

Appendix B

Revised mitigation measures

Revised environmental mitigation measures

1.1 Revised environmental mitigation measures

The consolidated revised environmental mitigation measures for the project, including the proposed modification are presented in the Table A-1. Mitigation measures provided in Table A-1 supersedes the revised mitigation measures presented in Submissions Report for the approved project.

Changed and additional mitigation measures are proposed as a result of the modification to those required for the approved project and are provided in Table 5-7. New mitigation measures are shown in **bold** text with deletions shown with a ~~strike through~~. Rows highlighted in grey include either an addition or change to an existing mitigation measure.

Table A-1 Revised mitigation measures

| Reference | Impact / issue | Mitigation measure | Applicable location |
|------------------------------|------------------------|---|---------------------|
| Traffic and transport | | | |
| TT1 | Changes to the network | The community would be notified in advance of proposed road and pedestrian network changes through appropriate forms of community liaison. | All |
| TT2 | Traffic incidents | In the event of a traffic related incident, coordination would be carried out with Transport for NSW, including Transport Coordination and/or the Transport Management Centre's Operations Manager. | All |
| TT3 | Emergency vehicles | Access to properties for emergency vehicles would be provided at all times. | All |
| TT4 | Road safety | Vehicle access to and from construction sites would be managed to maintain pedestrian, cyclist and motorist safety. Depending on the location, this may require manual supervision, physical barriers, temporary traffic signals and modifications to existing signals or, on occasions, police presence. | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|----------------|--|---------------------|
| TT5 | Road safety | <p>Additional enhancements for pedestrian, cyclist and motorist safety near the construction sites would be implemented during construction. This would include measures such as:</p> <ul style="list-style-type: none"> • Assessing the suitability of construction haulage routes through sensitive land use areas with respect to road safety • Deployment of speed awareness signs in conjunction with variable message signs near construction sites to provide alerts to drivers • Providing community education and awareness about sharing the road safely with heavy vehicles • Specific construction driver training to understand route constraints, safety and environmental considerations such as sharing the road safely with other road users and limiting the use of compression braking • Requiring technology and equipment to improve vehicle safety, eliminate heavy vehicle blind spots, and monitor vehicle location and driver behaviour. | All |
| TT6 | Road safety | All trucks would enter and exit construction sites in a forward direction, where feasible and reasonable. | All |
| TT7 | Congestion | Construction site traffic would be managed to minimise movements during peak periods. | All |
| TT8 | Congestion | Construction site traffic immediately around construction sites would be managed to minimise vehicle movements through school zones during pick up and drop off times. | WMS, PMS, BNS, FDS |
| TT9 | Congestion | Opportunities to minimise impacts at the Alexandra Avenue/ Bridge Road intersection would be determined in consultation with Transport for NSW. | WMS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|------------------------------|--|---------------------|
| TT10 | Loss of parking | Where existing parking is removed to facilitate construction activities, consultation would occur with the relevant local council to investigate opportunities to provide alternative parking facilities. | All |
| TT11 | Loss of parking | Construction sites would be managed to minimise the number of construction workers parking on surrounding streets by: <ul style="list-style-type: none"> • Encouraging workers to use public or active transport • Encouraging ride sharing • Provision of alternative parking locations and shuttle bus transfers where feasible and reasonable. | All |
| TT12 | Change of bus stop locations | Any temporary closure or relocation of bus stops and kiss-and-ride facilities would be carried out in consultation with Transport for NSW including Transport Coordination (for relevant locations), the relevant local council and bus operators. Wayfinding and customer information would be provided to notify customers of relocated bus stops. | WMS, NSMS, BNS, TBS |
| TT13 | Bus priority | Opportunities to improve bus priority along the temporary detour at Westmead metro station construction site would be investigated during detailed design. | WMS |
| TT14 | Active transport | Pedestrian and cyclist access would be maintained during the temporary closure of Alexandra Avenue at Westmead. Wayfinding and customer information would be provided to guide pedestrians and cyclists to alternative routes. | WMS |
| TT15 | Impacts on active transport | Where existing cyclist facilities (e.g. bicycle parking) would be temporarily unavailable to facilitate construction activities, suitable replacement facilities would be provided for this duration. | WMS, PMS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|------------------------------|--|---------------------|
| TT16 | Taxi relocation | Any relocation of taxi ranks would be carried out in consultation with Transport for NSW, the relevant local council and taxi operators. Wayfinding and customer information would be provided to notify customers of relocated taxi ranks. | SOPMS |
| TT17 | Impacts on special events | <p>During major special events, impacts to the transport and traffic network would be reduced by (as necessary):</p> <ul style="list-style-type: none"> • Minimising the level of construction activity, and if necessary, ceasing all construction activity • Maintaining appropriate access to all areas within the event precinct • Erection of hoardings, site fencing and gates at key locations within the construction site boundary to permit pedestrian movements adjacent to the construction site and separate pedestrians from construction vehicles • Scheduling deliveries to the construction site outside of event periods. <p>For special events that require specific traffic measures, those measures would be developed in consultation with Transport for NSW, including Transport Coordination (for relevant locations) and the organisers of the event.</p> | PMS, CSMF, SOPMS |
| TT18 | Property access | Access to existing properties and buildings would be maintained in consultation with property owners. | All |
| TT19 | Construction vehicle impacts | Traffic control measures required at the Parramatta metro station construction site access on George Street would be determined in consultation with Transport for NSW. | PMS |
| TT20 | Construction vehicle impacts | Adjustments to site access arrangements and the local road network would be explored during detailed design to minimise conflicts with heavy vehicle movements. | NSMS, FDS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|--|---|---------------------|
