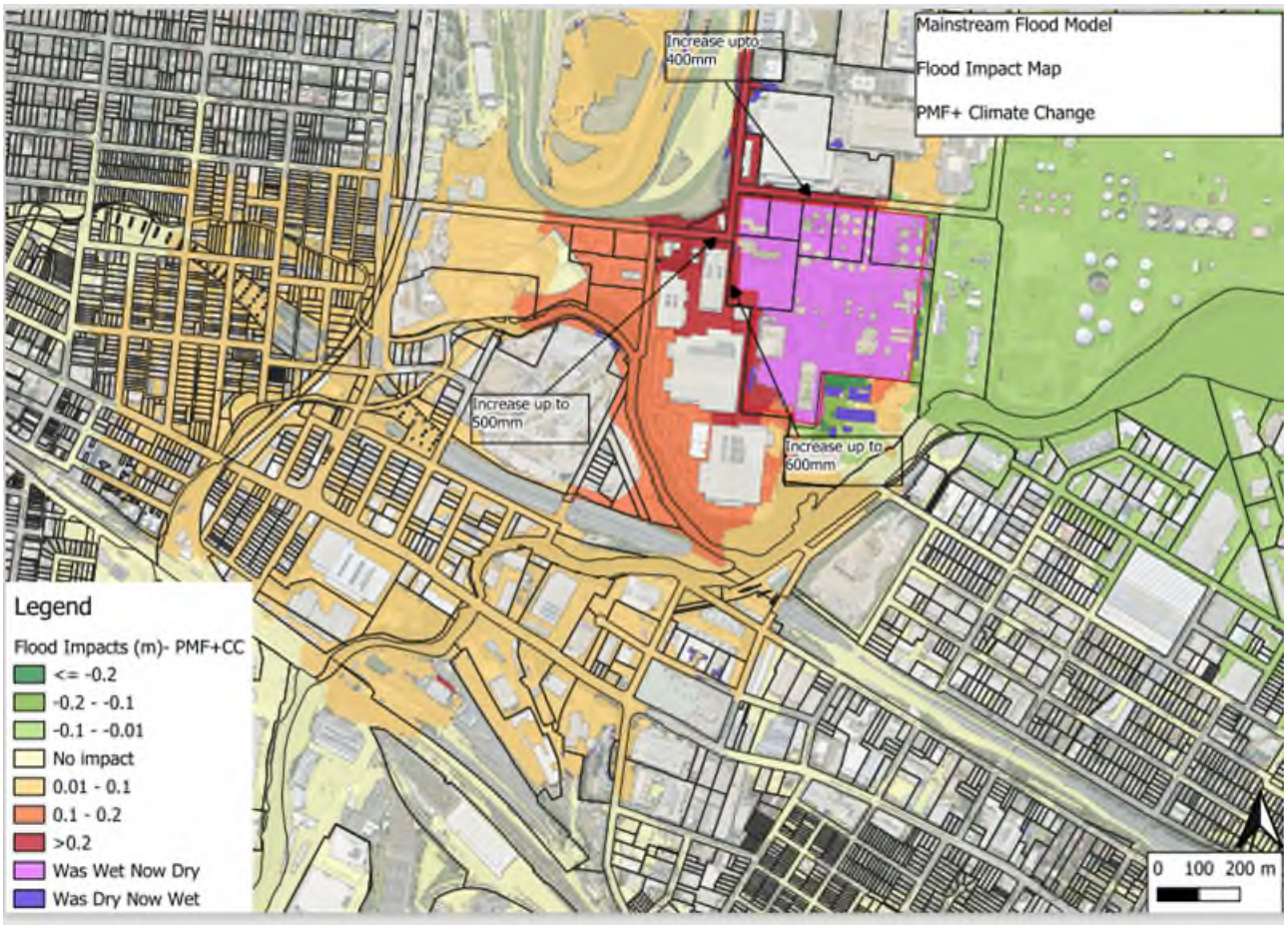


Figure 5-8 Flood impact map showing changes to flood level (PMF)

The results focused on locations with flood protection levels, mainly those associated with the Metro West project. Flood Protection Levels are design elevation levels to which structural elements are constructed up to, to protect key infrastructure from flood flows. The results show that

while the proposal reduces some areas of Metro West's Flood Protection Levels in the PMF, the flooding impact protection to the sites has not changed. Sydney Water is continuing to consult with Metro West about the proposal and potential impacts of flooding in the case of a PMF event.

During the PMF scenario Unwin Street, Devon Street and Colquhoun Street experience increases in flood levels of generally 0.3 m and up to 0.5 m. Other local roads experience increases of approximately 0.05 – 0.08 m. The assessment reported that this was unlikely to impact access during the PMF event as these roads already experience flooding during the baseline PMF scenario. The flood modelling showed that there would be no new roads impacted by flooding on the completion of works.

Figure 5-8 shows land adjacent to Duck River upstream of the proposal may experience minor increases in flood levels during the PMF (0.01-0.1 m), noting that these areas already experience flooding. Downstream of Duck River from the proposal scenario flood levels improve.

In addition to maintaining the drainage channel along the western boundary of the site (which was included in the model), the assessment identified measures that could be implemented during construction to minimise flooding impacts in the 1% AEP event. These include:

- Refine ground levels along the western boundary to allow water to flow into the drainage channel.
- Ensure the grading of the capping layer falls away from adjacent properties.
- Install raised berms along the eastern and western edges of the capping layer.

These measures have been adopted by Sydney Water as part of the proposal design. The option for an additional culvert on Devon Street or the removal of the high points along the median strip to mitigate afflux in Devon Street was initially considered and briefly discussed with City of Parramatta Council. However, a review of the utilities survey identified an existing high voltage electricity line in Devon Street which would be affected by these mitigation works. Given the change in flood levels is limited to the roadway and not affecting properties or traffic, these mitigation works were not considered further.

The assessment demonstrated that the proposal would not create flooding issues for any properties which are currently not flood affected. The proposal would also have a negligible impact on the surrounding area in the 1% AEP event. While some increases in the PMF were modelled, these are considered to be minor due to the high existing flood depths within the area, in the baseline scenario. An exception is the potential impact to the flood protection levels of Sydney Metro West. Sydney Water will continue to engage with Parramatta City Council, the Metro West project and other stakeholders.

Groundwater

A geotechnical assessment was undertaken for the proposal (Jacobs, 2024). This assessment included the installation of 16 shallow and 2 deep groundwater wells across the proposal area. Observations of these wells throughout June and July indicated that groundwater levels vary between 0.5 meters below ground level (mbgl) and 4.5 mbgl and are generally within the alluvium layer.

The assessment noted that the groundwater was an unconfined to semi-confined shallow perched groundwater system within fill materials, shallow alluvium, with the potential for deeper confined groundwater system within the alluvium / bedrock. Groundwater flows in a south, southeast direction towards Duck River at a rate of 0.006 m/m.

Groundwater sampling identified concentrations of some heavy metals, TRH, BTEX, PAH and PFAS compounds. The concentrations exceeded the human health and/or ecological guideline levels for the protection of receptors.

The assessment included modelling to determine potential settlement impacts associated with the proposal. These results, with consideration of the hydrogeological conditions were used to determine potential impacts to groundwater movement. Groundwater movement was modelled to show the impacts of the instantaneous loading on the proposal area.

Due to the low hydraulic conductivity of the clay and the low hydraulic gradient across the proposal area, the potential impacts of capping works on groundwater movement are considered to be extremely low. The rate of groundwater movement was described as equivalent to the rate of a dripping tap spread across a 500 m long southern boundary. The temporary increase in ground water flux is only expected during construction works and is predicted to return to current levels on the completion of the works. Furthermore, this increase was only shown to occur within a 10 m area from the base (southern boundary) of the capping layer, noting that Duck River at its closest point is 80 m from the proposal area. These results are also considered conservative because the material was modelled to be deposited all at once, when it will be placed progressively over the site over a 12-18 month period.

Given the shallow nature of excavations it is unlikely that the proposal will encounter groundwater. No groundwater removal will be required during construction and operation. There are no groundwater dependent ecosystems that would be impacted by the proposal.

Based on this information we anticipate that the proposal would have a negligible impact on groundwater, and the risk of contaminated groundwater movement outside of the proposal area. During the works groundwater will be monitored and the site auditor will be consulted regarding the results or any actions that may be required.

Mitigation measures

With the implementation of the mitigation measures below, impacts to water and drainage can be adequately managed, and residual impacts are expected to be minor.

Table 5-6 Environmental mitigation measures — water and drainage

Mitigation measures
Sydney Water Project Manager to ensure the following design recommendations for flooding are incorporated into the final landform: • Refine ground levels along the western boundary to allow water to flow into the drainage channel. • Ensure the grading of the capping layer falls away from adjacent properties. • Install raised berms near drainage areas, such as along the eastern and western edges of the capping layer.

Mitigation measures
No groundwater removal is permitted during works.
If the potential for intercepting groundwater is identified during the works, stop work, and seek advice from the Environmental Representative. Sydney Water will obtain a groundwater Water Supply Works Approval. Where dewatering is >3ML per water year (from 1 July), Sydney Water will also be required to obtain a Water Access Licence.
Prior to the works commencing, Sydney Water is to implement the groundwater monitoring plan. The monitoring plan should present baseline groundwater condition and provide a methodology to monitor groundwater levels and contaminant concentrations, with suggested actions should changes be observed.
Implement erosion and sediment control measures (identified in Section 5.2 and in accordance with the Blue Book) to protect the western drainage line and site boundaries and allow flow of stormwater.
Before works commence, test the surface water in the existing basins. Seek approval and discharge criteria from the Client prior to discharge of water to the wastewater system. Otherwise tanker by a licensed waste Contractor and dispose off-site to an appropriately licensed facility.
During the works, if additional surface water collects on site, collect, and analyse the water to ensure it meets the ANZG 2018 criteria or does not make worse ambient conditions of the receiving water body before discharge to the environment or stormwater. Discharge all water in accordance with Sydney Water's Water Quality Management During Operational Activities Policy (D0001667) including erosion controls, discharge rate, dechlorination, monitoring. Re-use water where possible.
Store all chemicals and fuels in accordance with relevant Australian Standards and Safety Data Sheets. Record stored chemicals on site register. Ensure bunded areas have 110% capacity of the largest chemical container, or an additional 25% capacity of the total volume stored within (whichever is greater). Tightly secure chemicals and fuels in vehicles. Clearly label all chemicals.
Locate portable site amenities, chemical storage and stockpiles of erodible materials away from watercourses, drainage lines and flood prone areas.
Refuel plant and machines in designated bunded areas and away from drainage lines.
Ensure equipment is leak free and well maintained. Repair oil/fuel leaks immediately or remove from site and replace with a leak-free item.
Keep functioning spill kit on site for clean-up of accidental chemical/fuel spills. Keep the spill kits stocked and located for easy access.
Conduct any equipment wash down within a designated washout area.

5.2.3 Flora and fauna

Existing environment and potential impacts

Most of the proposal area has been previously cleared, however there is some vegetation along the western edge of the proposal area. This vegetation is predominately *Casuarina glauca* (swamp oak) and is mapped as urban exotic/natives.

South of the proposal area, along Duck River are areas of native and riparian vegetation, including *Swamp Oak floodplain swamp forest Sydney Basin Bioregion and South East Corner Bioregion* (Endangered, BC Act) and *Coastal Swamp Oak Forest of South East Queensland and New South Wales* (Endangered, EPBC Act) (Biosis, 2018). Mangrove forest vegetation is also present closer to Duck River.

No vegetation, native or exotic is proposed to be cleared as part of the proposal.

Duck River is mapped as Key Fish Habitat and the associated riparian area mangroves are identified as High Potential Groundwater Dependent Ecosystem (GDE) (Office of Water, 2024). The proposal will not impact any of the surrounding vegetation.

A search of the Protected Matters Search Tool (17 September 2024) indicated there are approximately 78 threatened species and 40 listed migratory species located near the proposal area (1 km buffer area). Bionet records show one record of Grey-headed Flying-fox (GHFF) and Masked Owl within the proposal area. There are numerous sightings of GHFF surrounding the proposal area. Green and Golden Bell Frog has also been sighted numerous times in areas closer to the confluence of Duck and Parramatta River. Given the disturbed nature of the proposal area it is unlikely that the proposal would impact any Green and Golden Bell Frogs.

Two permanent Grey-headed Flying-fox camps are in the vicinity of the proposal (see Figure 5-10). Grey-headed Flying-fox (GHFF) are listed as vulnerable under both the BC and EPBC Act. The Clyde camp is located approximately 1.3 kilometres (km) to the southwest and the Parramatta Park camp located approximately 4 km north west of the proposal area. The Parramatta Park camp is considered nationally important due to its population size (up to 9,999 individuals). Potential impacts (lighting, noise) were assessed by Biosis Pty Ltd (September, 2024). The assessment included the completion of a NSW Test of Significance and a Commonwealth Significant Impact Criteria Assessment. The assessment noted that GHFF demonstrate the ability to exist in light polluted urban environments and concluded that as the proposal will not have any direct impacts to GHFF breeding camps or resources, significant impacts to the GHFF camps are unlikely. Noise impacts (see Section 5.2.5) were also found to be limited to the immediate vicinity of the proposal area, and unlikely to impact populations of GHFF. The proposal will implement mitigation measures to minimise light spill from the proposal area.

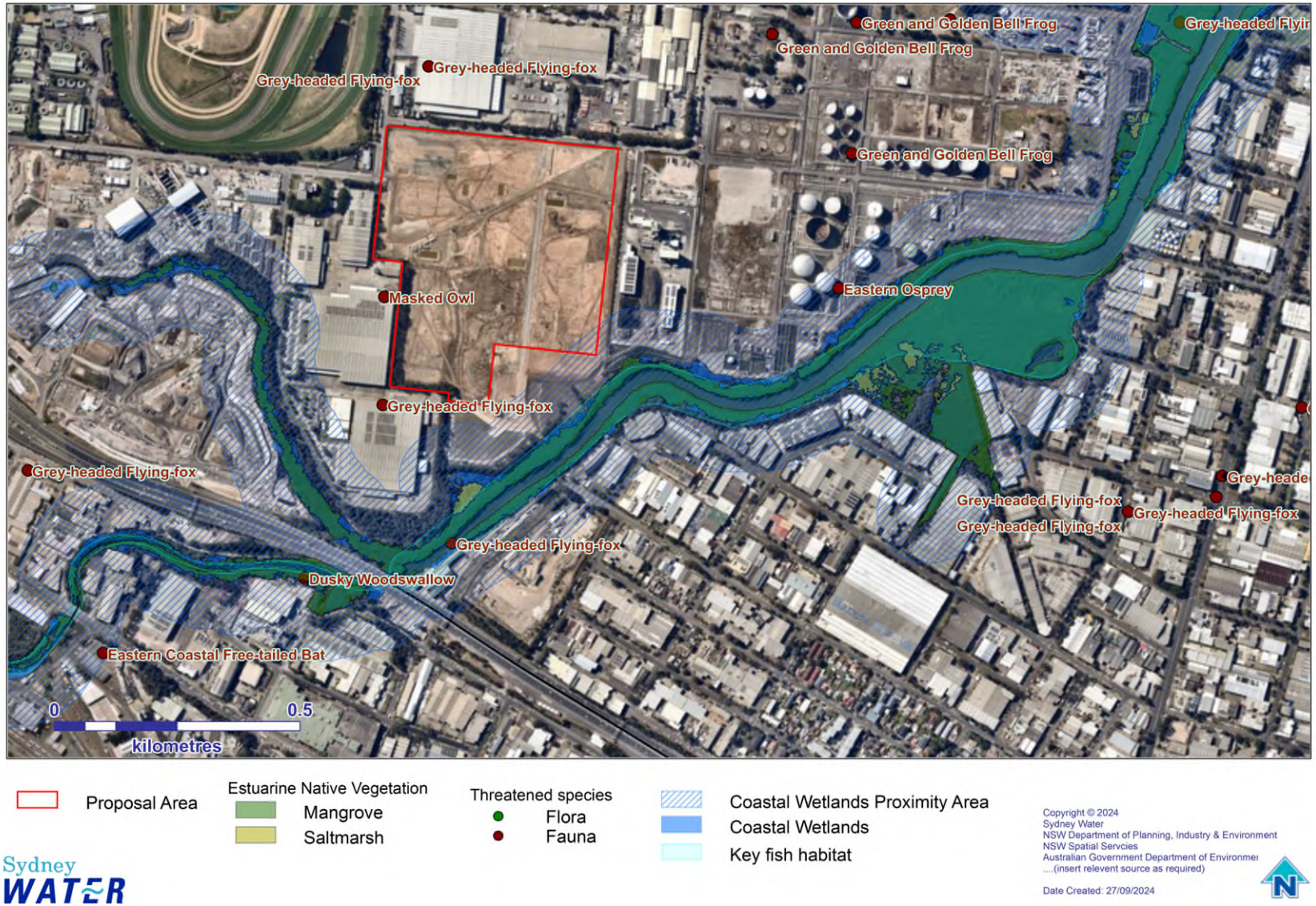


Figure 5-9 Biodiversity constraints in the vicinity of the site

Figure 5-10 Location of nearby Grey-headed flying fox camps

Mitigation measures

With the implementation of the mitigation measures below, impacts to flora and fauna can be adequately managed, and residual impacts are expected to be low.

Table 5-7 Environmental mitigation measures — flora and fauna

Mitigation measures
Vegetation clearing will not occur as part of the proposal.
If native fauna is encountered on site, stop work and allow the fauna to move away unharassed. Engage WIRES or a licensed ecologist if assistance is required to move fauna.
Minimise light spill outside of the proposal area. To ensure impacts to sensitive receivers are minimised (eg fauna) the following will be implemented: • Lights will only be utilised as required on active areas of the proposal area. • Globes which use longer wavelengths should be used as opposed to short wavelength globes that emit fluorescent or ultraviolet light (Threlfall 2012). Low pressure lights that are more specific (rather than broad-spectrum), using longer wavelengths like orange and red should be the least disruptive to bat activity. • Avoid raising the lighting rig too high. Higher elevation of the LEDs will result in a wider lit area. Elevation of the lighting rig should be limited to that which allows for safe work operations and avoid lighting area beyond the construction area. • Switch off lighting when not in use. Do not unnecessarily light areas. Any lighting towers situated near Duck River should be utilised only when required. • Consider use of asymmetric beams to minimise light spread. • Lighting fixtures should be adjusted (i.e., tilt and spread), and diffusers utilised, such that lighting does not shine directly into areas of remnant native vegetation. In particular, lighting fixtures should be positioned such that they shine away from the Duck River riparian corridor. • Lights will be located as far away as possible and pointed away from any sensitive receivers. • Existing features will be used to hide the light source from view (eg building walls, vegetation buffers). • Lights will be used to illuminate the target area. Avoid upward light spill by directing lights downwards and installing shields.

5.2.4 Heritage

Existing environment and potential impacts

Aboriginal heritage:

The proposal:

- is not within 200m of any Aboriginal Heritage Information Management System (AHIMS) sites
- is located 50 m from a high value (cultural) landscape feature (ie Duck River)
- is not near any culturally modified scarred trees (DCCEEW, 2016).

Works will occur in an area previously disturbed by the construction, operation and removal of the former Clyde Refinery and subsequent remediation works. The proposal is unlikely to impact any Aboriginal objects.

Non-Aboriginal heritage

The proposal is within the area of the former Clyde Refinery. While the Clyde Refinery was not listed on any register the Refinery was assessed as having state significance. This heritage value was removed during previous works undertaken on the site (unrelated to this proposal).

Two locally listed heritage sites (under Parramatta LEP 2024) were identified within 200 m of the proposal area (see Figure 2-1). These included:

- Capral Aluminium (I575) listed for its associations with local industry and manufacturing.
- Wetlands (I1) located along Duck River to the south of the proposal area listed as an item of ecological significance.

With the implementation of mitigation measures identified in this REF, it is unlikely that the works would have either direct or indirect impacts to these locally listed heritage items.

The proposal is also located within the Parramatta Archaeological Management Unit 2966 (PAMU 2866), identified in the Parramatta Archaeological Zoning Plan (AZP). The listing for PAMU 2866 (OEH, 2024) described the unit to contain the infrastructure associated with the former Shell Refinery and that this would likely have significantly disturbed any subsurface deposits throughout the proposal area. Work undertaken within the proposal area (unrelated to this proposal) has removed infrastructure associated with the former refinery. It is unlikely that the area would contain any relics.

Mitigation measures

With the implementation of the mitigation measures below, impacts to heritage can be adequately managed, and residual impacts are expected to be low.

Table 5-8 Environmental mitigation measures — heritage

Mitigation measures
No works are permitted within the Duck River wetlands.
If any Aboriginal object or non-Aboriginal relic is found, cease all excavation or disturbance in the area and notify Sydney Water Project Manager in accordance with SWEMS0009.

5.2.5 Noise and vibration

Existing environment and potential impacts

AECOM Australia Pty Ltd (AECOM) were commissioned by Sydney Water to undertake a Noise and Vibration Impact Assessment (NVIA) for the proposal. The NVIA described the surrounding acoustic environment as largely industrial with the closest residential receivers located:

- approximately 460 m to the southeast of the proposal area
- approximately 875 m to the west and northwest of the proposal area.

The Rosehill Gardens Racecourse horse stables are located approximately 620 m to the west.

Long term unattended and short term attended noise measurements were undertaken to establish the existing noise levels at potentially affected receivers. The long-term noise monitoring was undertaken at two locations during May 2024. In accordance with the EPA's NSW *Noise Policy for Industry*, noise monitoring affected by adverse weather conditions of extraneous noise events was excluded from the monitoring data. Attended noise measurements were also undertaken at two locations during the daytime on the 15 May 2024. Each measurement was conducted over a 15-minute period. Weather conditions were fine and partly cloudy.

Noise catchment areas were applied to the surrounding areas with similar noise environments. The locations of the noise catchment areas are shown in Figure 5-11 and description of the noise environment is provided in **Table 5-9** Existing noise environment**Table 5-9**.

Table 5-9 Existing noise environment

Noise catchment area	Noise environment description
1	Local traffic and bird noise audible.
2	Dominated by local traffic noise. Occasional aircraft noise.

In accordance with the *Interim Construction Noise Guideline* (ICNG) (DECC, 2009), a quantitative assessment based on 'reasonable' worst case scenarios was undertaken for the proposal. Noise levels expected during the proposal were predicted at the closest residential receivers and compared to noise levels provided in the ICNG.

Noise management levels applicable to the proposal were determined using the ICNG and background noise monitoring. Table 5-10 provides the noise management levels specific to the proposal.

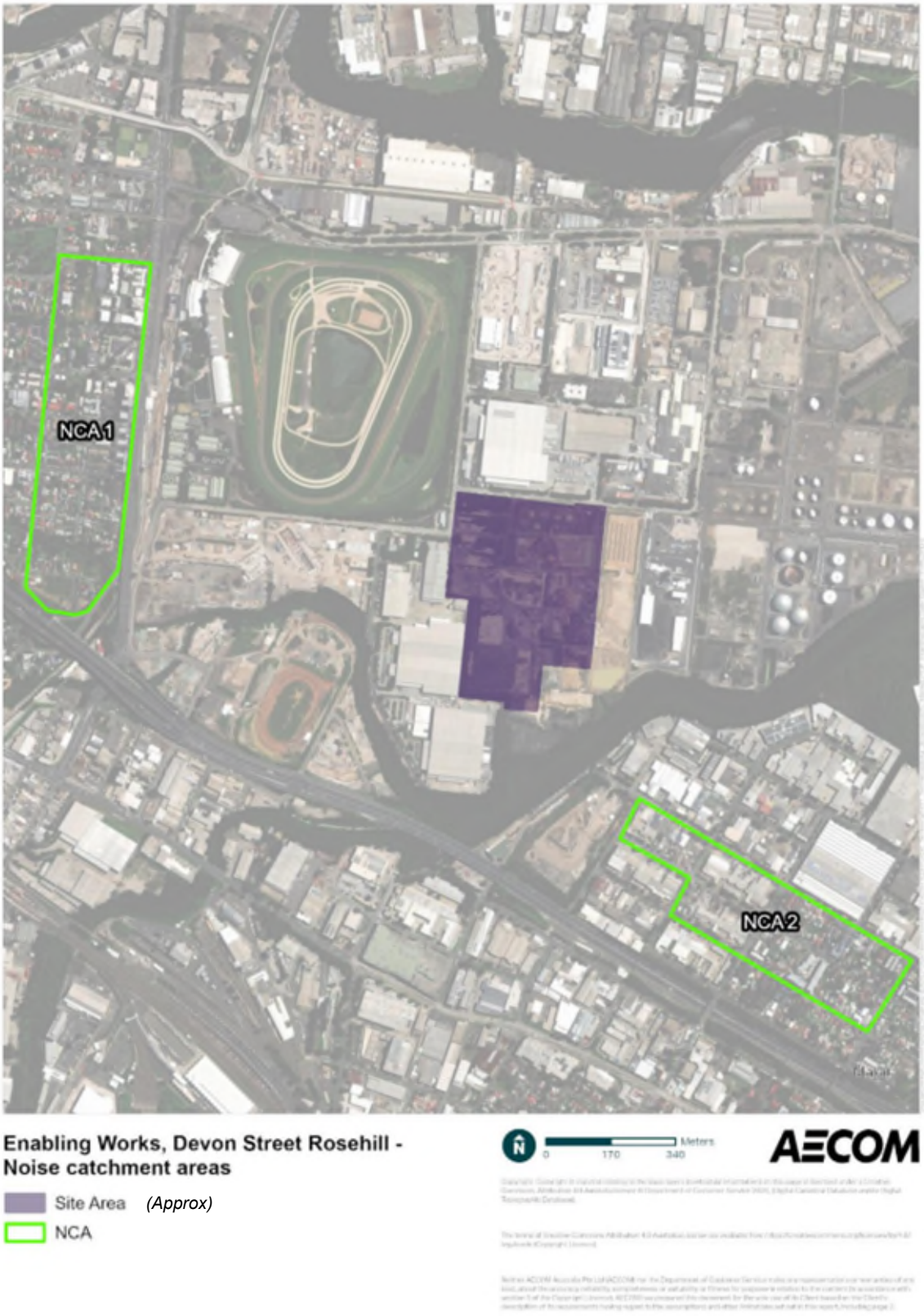


Figure 5-11 Noise catchment areas

Table 5-10 Construction Noise Management Levels

Location	Period	RBL, L_{A90} dB(A)	Standard Hours NMLs, $L_{Aeq,\ 15\ min}$, dB(A)	Out of Hours NMLs, $L_{Aeq,\ 15\ min}$, dB(A)
Eleanor Street, Rosehill (1)	Day	52	62	57
	Evening	50		55
	Night	42		47
Asquith St, Silverwater (2)	Day	51	61	56
	Evening	47		52
	Night	45		50

Notes:

RBL = Recommended Background Level
NML = Noise Management Levels
LA_{90}DB(A) =

The ICNG also requires a sleep disturbance analysis when construction works are proposed to extend beyond two consecutive nights. The proposal has been assessed to construct continuously over a 24-hour period, including Sundays and public holidays. This continuous construction is preferred to minimise the duration of construction, however hours may be limited to 7am to 10pm depending on the hours for the source of the imported material. The sleep disturbance criteria based on the background noise monitoring is provided in Table 5-11.

Table 5-11 Sleep disturbance criteria

Location	Background Noise Level (L_{A90}), dB(A)	Sleep Disturbance Criteria	$L_{A1(1\ minute)}$, dB(A)
		Screening Level	Awakening Reaction
1 Eleanor Street, Rosehill	40	55	65
2 Asquith St, Silverwater	38	53	65

Noise from the proposal was modelled in SoundPLAN Version 8.2 using a reasonable worst case construction scenario (three construction crews operating simultaneously). The model also considered ground topography and absorption, and buildings which may provide acoustic shielding.

The NVIA assessed noise levels against the night-time noise levels as this represents the most stringent criteria. The results provided in Figure 5-12 show that construction noise levels are not

expected to exceed the NML at any nearby residential receivers or at any non-residential receivers (including the stables) at any time.

The construction traffic noise assessment (within the NVIA) concluded that the additional traffic on Unwin Street would have a noticeable impact on traffic noise levels at the horse stables during the nighttime which would be greater than 2dB(A). This can be mitigated by consulting with the stables or using an alternative route at night. As noted in Section 3, consultation has occurred with the Australian Turf Club and will be ongoing. On James Ruse Drive existing traffic flow is more than proposed construction traffic volumes. As such, the proposals additional traffic would have a minor impact on traffic noise at residential receivers.

The construction vibration assessment considered vibration intensive works (e.g. use of vibratory rollers) against the minimum working distances recommended in the Transport for NSW Construction Noise and Vibration Guideline (Roads). The NVIA concluded that the works are unlikely to occur within the minimum working distances for any offsite receivers. This includes the heritage listed Capral Aluminum building located over 100 m from the proposal area. No vibration impacts are expected as a result of the proposal.

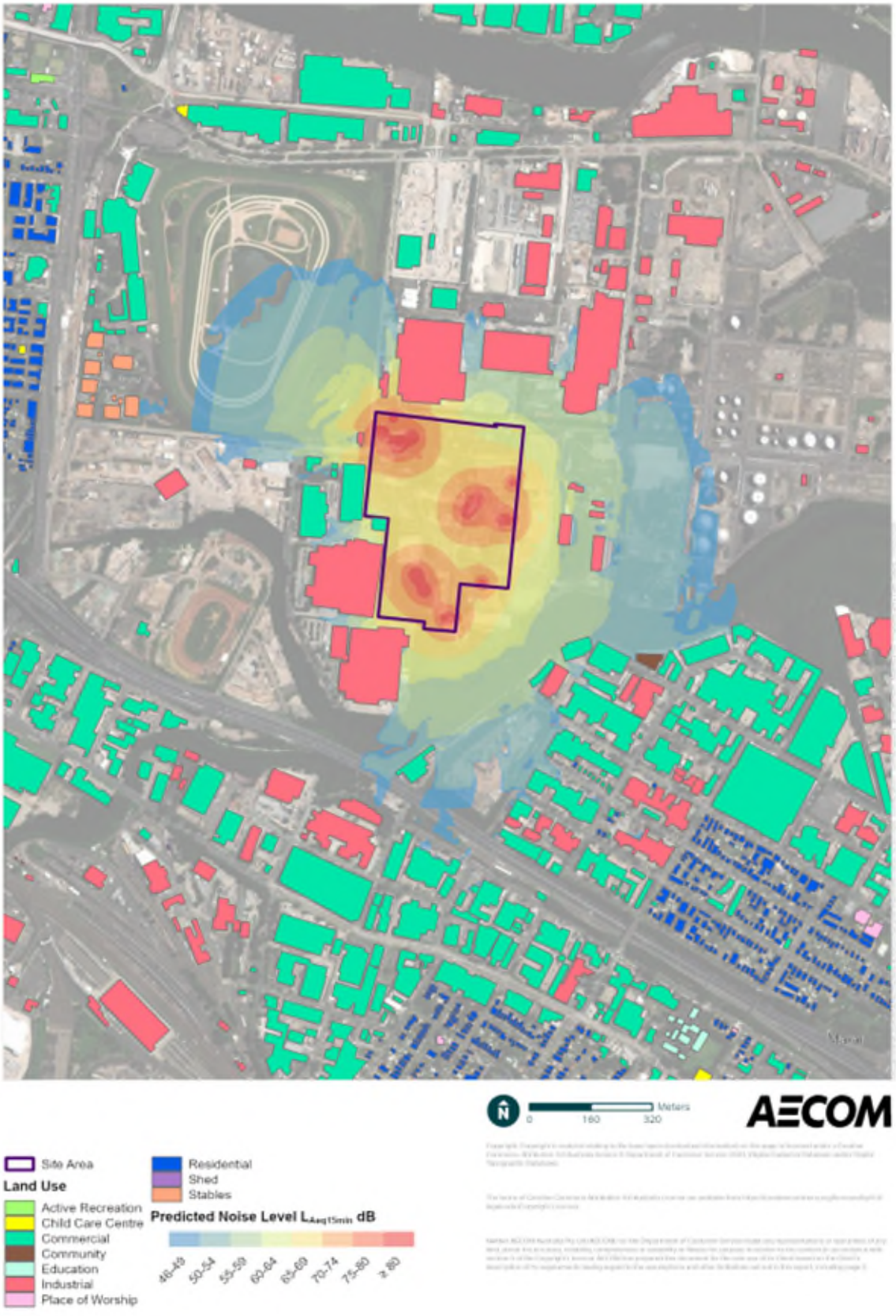


Figure 5-12 Construction noise contours

Mitigation measures

With the implementation of the mitigation measures below, impacts to noise and vibration can be adequately managed, and residual impacts are expected to be minor.

Table 5-12 Environmental mitigation measures — noise and vibration

Mitigation measures
Incorporate all reasonable and feasible noise management safeguards into the CEMP, including but not limited to: • Identify and consult with surrounding receivers about the project before works start. This should describe the nature of works, the expected noise impacts (including, approved hours of work and including night works), duration, complaints handling and contact details. • Implement a noise complaints handling procedure. • Select appropriate plant for each task, to minimise the noise impact e.g. all stationary and mobile plant will be fitted with residential type silencers. • Do not use engine brakes when entering or leaving the work site(s) or within work areas. • Regularly inspect and maintain equipment in good working order. • Arrange the work site where possible to minimise noise (eg site set up to minimise use of vehicle reversing alarms, site amenities and/ or entrances away from noise sensitive receivers. • Use natural landforms/ mounds or site sheds as noise barriers. • Use non-tonal reverse alarms on vehicles and machinery. • Follow Sydney Water's Noise Management Code of Behaviour (SWEMS0056.01) and document all reasonable and feasible management measures to be implemented. • For out of hours work shifts, consult with potentially impacted receivers before these shifts commence. If needed, identify and implement reasonable and feasible noise controls and review night time construction activities and work hours.
Consult with the Australian Turf Club regarding potential for traffic noise to impact at the horse stables during the night. If required for noise management, at night ensure trucks avoid using the Unwin Street, Kay Street and Wentworth Street route, to minimise noise impacts on the horse stables.
Any changes to construction equipment and plant would be reviewed prior to construction commencing to determine whether further assessment would be required. If the number of equipment were to increase by more than 60%, or if the equipment size were to increase considerably, this may result in a significant increase in the overall sound power level (SWL) of the construction works, and would require further assessment.

5.2.6 Air and energy

Existing environment and potential impacts

Air quality

Airen Consulting was commissioned by Sydney Water to assess the potential air quality impacts. For this proposal, emissions to air could occur from a variety of activities including material transport, material unloading, spreading and compaction, and wind erosion from exposed areas. The main potential emission to air will be dust, also referred to as particulate matter.

The proposal was compared to the relevant air quality criteria set by the EPA within the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (Approved Methods) (EPA, 2022), which included consideration of the national standards for air quality set by the National Environmental Protection Council of Australia in the National Environment Protection Measures (NEPMs) (NEPC, 1998).

The relevant air quality criteria selected for the assessment are shown in Table 5-13. These apply to sensitive receivers which the Approved Methods define as "a location where people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area".

Table 5-13 EPA air quality assessment criteria

Air quality indicator	Averaging time	Criterion	Application
Particulate matter (PM_{10})	24-hour	50 µg/m^3	Cumulative, at sensitive receptors
	Annual	25 µg/m^3	Cumulative, at sensitive receptors
Particulate matter ($PM_{2.5}$)	24-hour	25 µg/m^3	Cumulative, at sensitive receptors
	Annual	8 µg/m^3	Cumulative, at sensitive receptors
Particulate matter (Total suspended particulates, TSP)	Annual	90 µg/m^3	Cumulative, at sensitive receptors
Deposited dust	Annual (maximum increase)	2 g/m^2/month	Incremental, at sensitive receptors
	Annual (maximum total)	4 g/m^2/month	Cumulative, at sensitive receptors

As the EPA air quality assessment criteria relate to total concentration of air pollutants (ie cumulative pollution) rather than project specific criteria, the assessment included consideration of background levels.

Recent and historical meteorological data and ambient air quality conditions were reviewed. Air quality criteria for PM_{10} and $PM_{2.5}$ are set to protect against adverse health impacts. The assessment used DPHI data from an air quality monitor at Parramatta North which collects PM_{10}

and $PM_{2.5}$ concentration data. Data from years with extreme events, such as drought conditions are excluded (see Appendix E for details). Table 5-14 provides the background air quality levels that would apply near the site. The assessment noted that for Parramatta North, $PM_{2.5}$ concentrations have decreased in recent years, with compliance against the EPA criteria demonstrated in 2022 and 2023.

Table 5-14 Assumed background levels that apply near the proposal

Air quality indicator	Averaging time	Assumed background level	Notes
Particulate matter (PM_{10})	24-hour	Variable by day	DPHI measurements from Parramatta North in 2023
	Annual	16.8 µg/m^3	DPHI measurements from Parramatta North in 2023
Particulate matter ($PM_{2.5}$)	24-hour	Variable by day	DPHI measurements from Parramatta North in 2023
	Annual	6.6 µg/m^3	DPHI measurements from Parramatta North in 2023
Particulate matter (TSP)	Annual	42 µg/m^3	Estimated from DPHI measurements at Parramatta North in 2023
Deposited dust	Annual	1.9 g/m^2/month	Estimated from DPHI measurements at Parramatta North in 2023

The likely contribution of particulates and dust from the proposal have been added to these levels to determine the potential cumulative impacts.

Table 5-15 Estimated annual dust emissions

Activity	Annual emissions (kg/yr)			Assumed emission controls for the assessment
	TSP	PM10	PM2.5	
Transporting material to site	5,505	1,685	262	Water cart, 85% control.
Unloading material to site	154	73	11	Nil.
Spreading and compaction by dozer(s)	10,366	1,913	1088	Travel routes and materials kept moist, 50% control.
Wind erosion from working areas	4,380	2,190	329	Nil
Grading roads	416	186	6	Water cart, 85% control.
Total	**20,822**	**6,047**	**1,696**	-

Note: The figures in the table were based on 756,000 tonnes per annum and as such provide a conservative estimate for the assessment

Dispersion modelling in accordance with the Approved Methods was undertaken for the proposal using a CALPUFF model. As dust is the likely key emission for the proposal, model inputs were estimated using the proposed material handling schedule (for a 3 m capping scenario), the list of equipment and typical site layout plans. Hourly rates of emissions for each source were developed which considered the level of the activity and wind speed. The modeling assumed 24-hour construction activity. The results from the dispersion modelling were assessed for each air quality indicator, as discussed below. The results of the modelling for PM_{10} were shown on contour plots below and the other indicators included in Appendix E.

Particulate Matter (as PM_{10})

In accordance with the EPA's requirements, the number of days above 50 µg/m^3 PM_{10} as a cumulative measure was considered. The modelling indicates that the proposal may contribute to an off-site exceedance one day per year. However, as the proposal is within an industrial environment this will not occur at any sensitive receivers. The racecourse was not considered a sensitive receiver by the Approved Methods as it is not continuously occupied. There is evidence to suggest that horses have a higher threshold to dust impacts compared to humans (NSW Government, 2017) although it is noted that there is also evidence to the contrary. The modelled increase of one day above 50 µg/m^3, as the works would take 18 months to complete, is considered a very low risk. This potential impact can be managed by implementing mitigation measures during construction works. The annual average PM_{10} for the proposal will not exceed the EPA criteria at sensitive receivers.

Particulate Matter (as $PM_{2.5}$)

Similar to PM_{10}, the cumulative measure of number of days above 25 µg/m^3 $PM_{2.5}$ was considered. Modelling showed that the proposal may contribute to an off-site exceedance of $PM_{2.5}$ one day per year. This exceedance will not impact any sensitive receivers and can be managed by implementing the mitigation measures in Table 5-16. The annual average of $PM_{2.5}$ concentrations for the proposal will not exceed the EPA criteria at sensitive receivers.

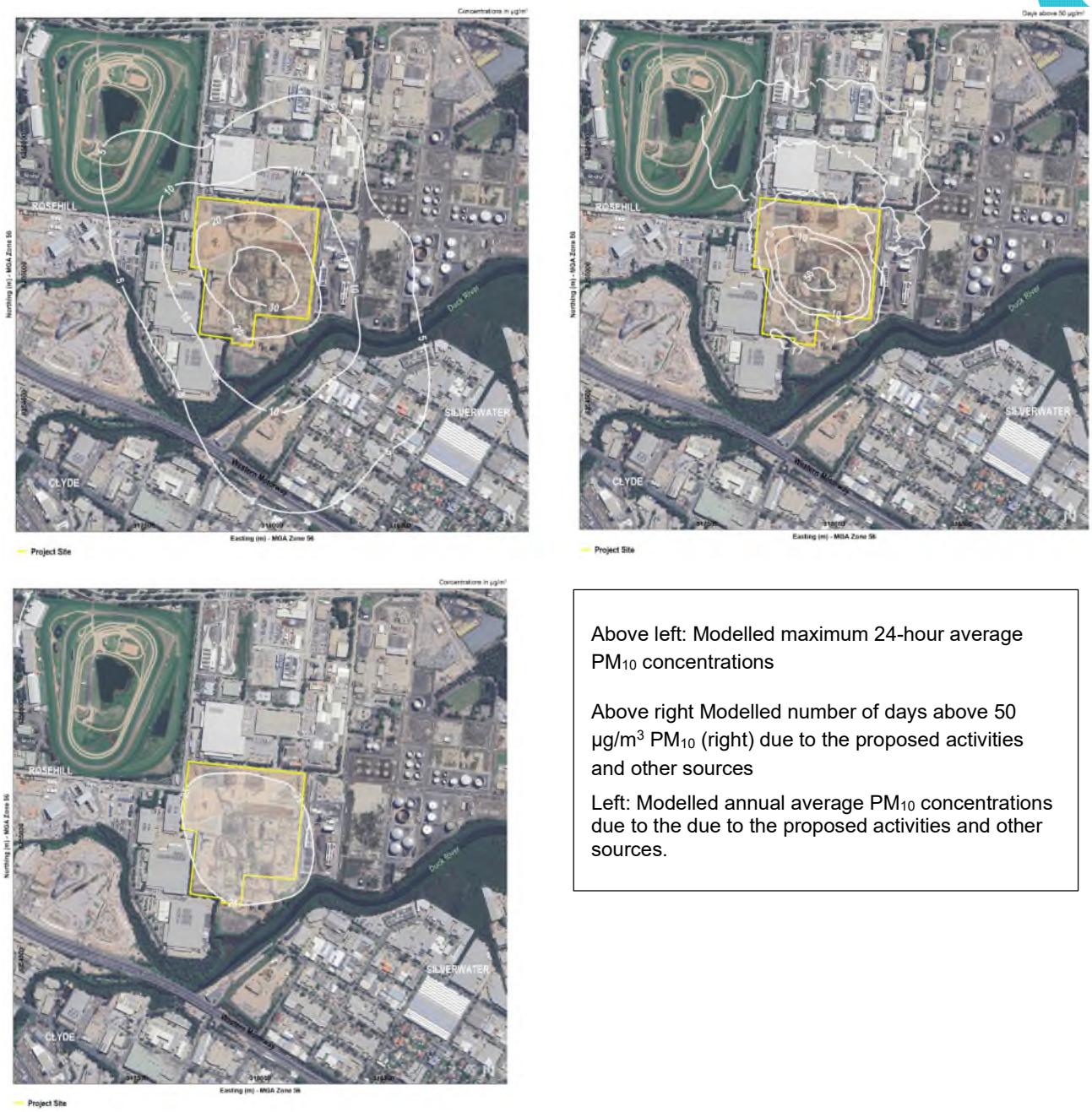
Particulate Matter (as TSP)

Modelling showed that the annual average TSP (90 µg/m^3) will not exceed the EPA's assessment criteria at sensitive receivers.

Deposited dust

Deposited dust levels resulting from the proposal did not exceed the EPA's assessment criteria for maximum increases (2 g/ m^2/month) at any sensitive receivers. Deposited dust levels were also considered as a cumulative measure. Results showed that the annual average deposited dust (4 g/m^2/month) will not exceed the EPA's assessment criteria at sensitive receivers.

The air quality assessment concluded that the proposal could potentially exceed dust criteria at surrounding properties. However, none of these properties were considered sensitive receivers. A risk assessment for the proposal indicated that by implementing mitigation measures during works, impacts to air quality as a result of the proposal are considered to be low.



Above left: Modelled maximum 24-hour average PM_{10} concentrations

Above right Modelled number of days above 50 $\mu g/m^3$ PM_{10} (right) due to the proposed activities and other sources

Left: Modelled annual average PM_{10} concentrations due to the due to the proposed activities and other sources.

Figure 5-13 Air quality modelling results for PM_{10} concentrations

Energy

The proposal will involve the transport and placement of about 365,000 m^3 of natural material. Fifteen trucks (30 truck movements) per hour will move material from a tunnelling site (likely in Pyrmont) to the proposal site, which is about 23 kms. Fuel use in vehicles and machinery will be the primary form of energy use. Minimal amounts of electricity and chemicals will be used for the proposal. Fuel use in vehicles is estimated to primarily include diesel, however some vehicles may use E10, ethanol, gasoline and LPG. The Contractor will be required to monitor and report on fuel use during the works.

Mitigation measures

Table 5-16 Environmental mitigation measures — air and energy

Mitigation measures
Use alternatives to fossil fuels where practical and cost-effective.
Track fuel and energy use per SWEMS0015.28 Contractor NGER template.
Maintain equipment in good working order, comply with the clean air regulations of the *Protection of the Environment Operations Act 1997*, have appropriate exhaust pollution controls, and meet Australian Standards for exhaust emissions.
Switch off vehicles/machinery when not in use.
Implement measures to prevent offsite dust impacts, for example: • Minimise the extent of disturbed areas as far as practicable. Compact and stablise areas progressively to prevent dust. • Minimise the length of on-site haul roads and maintain haul roads in a condition that minimises dust. • Minimise vehicle speeds over unsealed surfaces. • Water haul roads and stockpiles as required to maintain moisture (using non-potable water source where possible) • Modify or cease activities that are generating visible dust. • Modify or cease work in windy conditions.
Contractor to consider the intensity of site activities and dust emissions on race days.
Cover all transported waste.

5.2.7 Waste and hazardous materials

Existing environment and potential environmental impacts

Sydney Water has a corporate objective to be a resource recovery business with an increasing portfolio of circular economy products and services. This includes reducing waste through recycling and re-use and encouraging our suppliers to minimise waste.

Some waste material is present on site mixed within the soil. This includes asbestos (including soil containing asbestos/ sheeting) and construction materials from previous works, such as metal, reinforcement bars, concrete and plastic pipes. Where possible, waste material will be separated to be recycled. The proposal is designed to substantially reduce the potential volume of soils that would need disposal offsite to landfill. All soils and waste proposed to be disposed offsite will be classified in accordance with the NSW EPA Waste Classification Guidelines 2014 prior to removal, including as:

- general solid waste (potentially special waste if including asbestos)
- restricted solid waste (potentially special waste if including asbestos)

- small volumes of liquid waste.

The volumes of these materials are not currently known, however the proposal has been designed to mimimise the disposal of waste, and excavations will be kept to a minimum. The contractor will seek opportunities to reduce, recycle and reuse materials. This will be documented in the CEMP.

Waste will be tracked using the EPA's Waste Locate online tracking System.

Overall, the proposal will minimise waste generation by reducing potential interaction with residual contaminated material and the volume of material requiring on-site treatment and/or disposal off-site. The proposal will also achieve resource recovery opportunities by engaging with other major projects and accepting their ENM and/or VENM and / or other materials under a general or specific resource recovery exemption / order, avoiding the need to potentially send this material to landfill.

Mitigation measures

With the implementation of the mitigation measures below, waste impacts can be adequately managed, and residual impacts are expected to be minor.

Table 5-17 Environmental mitigation measures — waste and hazardous materials

Mitigation measures
Manage waste in accordance with relevant legislation and maintain records to show compliance eg waste register, waste classification (if relevant), import and export register (material haulage), transport and disposal records. Record and submit SWEMS0015.27 Resource use and recovery report template. Refer to the Spoil and Stockpile Management Plan identified in Table 5-1.
Provide adequate bins for general waste, hazardous waste and recyclable materials.
Prevent pollutants from escaping including by covering skip bins.
Minimise the generation of waste and sort waste streams to maximise reuse/recycling in accordance with the legislative requirements. Incorporate waste management measures within the CEMP.

5.2.8 Traffic and access

Existing environment and potential impacts

Sydney Water commissioned Aurecon Arup to prepare a Traffic and Transport Impact Assessment (TTIA). The TTIA considered the following guidelines:

- Guide to Traffic Generating Development (Roads & Traffic Authority, 2002) (RTA)
- Guide to Traffic Management Part 12: Traffic Impacts of Developments (Austroads, 2009)
- Draft Guide to Transport Impact Assessment (TfNSW, 2024).

The methodology of the TTIA included:

- Review available data to understand the available transport options in the vicinity of the proposal area.

- Consider other developments which overlap with the proposal and the likely cumulative impacts on the surrounding road network.
- Identify the key routes to be used by the construction and operational vehicles and the potential impacts.
- Identify any impacts to public transport, walking and cycling routes.
- Classify all potential impacts.
- Develop mitigation measures to manage the identified impacts.

The key local and state roads providing access to the proposal area are:

- James Ruse Drive (state road) 3-lane dual carriageway that runs to the west of the proposal area.
- Great Western Highway/ Parramatta Road (state road) is a 2-lane dual carriageway which provides access to the proposal area in the south.
- Grand Avenue (local road) which occurs to the north of the proposal area and provides access to James Ruse Drive.
- Wentworth Street (local road) which provides access to Great Western Highway in the south.
- Devon Street/Durham Street, Colquhoun Street, Unwin Street (local roads) immediately adjacent to the proposal area.

A bus was the only operational public transport option with the closest bus stops located along James Ruse Drive (approximately 30 mins walk). Cycling and walking facilities were also limited in the Camellia-Rosehill area. On-street parking along Colquhoun Street and Devon Street was observed to be well used during a site visit in May 2024. Plans for a walking and cycling network for the Duck River Nature Trail and connecting to the M4 Shared Path and Parramatta River foreshore are expected to open from 2025 to 2028.

The Camellia-Rosehill area is undergoing significant change in the near and long term. The TTIA identified other infrastructure and industrial developments in the adjacent areas, including:

- **Parramatta Light Rail (PLR)**, expected to open in late 2024. As part of the PLR Project, a stabling and maintenance facility has been constructed on the south eastern corner of Grand Avenue and Colquhoun Street. As part of this facility, new traffic signals are proposed on Grand Avenue at the stabling and maintenance facility access road, east of Colquhoun Street. These traffic signals will facilitate light rail trams crossing Grand Avenue when travelling to and from the stabling and maintenance facility.
- **Sydney Metro West** (in construction)**.** As part of the Sydney Metro West development, a stabling and maintenance facility is being constructed in the area bounded by M4 Motorway, James Ruse Drive and Rosehill Gardens Racecourse. The facility will include a traction substation, water treatment plant, offices, parking and storage. Vehicle access during construction of the facility will be via Wentworth Street. Kay Street and sections of Unwin Street will be realigned/replaced with an at-grade road and underpass designed to

accommodate B-doubles. This will maintain vehicle access to and from Parramatta Road via Wentworth Street. Work is currently occurring on Wentworth, Unwin, Martha and Hamilton streets (24 hours a day) and are expected to continue until late 2024. Refer **Figure 5-14** below for the temporary traffic management works.

- **Downer Sustainable Road Resource Centre** (operational). This centre is located adjacent to the proposal area (eastern boundary) and includes an asphalt plant producing 550,000 tonnes per annum (tpa), a reclaimed asphalt pavement facility processing 250,000 tpa, a bitumen products plant producing 15,000 tpa, and a Reconomy facility that recycles street sweepings and other waste products for asphalt production, processing 40,000 tpa. The centre operates 24 hours a day.

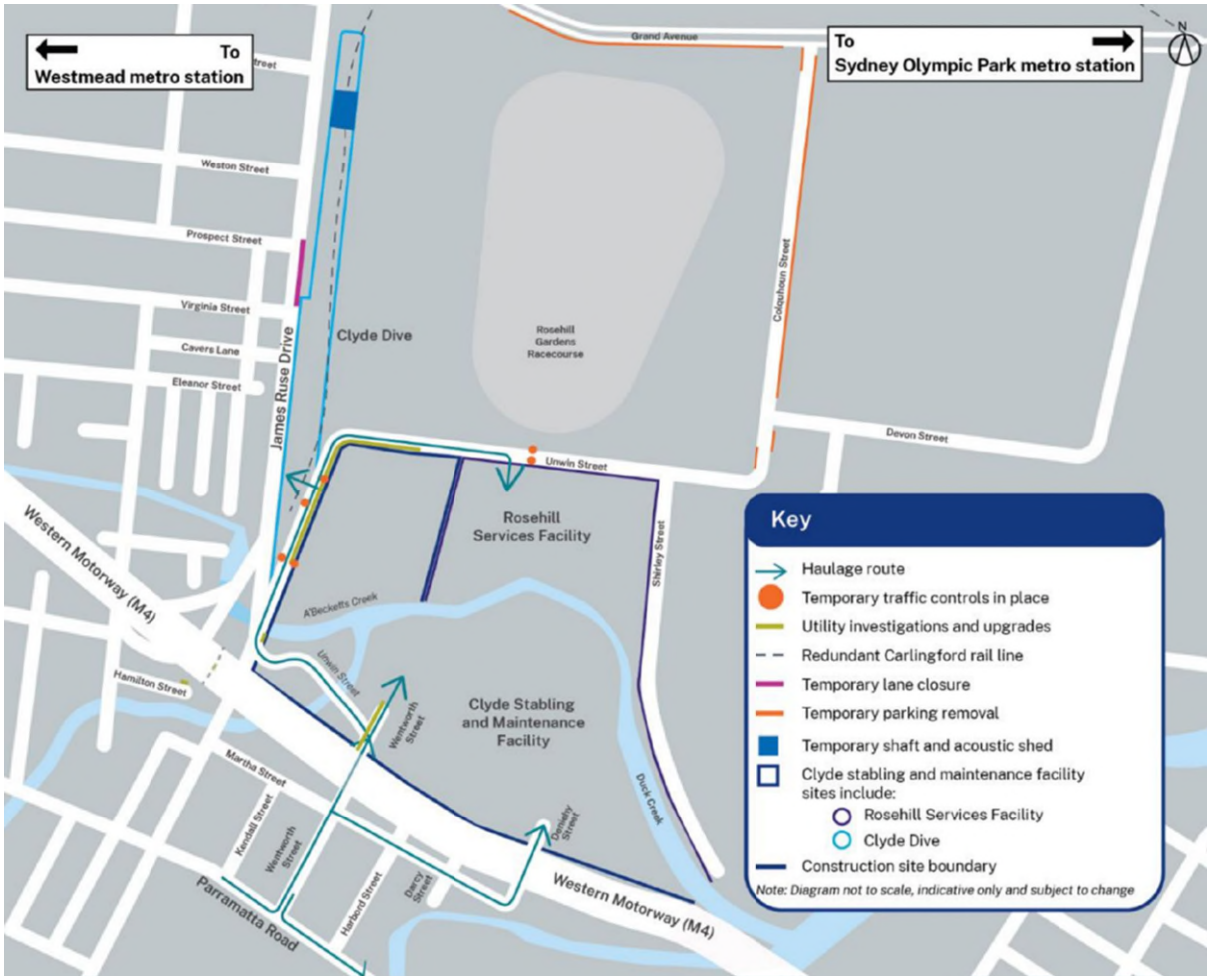


Figure 5-14 Temporary traffic management of the Clyde stabling and maintenance facility (Sydney Metro, 2024).

Construction vehicles and hours

From a traffic and transport perspective, the key works involve the trucking of material to the proposal site. Most of the material, approximately 365,000m³, will be sourced from the Eastern

tunnelling works in Pyrmont, supplemented from other areas such as inner western Sydney (see Figure 5-15). The access routes to the site will be divided between Unwin Street (via Wentworth Street) and Colquhoun Street (via James Ruse Drive and Grand Avenue). Due to road constraints, the trucks used will typically be Bogie trucks without dog-trailers. The peak construction periods are expected to generate 15 light vehicle movements and 30 heavy vehicle movements (total inbound and outbound) per hour.

The works will typically take place between 7 am to 10 pm weekdays and Saturdays 7 am to 2 pm. However, the TTIA considered works could take place 24 hours a day, 7 days a week, including public holidays. Works are scheduled to commence in November 2024, continuing for a duration of 12 to 18 months. The site plan for the traffic assessment is shown in Figure 5-15.

A baseline traffic scenario was adopted from the Transport Management and Accessibility Plan for the Multi-level warehouse at 6 Grand Avenue Rosehill (Asongroup, 2023) as well as an assessment for a concrete batching plant at 10A Grand Avenue Rosehill prepared by Transport and Urban Planning in March 2022. The Asongroup report used results from a traffic survey undertaken on the 14 March 2023 at the James Ruse Drive, Grand Avenue, Hassall Street intersection. The report provided data for the AM and PM peak periods (ie 08:00–09:00 and 17:00–18:00) which are considered commuter peak periods and provide a 'worst case' scenario for traffic conditions.

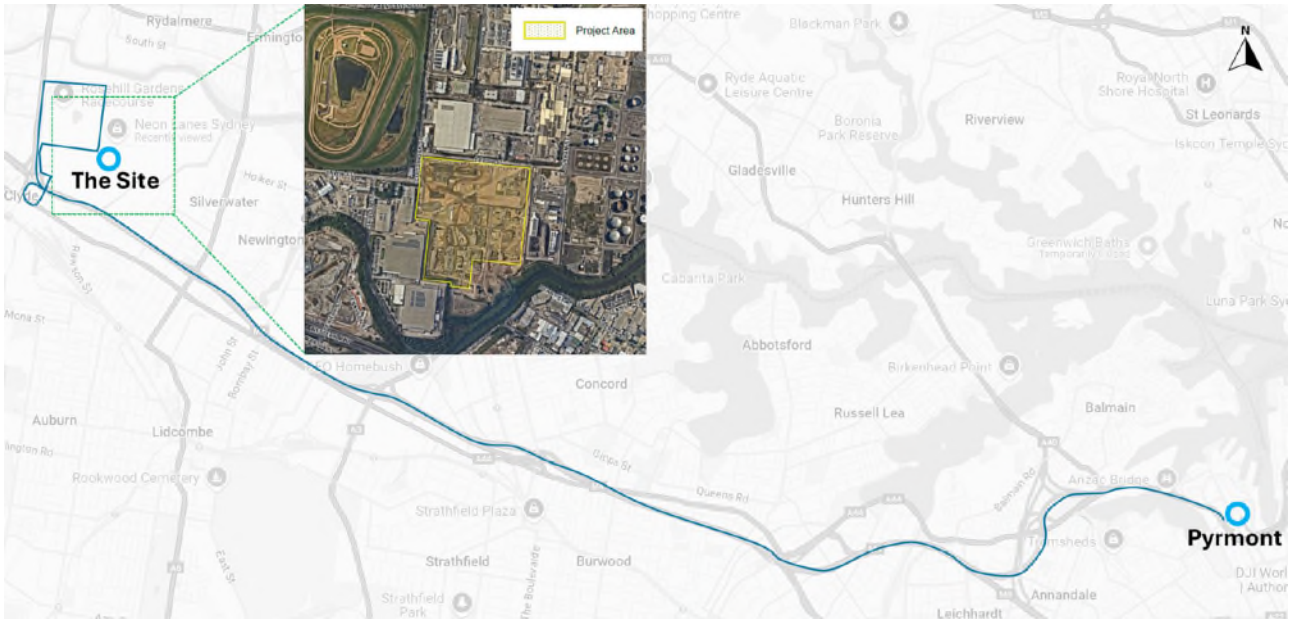


Figure 5-15 Location of source material and the proposal area

Intersection modelling had been conducted in the assessments by Jacobs and Asongroup for James Ruse Drive/ Grand Avenue/ Hassall Street intersection and Parramatta Road/ Wentworth Street. These reports were used as a basis for this assessment due to the smaller traffic volumes for this proposal. In urban areas, the traffic capacity of the major road network is generally a function of the performance of key intersections. This performance is quantified in terms of level of

Service, which is based on the average delay per vehicle. Level of Service ranges from A = very good to F = unsatisfactory. Table 5-18 below shows the different levels of service. An intersection operating at Level of Service D is considered to be performing at an acceptable level.

Table 5-18 Intersection level of service

Level of Service	Average Delay	Operation
A	<15	Good operation
B	15-28	Good with acceptable delay and spare capacity
C	29-42	Satisfactory
D	43-56	Operating near capacity
E	57-70	At capacity
F	>70	Over capacity

The baseline model shows the intersection performs poorly in the PM peak. This is associated with a high volume of right turn movements from Grand Avenue, James Ruse Drive and Hassall Street, as well as the heavy straight through traffic from Grand Avenue and James Ruse Drive. The southbound straight through movement on James Ruse Drive has the longest queue.

The proposed vehicle access routes are shown in Figure 5-16. The proposed vehicle routes will not pass through school areas and the proposal would have a negligible impact during school hours.

Traffic generation

Typical construction would involve up to 15 workers on site at any one time (excluding truck drivers). The peak construction periods are expected to generate 15 construction vehicle deliveries resulting in 30 heavy vehicle movements (total inbound and outbound) per hour. For the purposes of this assessment, and considering a worst-case scenario, light vehicle arrivals were assessed as coinciding with heavy vehicle movements in the AM peak hour and similarly light vehicle departures and heavy vehicle movements coincide in the PM peak hour.

The TTIA also noted that the previous landowner was undertaking work on site under their own consents; SSD-9302 for the Viva Energy Clyde Western Remediation Project and SSD-10459 for the Central Sydney Industrial Estate and Downer Sustainable Road Resource Centre. Traffic Impact Assessments were undertaken for these developments (SSD-9302 and SSD-10459), including estimates for different project stages and construction and operation scenarios. The assessments for the approved SSD's concluded the movements were within the daily fluctuations of heavy vehicle traffic in the locality and would not have any notable negative impact on the local road network.

Figure 5-16 Indicative construction vehicle routes

The TTIA undertaken for Sydney Water's proposal used the results from the SSD's and are summarised in Table 5-19 below.

Table 5-19 Summary of peak construction traffic generation

	AM Peak (vehicle movements/hour)		PM Peak (vehicle movements/hour)	
	Light Vehicle	**Heavy Vehicle**	**Light Vehicle**	**Heavy Vehicle**
Site traffic from SSD projects	80	20	80	20
Proposed traffic movements from Sydney Water	15	30	15	30
Net trip generation	-65	+10	-65	-10

The Sydney Water assessment concluded that the additional heavy vehicle trip generation is less than 1% of the existing flows at the James Ruse Drive/ Grand Avenue/ Hassall Street intersection and Parramatta Road/ Wentworth Street intersection. It also noted these are peak values and vehicle movements are expected to be lower than these values for large periods of the construction phase. Light vehicle movements are predominately driven by the number of workers on site with almost all of these movements occurring immediately prior to shift start times and immediately post shift end times.

Due to the temporary closure of roads associated with the Sydney Metro project, two scenarios were considered.

Table 5-20 Scenario 1, Access via James Ruse Drive only

Scenario 1	**AM Peak (vehicles per hour)**		**PM peak (vehicles per hour)**	
	Proposal volumes	Existing total	Proposal volumes	Existing total
Grand Avenue Eastbound	30 (6.1%)	493	15 (7.7%)	195
Grand Avenue Westbound	15 (4.5%)	333	30 (6.2%)	487
Grand Avenue Total	**45 (5.4%)**	**826**	**45 (6.6%)**	**682**
Intersection Total	**45 (0.7%)**	**6,087**	**45 (0.7%)**	**6,285**

Scenario 2 evaluated a relatively even split between the two external intersections to the arterial road network after Wentworth Street and Unwin Street reopen in 2025.

Table 5-21 Scenario 2, Access via James Ruse Drive and Wentworth Street

Scenario 2	AM Peak (vehicles per hour)		PM peak (vehicles per hour)	
	Proposal volumes	Existing total	Proposal volumes	Existing total
James Ruse Drive / Grand Avenue / Hassall Street Intersection				
Grand Avenue Eastbound	15 (3.0%)	493	7 (3.6%)	195
Grand Avenue Westbound	8 (2.4%)	333	15 (3.2%)	487
Grand Avenue Total	**23 (2.74%)**	**826**	**22 (3.2%)**	**682**
Intersection Total	**23 (0.4%)**	**6,087**	**22 (0.4%)**	**6,285**
Parramatta Road / Wentworth Street Intersection				
Wentworth Street Northbound	15 (6.5%)	231	8 (7.5%)	106
Wentworth Street Southbound	7 (5.6%)	125	15 (6.4%)	236
Wentworth Street Total	**22 (6.2%)**	**356**	**23 (6.7%)**	**342**
Intersection Total	**22 (0.5%)**	**4,044**	**23 (0.6%)**	**3,670**

Under scenario 1, traffic associated with the site is anticipated to comprise 4-8% of total volumes on Grand Avenue. This will not all be additional traffic as the previous remediation activities on the site (under the SSDs) have now ceased.

Under scenario 2, traffic associated with the site is anticipated to comprise approximately 2-4% of total volumes on Grand Avenue, and 5-8% of total volumes on Wentworth Street. As with scenario 1 above, this will not all be additional traffic.

In scenario 1, the site trip generation is less than 1% of the existing flows at the James Ruse Drive/ Grand Avenue/Hassall Street intersection, and once vehicles disperse to James Ruse Drive there will be negligible traffic impact. In scenario 2, the additional site trip generation is less than 1% of the existing flows at the James Ruse Drive/ Grand Avenue/ Hassall Street intersection and the Parramatta Road/ Wentworth Street intersection.

TfNSW's *Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments* (the guide) notes that where development traffic is less than 5% then it does not warrant an intersection assessment. It is expected that the construction traffic generated would have a negligible impact on the operation of the intersections in the vicinity of the proposal. This

includes the James Ruse Drive/ Grand Avenue/ Hassall Street intersection and the Parramatta Road/Wentworth Street intersection.

The proposal area will be orientated to prevent queuing on local roads, ensuring smooth traffic flow and all traffic management measures will be in accordance with Council requirements. Construction worker parking will also be provided within the proposal area minimising impacts on local roads.

Additional movements on local roads required as a result of the proposal is considered less than 1% of existing flows experienced by the James Ruse Drive, Grand Ave and Hassall Street intersection. The TTIA concluded that the construction traffic generated from the proposal would have a negligible impact on the operation of this intersection.

When the capping works are complete, vehicle movements would reduce to approximately 1-2 heavy vehicles per week and 2-3 light vehicles per day. Impact to the surrounding roads network performance, parking and public transport are also expected to be negligible.

Mitigation measures

With the implementation of the mitigation measures below, impacts to traffic can be adequately managed, and residual impacts are expected to be negligible.

Table 5-22 Environmental mitigation measures — traffic and access

Mitigation measures
Prepare a Traffic Management Plan (TMP). Ensure all traffic management measures included in the TMP are in accordance with Parramatta City Council and/or Transport for NSW requirements. Consideration should also be given to the Traffic and Transport Impact Assessment prepared for the proposal, in particular Chapter 6 and Chapter 7 (Appendix G).
The contractor will ensure that the site layout prevents any queuing on local roads. This includes, but not limited to: - stage trucks to avoid all trucks arriving at the same time - orient the site to minimise congestion or need to reverse.
The contractor will provide construction and operational worker parking within the proposal area.
The contractor will encourage workers to use more sustainable transport modes e.g. car pooling to reduce the number of private vehicles.
Where possible, and to reduce traffic and other impacts, undertake haulage work from sites with extended / 24 hour access. However, no haulage to take place without the correct approvals in place.
Consult with nearby projects, including PLR and Metro.
Monitor truck numbers, traffic flow, impacts and delays during peak periods. Adapt routes and shifts to minimise traffic impacts, including: • to respond to road closures

Mitigation measures
• schedule split shifts to allow carting over a longer period and reduce flow in the morning and afternoon peaks • during peak periods construction vehicles to consider using Wentworth Street, Kay Street and Unwin Street (when opened) to avoid existing congestion at the intersection of James Ruse Drive, Grand Avenue, and Hassall Street • encourage workers and drivers of heavy vehicles (under 4.6 m height) to travel to the site via Wentworth Street, Kay Street and Unwin Street during peak periods by making left turns at the intersection, to avoid delay due to the right turn movement of the intersection (when opened).
Minimise impacts to surrounding businesses by consulting with them.
Ensure proposed vehicle routes will not pass through school areas.
Ensure work vehicles do not obstruct vehicular or pedestrian traffic, or private driveway, public facility or business access unless necessary and only if appropriate notification has been provided.

5.2.9 Social and visual

Existing environment and potential impacts

The proposal will be within Sydney Water owned land which is not publicly accessible. We do not anticipate any social impacts as a result of the proposal.

Heavy industrial land uses dominate the local setting, with the site surrounded by:

- Camellia transmission substation, Devon Street and an industrial facility to the north
- Downer Sustainable Road Resource Centre to the east
- Roseville zone substation, Unwin Street and the Rosehill Industrial Estate to the west
- part of the remaining VE Property to the south.

Rosehill Racecourse Gardens is located to the north west of the site and provides an area of green space within the vicinity of the site.

The area is not currently valued for its scenic character, however vegetation along the watercourses of Duck River south of the proposal area and Parramatta River to the east screen the industrial precinct. Visibility of the proposal area would be limited to bordering private industrial properties and streets surrounding the site. The Sydney Water site is not directly connected to Duck River.

Temporary visual impacts associated with traffic, site compounds and worksites during construction may occur. Lighting impacts from the use of approximately 12-15 lighting towers (188,000 lumens per tower) to facilitate 24 hour construction are expected. Given the existing moderately lit industrial setting these visual impacts are negligible.

The proposed site environmental management works will not require new permanent above ground structures and will not alter the visual character of the area. The site will be raised about 1.7 m from current levels and will be maintained and monitored until approvals are obtained for future activities (WRRF).

Mitigation measures

With the implementation of the mitigation measures below, visual and social impacts can be adequately managed, and residual impacts are expected to be low.

Table 5-23 Environmental mitigation measures — social and visual

Mitigation measures
Minimise light spill by directing lighting away from sensitive receivers (residents, roads or fauna). This lighting will be operated in accordance with AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting.

5.2.10 Cumulative and future trends

Potential environmental impacts

Numerous projects are under development within the Camellia-Rosehill area, including major infrastructure projects such as Sydney Metro West and PLR. Both projects are in construction near the proposal area, with PLR due to be operational towards the end of 2024. The cumulative impact of these projects with the proposal has been considered, including as part of the traffic assessment (section 5.2.8). Given the existing industrial setting of the area, and the proximity to arterial roads cumulative impacts are not expected. Sydney Water will continue to consult and work with local projects and stakeholders to minimise impacts.

Future trends that could impact the proposal were considered, such as bushfires, coastal hazards, flooding, extreme heat and extreme storm events related to climate change.

The proposal has considered future scenarios in line with Sydney Water's position statement on Climate Change Adaptation. A risk review was undertaken which considered a representative concentration pathway (RCP) 4.5. As the proposal is for site environmental management works and involves raising the site above the 1%AEP, the proposal is unlikely to be impacted by climate change.

However, the proposal has also considered the potential for impacts from the proposal to increase relevant to future trends (eg flooding and sea level rise from climate change). The design has included shaping and stablisation of the site (to prevent runoff) and the retention of an existing drainage basin on the western boundary of the site.

No impacts are anticipated as a result of the proposal upon completion of the works. The site will be monitored and maintained until approvals are obtained for the future WRRF.

Mitigation measures

With the implementation of the mitigation measures below, potential cumulative impacts can be adequately managed, and residual impacts are expected to be low.

Table 5-24 Environmental mitigation measures — cumulative and future trends

Mitigation measures
Undertake regular consultation with stakeholders in the area.
Undertake works in accordance with Sydney Water Communications policies and requirements including: • Notify impacted businesses. • Erect signs to inform the public on nature of work. • Treat community enquiries appropriately.
At the completion of the works, prepare a site handover to the Property Asset Management team for ongoing land management and monitoring until approvals are obtained for the future WRRF.

5.2.11 General environmental management

Table 5-25 Environmental mitigation measures — general environmental management

Mitigation measures
Prepare a Construction Environmental Management Plan (CEMP) addressing the requirements of this environmental assessment. The CEMP should specify licence, approval and notification requirements. Prior to the start of work, all project staff and contractors will be inducted in the CEMP. The CEMP must be readily available on site and include a site plan which shows: • boundaries of the work area, including locations of lay-down and storage areas for materials and equipment • location of environmental controls (such as erosion and sediment controls, spill kits)
Prepare an Incident Management Plan (IMP) outlining actions and responsibilities for: • predicted/onset of heavy rain during works • spills • unexpected finds (eg contamination) • other potential incidents relevant to the scope of works. All site personnel must be inducted into the IMP.
Follow SWEMS0009 to ensure compliance with legislative requirements for incident management (eg Protection of the Environment Operations Act 1997). Attach SWEMS0009 to the CEMP.
Complaints to be managed in accordance with Sydney Water's Complaints Procedure and relevant Community Engagement Plan.
A post-construction Contaminated Land Management Plan (CLMP) must be prepared by a suitably qualified person prior to completion of the project. The plan must be reviewed by the Contamination and Hazardous Materials team. The plan must identify the type and location of contamination, risk mitigation measures such as location, type and extent of capping layers (if applicable) and the required ongoing management measures.

6 Conclusion

Sydney Water has prepared this REF to assess the potential impacts of the site environmental management works at Devon Street, Rosehill. The site has recently been acquired by Sydney Water and the proposal will manage residual contamination at the site and temporarily stabilise the site until approvals can be obtained for future projects.

The main potential construction environmental impacts of the proposal include dust, traffic, noise, and lighting impacts. When the proposed site environmental management works are complete, there is the potential for some minor additional flooding in the area during the predicted maximum flood scenarios. We do not anticipate other impacts from the site when the works are complete.

Given the nature, scale and extent of impacts and implementation of the mitigation measures outlined in this REF, the proposal is unlikely to have a significant impact on the environment. Therefore, an environmental impact statement is not required under Division 5.1 of the EP&A Act.

The REF considers how the proposal aligns with the principles of ESD. The proposal will result in positive long-term environmental improvements. The proposal will not result in the degradation of the quality of the environment and will not pose a risk to the safety of the environment.

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Transport For NSW (2024) Draft Guide to Transport Impact Assessment

Transport for NSW Construction Noise and Vibration Guideline (Roads) (CNVG-R)

WaterNSW (2022) Neutral or Beneficial Effect on Water Quality Assessment Guideline, WaterNSW, NSW

Appendices

Appendix A – Section 171 checklist

Section 171 checklist	REF finding
Any environmental impact on a community	There may be short term environmental impacts on the community from dust, noise and traffic during construction. By undertaking the proposal, we will minimise potential impacts to the surrounding community in the long term by reducing potential interactions with residual contamination and the volume of waste being sent to landfill.
Any transformation of a locality	The locality is dominated by industrial activity and development work. The work proposed is consistent with these activities. The proposal will not result in the transformation of a locality.
Any environmental impact on the ecosystems of the locality	The proposal occurs in previously disturbed areas. The proposal provides site environmental management works to reduce the potential for environmental impacts from the site, including to surrounding ecosystems of the locality. The proposal aims to improve environmental impacts by reducing the need to interact with previously contaminated soils and groundwater.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The proposal occurs in previously disturbed areas and is compatible with the heavy industrial setting of the area. The proposal will not reduce the aesthetic, recreational, scientific or other environmental quality or value of the locality.
Any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations	A local heritage item is located adjacent to the proposal area and there are areas of aesthetic value within the vicinity of the site. However, the proposal will not have any effect upon a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or any other special value for present or future generations. The proposal will stabilise an existing disturbed site until approvals are obtained for the future WRRF.
Any impact on the habitat of any protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)	The proposal will not require any vegetation removal and will not impact on the habitat of any protected animals.
Any endangering of any species of animal or plant or other form of life, whether living on land, in water or in the air	The indirect impacts of lighting on animals (particularly Grey-headed Flying-fox) were considered in this REF. This assessment found that the proposal was unlikely to impact animals given the already lit setting. The proposal will not be

Section 171 checklist	REF finding
	endangering any species of animal, plant or other form of life, whether living on land, in water or in the air.
Any long-term effects on the environment	The proposal will provide a beneficial long-term management solution to the residual contamination within the proposal area.
Any degradation of the quality of the environment	The proposal will not degrade the quality of the environment. The site environmental management works proposed aim to reduce degradation of the quality of the environment by reducing the need to interact with residual contamination.
Any risk to the safety of the environment	The proposal aims to reduce the risk to the safety of the environment by stabilising the existing disturbed site.
Any reduction in the range of beneficial uses of the environment	The proposal will not reduce the range of beneficial uses of the environment.
Any pollution of the environment	The proposal is not expected to result in pollution of the environment. Environmental mitigation measures have been identified and will be implemented to mitigate the potential for the proposal to pollute the environment.
Any environmental problems associated with the disposal of waste	Waste disposal will be in accordance with the environmental mitigation measures, and no environmental problems associated with the disposal of waste are expected. The proposal has been designed to reduce waste. By collaborating with other major projects to beneficially reuse excavated material we have reduced the volume of waste that may have been sent to landfill.
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	The proposal will not increase demand on resources, that are, or are likely to become, in short supply.
Any cumulative environmental effect with other existing or likely future activities	The cumulative impact of the proposal has been considered due to the number of major projects occurring in the area, for example due to dust or traffic. The REF determined that the likely impact to receivers was low. Mitigation measures identified in the REF will be implemented.
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	The proposal is not within an area subject to coastal processes or coastal hazards. However, the potential for projected climate change impacts on sea level rise has been considered in relation to flooding. The proposal will not impact coastal process or coastal hazards.

Section 171 checklist	REF finding
Any applicable local strategic planning statements, regional strategic plans or district strategic plans made under the EP&A Act, Division 3.1	The Camellia-Rosehill Place Strategy is a 20-year plan for the renewal of Camellia-Rosehill. The Strategy identifies a new town centre and enhanced entertainment precinct, new urban services precinct and land retained to support heavy industry. Sydney Water's has acquired the site to develop a future WRRF to service the area. The proposal will support the strategy.
Any other relevant environmental factors.	The proposal has been assessed against the factors listed above, and there are no other relevant environmental factors to consider.

Appendix B – Consideration of TISEPP consultation

TISEPP section	Yes	No
Section 2.10, council related infrastructure or services – consultation with council		
Will the work:		
Potentially have a substantial impact on stormwater management services provided by council?		✓
Be likely to generate traffic that will strain the capacity of the road system in the LGA?		✓
Connect to, and have a substantial impact on, the capacity of a council owned sewerage system?		✓
Connect to, and use a substantial volume of water from a council owned water supply system?		✓
Require temporary structures on, or enclose, a public space under council's control that will disrupt pedestrian or vehicular traffic that is not minor or inconsequential?		✓
Excavate a road, or a footpath adjacent to a road, for which the council is the roads authority, that is not minor or inconsequential?		✓
Section 2.11, local heritage – consultation with council		
Is the work likely to affect the heritage significance of a local heritage item, or of a heritage conservation area (not also a State heritage item) more than a minor or inconsequential amount?		✓
Section 2.12, flood liable land – consultation with council		
Will the work be on flood liable land (land that is susceptible to flooding by the probable maximum flood event) and will works alter flood patterns other than to a minor extent?		✓
Section 2.13, flood liable land – consultation with State Emergency Services		
Will the work be on flood liable land (land that is susceptible to flooding by the probable maximum flood event) and undertaken under a relevant provision*, but not the carrying out of minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance? * (e) Div.14 (Public admin buildings), (g) Div.16 (Research/ monitoring stations), (i) Div.20 (Stormwater systems)?		✓
Section 2.14, development with impacts on certain land within the coastal zone– council consultation		
Is the work on land mapped as coastal vulnerability area and inconsistent with a certified coastal management program?		✓
Section 2.15, consultation with public authorities other than councils		
Will the proposal be on land adjacent to land reserved under the *National Parks and Wildlife Act 1974* or land acquired under Part 11 of that Act*? If so, consult with DPE (NPWS).*		✓
Will the proposal be on land in Zone C1 National Parks and Nature Reserves or on a land use zone that is equivalent to that zone? *If so, consult with DPE (NPWS).*		✓
Will the proposal include a fixed or floating structure in or over navigable waters? *If so, consult TfNSW.*		✓
Will the proposal be on land in a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*? *If so, consult with Subsidence Advisory NSW.*		✓
Will the proposal be on land in a Western City operational area specified in *the Western Parkland City Authority Act 2018,* Schedule 2 and have a capital investment value of $30 million or more? *If so, consult the Western Parkland City Authority*.		✓
Will the proposal clear native vegetation on land that is not subject land (ie non-certified land)? *If so, notify DPE at least 21 days prior to work commencing. (Requirement under s3.24 Chapter 3 Sydney Region Growth Centres - of the SEPP (Precincts – Central River City) 2021).*		✓

Appendix C – Development in Regulated Catchments considerations (Part 6.2)

Considerations	Response
6.6 Water quality and quantity (1) In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following—	(a) We will implement safeguards to ensure that the proposal has a neutral impact on water quality in Duck River.
(a) whether the development will have a neutral or beneficial effect on the quality of water entering a waterway,	
(b) whether the development will have an adverse impact on water flow in a natural waterbody	(b) The proposal will not have adverse or direct impact on water flows in Duck River, the nearby natural waterbody. During a PMF, there may be some increase in water flowing within Duck River from the surrounding area, as well as the site.
(c) whether the development will increase the amount of stormwater run-off from a site,	(c) The proposal will not increase the area of impervious surfaces. The final landform will ensure that the proposal will not increase the volume of stormwater run-off from the site.
(d) whether the development will incorporate on-site stormwater retention, infiltration or reuse,	(d) The final landform will not incorporate on-site stormwater retention, infiltration or reuse. However the design for the proposal will include a drainage area which will help with the areas stormwater movement, until future approvals are obtained.
(e) the impact of the development on the level and quality of the water table,	(e) Geotechnical modelling has shown that ground loading is unlikely to change the level of the water level. Works do not include activities that will change the water quality.
(f) the cumulative environmental impact of the development on the regulated catchment,	(f) The proposal area is already highly disturbed. It is unlikely that proposed works will result in additional cumulative impacts to the catchment.
(g) whether the development makes adequate provision to protect the quality and quantity of ground water.	(g) Assessment has shown there may be residual groundwater contamination from pervious activities. The proposal is not predicted to affect groundwater quality or quantity, however groundwater will continue to be monitored as part of the proposal.
(2) Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied the development ensures—	As per the responses above the proposal will have minimal impact to the water quality and flows in Duck River. A neutral effect is predicted.

(a) the effect on the quality of water entering a natural waterbody will be as close as possible to neutral or beneficial, and (b) the impact on water flow in a natural waterbody will be minimised.	
(3) Subsections (1)(a) and (2)(a) do not apply to development on land in the Sydney Drinking Water Catchment.	-
6.7 Aquatic ecology	
(1) In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following— (a) whether the development will have a direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation,	(a) The REF considered direct, indirect and cumulative impacts to terrestrial animals or migratory species and determined that impacts would be unlikely. There will be no impacts to vegetation. Impacts to aquatic animals were not assessed as the proposal is not predicted to impact water quality.
(b) whether the development involves the clearing of riparian vegetation and, if so, whether the development will require— (i) a controlled activity approval under the *Water Management Act 2000*, or (ii) a permit under the *Fisheries Management Act 1994,*	No vegetation is to be removed as part of the proposal and no approvals are required.
(c) whether the development will minimise or avoid— (i) the erosion of land abutting a natural waterbody, or (ii) the sedimentation of a natural waterbody,	(i) Not applicable – the proposal is located 80 m from Duck River. (ii) The proposal will implement safeguards to ensure no impacts to the water quality in Duck River.
(d) whether the development will have an adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area,	The proposal will not impact wetlands.
(e) whether the development includes adequate safeguards and rehabilitation measures to protect aquatic ecology,	The proposal will not impact aquatic ecology.
(f) if the development site adjoins a natural waterbody—whether additional measures are required to ensure a neutral or beneficial effect on the water quality of the waterbody.	The proposal area does not adjoin a natural water body. As noted above, Duck River is about 80m south of the proposal area. Impacts to Duck River are not anticipated.
6.8 Flooding (1) In deciding whether to grant development consent to development on land in a regulated	This REF has considered potential impacts to flooding patterns associated with the proposal. The proposal is not anticipated to cause flooding of

catchment, the consent authority must consider the likely impact of the development on periodic flooding that benefits wetlands and other riverine ecosystems.	wetlands or other riverine ecosystems in a 1% AEP.
(2) Development consent must not be granted to development on flood liable land in a regulated catchment unless the consent authority is satisfied the development will not— (a) if there is a flood, result in a release of pollutants that may have an adverse impact on the water quality of a natural waterbody, or	The proposal includes stablising a disturbed site with a capping layer of VENM/ENM (or equivalent). This will be compacted to prevent runoff and will not result in the release of pollutants into Duck River during a flood.
(b) have an adverse impact on the natural recession of floodwaters into wetlands and other riverine ecosystems.	The proposal will not impede floodwaters from Duck River into the adjacent ecosystems.
6.9 Recreation and public access (1) In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider— (a) the likely impact of the development on recreational land uses in the regulated catchment, and	The proposal area is not adjacent to Duck River and the proposal will not impact recreational land uses in the catchment.
(b) whether the development will maintain or improve public access to and around foreshores without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation.	The proposal will not affect existing public access to and around the foreshores.
(2) Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied of the following— (a) the development will maintain or improve public access to and from natural waterbodies for recreational purposes, including fishing, swimming and boating, without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation,	Not applicable. The proposal will not affect public access within the area.
(b) new or existing points of public access between natural waterbodies and the site of the development will be stable and safe,	As above, the proposal will not affect public access within the area. The proposal involves stabilising and maintaining the site until future approvals can be obtained.
(c) if land forming part of the foreshore of a natural waterbody will be made available for public access as a result of the development but is not in public ownership—public access to and use of the land will be safeguarded.	Not applicable – the proposal is not located adjacent to a foreshore or affect public access.

(3) This section does not apply to development on land in a regulated catchment if the land is in a special area under the *Water NSW Act 2014*.	Not applicable.
6.10 Total catchment management In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consult with the council of each adjacent or downstream local government area on which the development is likely to have an adverse environmental impact.	The proposal will not have an adverse environmental impact on Duck River. Sydney Water has consulted with City of Parramatta Council about the proposal.
6.11 Land within 100m of natural waterbody In deciding whether to grant development consent to development on land within 100m of a natural waterbody in a regulated catchment, the consent authority must consider whether— (a) the land uses proposed for land abutting the natural waterbody are water-dependent uses, and	While the proposal area is within 100 m of Duck River (about 80 m), it is not abutting the waterway.
(b) conflicts between land uses are minimised.	The proposal is consistent with previous activities occurring within the proposal area. The proposal is consistent with surrounding land uses associated with the Heavy Industrial zoning and does not provide a conflict with other land uses.
6.12 Riverine Scenic Areas	Not applicable.
6.13 Hawkesbury-Nepean conservation area sub-catchments	Not applicable.
6.14 Temporary use of land in Sydney Harbour Catchment	Not applicable.

Appendix D – Development in Foreshores and Waterways Area, General considerations (s6.28)

Considerations	Response
(1) In deciding whether to grant development consent to development in the Foreshores and Waterways Area, the consent authority must consider the following— (a) whether the development is consistent with the following principles— (i) Sydney Harbour is a public resource, owned by the public, to be protected for the public good, (ii) the public good has precedence over the private good, (iii) the protection of the natural assets of Sydney Harbour has precedence over all other interests,	Not applicable. The proposal area is located 80 m from Duck River and does not include the Foreshore or Waterway area. The proposal will not affect public access to these areas.
(b) whether the development will promote the equitable use of the Foreshores and Waterways Area, including use by passive recreation craft,	Not applicable. The proposal area is located 80 m from Duck River and will not affect equitable use of the Foreshore or Waterway areas.
(c) whether the development will have an adverse impact on the Foreshores and Waterways Area, including on commercial and recreational uses of the Foreshores and Waterways Area,	Not applicable. The proposal area is located 80 m from Duck River and will not affect commercial or recreational uses of the Foreshore or Waterway areas.
d) whether the development promotes water-dependent land uses over other land uses,	Not applicable. The proposal area is located 80 m from Duck River and does not affect water dependent or other land uses.
(e) whether the development will minimise risk to the development from rising sea levels or changing flood patterns as a result of climate change,	The proposal considered critical events for Duck River and Duck Creek around the site, and changing flood patterns as a result of climate change. The proposal is not likely to impact flooding in Duck River during the 1% AEP.
(f) whether the development will protect or reinstate natural intertidal foreshore areas, natural landforms and native vegetation,	Not applicable. The proposal area is located 80 m from Duck River and will not affect natural intertidal foreshore areas, natural landforms and native vegetation.
(g) whether the development protects or enhances terrestrial and aquatic species, populations and ecological communities, including by avoiding physical damage to or shading of aquatic vegetation,	The proposal area largely comprises previously disturbed lands. The proposal will not remove or affect any terrestrial or aquatic vegetation.
(h) whether the development will protect, maintain or rehabilitate watercourses, wetlands, riparian lands, remnant vegetation and ecological connectivity.	The proposal is located 80 m from Duck River and will not impact on watercourses, wetlands, riparian lands, remnant vegetation or ecological connectivity.

Considerations	Response
(2) Development consent must not be granted to development in the Foreshores and Waterways Area unless the consent authority is satisfied of the following— (a) having regard to both current and future demand, the character and functions of a working harbour will be retained on foreshore sites,	Not applicable. The proposal area is located 80m from Duck River and does not include the Foreshore or Waterway areas.
(b) if the development site adjoins land used for industrial or commercial maritime purposes—the development will be compatible with the use of the adjoining land,	The proposal is within a Heavy Industrial area, the proposal is compatible to this use. The proposal is not adjoining land used for maritime purposes.
(c) if the development is for or in relation to industrial or commercial maritime purposes—public access that does not interfere with the purposes will be provided and maintained to and along the foreshore,	Not applicable. The proposal area is located 80 m from Duck River and does not include the Foreshore or Waterway areas, activities for maritime purposes or will affect public access.
(d) if the development site is on the foreshore—excessive traffic congestion will be minimised in the zoned waterway and along the foreshore,	Not applicable. The proposal area is located 80 m from Duck River and does not include the Foreshore or Waterway area. The proposal will not affect traffic in a waterway or foreshore area.
(e) the unique visual qualities of the Foreshores and Waterways Area and its islands, foreshores and tributaries will be enhanced, protected or maintained, including views and vistas to and from— (i) the Foreshores and Waterways Area, and (ii) public places, landmarks and heritage items	Not applicable. The proposal area is located 80 m from Duck River and does not include the Foreshore or Waterway. The proposal area is located adjacent to a locally listed heritage item, however will not affect views to or from this site.

Appendix E – Air Quality Impact Assessment

Appendix F – Noise and Vibration Impact Assessment

Appendix G – Traffic and Transport Impact Assessment

Appendix H – Biodiversity Memorandum