| TT21 | Construction vehicle impacts | Construction site traffic generated at the Five Dock Station construction site would be managed to avoid or minimise travel during the evening peak period. | FDS |
| TT22 | Construction vehicle impacts | Construction site traffic generated at the Five Dock Station construction site would be managed to minimise movements during church service times at St Albans Anglican Church. | FDS |
| TT23 | Construction vehicle impacts | Opportunities to provide vehicle access and egress directly to Parramatta Road and minimise the use of Loftus Street at the Burwood North Station construction site would be explored during detailed design. | BNS |
| TT24 | Cumulative construction traffic impacts | Co-ordination of traffic management arrangements between major construction projects would occur in consultation with Transport for NSW including Transport Coordination. | TBS |
| TT25 | Impacts on maritime traffic and waterway users | If barging of spoil is progressed, a Marine Traffic Management Plan would be developed by the construction contractor. The plan would outline the general operational plan for the movement and management of barging vessels in accordance with TT27, TT28 and TT29. The Plan would also outline the process for consultation in accordance with TT26. | TBS |
| TT26 | Impacts on maritime traffic and waterway users | If barging of spoil is progressed, clubs which operate watercraft would be consulted about potential barging and potential changes to courses for watercraft such as yachts before the start of barging. | TBS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|---|--|---------------------|
| TT27 | Impacts on maritime traffic and waterway users | If barging of spoil is progressed, barging vessel movements would be scheduled to avoid times and locations of high recreational marine traffic where feasible and reasonable in consultation with Transport for NSW. | TBS |
| TT28 | Impacts on maritime traffic and waterway users | If barging of spoil is progressed, barging vessel movements would be managed to not interfere with port operations or the navigation of seagoing ships and ferries, unless prior approval has been obtained from the Harbour Master. | TBS |
| TT29 | Impacts on maritime traffic and waterway users | If barging of spoil is progressed, barging vessel movements would not be undertaken during special events when navigation restrictions are in place. | TBS |
| TT30 | Construction and operation of vehicular traffic | The design of the temporary traffic arrangements at Westmead metro station construction site would consider construction traffic, alternate bus routes and bus stops, local vehicular traffic and pedestrian safety. The design of the temporary traffic arrangements would be undertaken in consultation with Transport for NSW, Schools Infrastructure, Heath Infrastructure, relevant local councils and bus operators. | WMS |
| TT31 | Potential parking impacts as a result of partial and full road closures required to facilitate construction works | Where existing parking is removed to facilitate construction activities for The Bays Station construction site power supply route, consultation would occur with the relevant local council, local businesses, the community and schools (where appropriate) to investigate opportunities to provide alternative parking facilities. | TBS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|----------------------------|--|---|---------------------|
| TT32 | Potential access and parking impacts as a result of partial and full road closures | Provision of assistance to carry shopping, luggage and other heavy or large goods between the alternative parking area at Ausgrid Rozelle sub-transmission substation (subject to final agreement between Sydney Metro and Ausgrid) and residences during times when access is limited. | TBS |
| Noise and vibration | | | |
| NV01 | Community preference for noise mitigation and management | <p>Further engagement and consultation would be carried out with:</p> <ul style="list-style-type: none"> • The affected communities to understand their preferences for mitigation and management measures. • 'Other sensitive' receivers such as schools, medical facilities or places of worship to understand periods in which they are more sensitive to impacts. <p>Based on this consultation, appropriate mitigation and management options would be considered and implemented where feasible and reasonable to minimise the impacts.</p> | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|--|---|---------------------|
| NV02 | Alternative construction methodologies | <p>Alternative construction methodologies and measures that minimise noise and vibration levels during noise intensive works would be investigated and implemented where feasible and reasonable. This would include consideration of:</p> <ul style="list-style-type: none"> • The use of hydraulic concrete shears in lieu of hammers/rock breakers • Sequencing works to shield noise sensitive receivers by retaining building wall elements • Locating demolition load out areas away from the nearby noise sensitive receivers • Providing respite periods for noise intensive works • Minimising structural-borne noise to adjacent buildings including separating the structural connection prior to demolition through saw-cutting and propping, using hand held splitters and pulverisers or hand demolition • Installing sound barrier screening to scaffolding facing noise sensitive neighbours • Using portable noise barriers around particularly noisy equipment, such as concrete saws • Modifying demolition works sequencing / hours to minimise impacts during peak pedestrian times and / or adjoining neighbour outdoor activity periods. | All |
| NV03 | Construction noise – respite periods | <p>Appropriate respite would be provided to affected receivers in accordance with the <i>Sydney Metro Construction Noise and Vibration Standard</i>. This would include consideration of impacts from Stage 1 utility and power supply works when determining appropriate respite periods for affected receivers.</p> <p>When determining appropriate respite, the need to efficiently undertake construction would be balanced against the communities' preferred noise and vibration management approach.</p> | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|---|--|---------------------|
| NV04 | Construction noise – out of hours work | The use of noise intensive equipment at construction sites with ‘moderate’ and ‘high’ out-of-hours noise management level exceedances would be scheduled for standard construction hours, where feasible and reasonable. Where this is not feasible and reasonable, the works would be undertaken as early as possible in each work shift. | All |
| NV05 | Night-time noise impacts | Air brake silencers would be used on heavy vehicles that access construction sites multiple times per night or over multiple nights. | All |
| NV06 | Sleep disturbance impacts from heavy vehicles | Perimeter site hoarding would be designed with consideration of on-site heavy vehicle movements with the aim of minimising sleep disturbance impacts. | All |
| NV07 | Noise emissions from equipment | Long term construction site support equipment and machinery would be low noise emitting and suitable for use in residential areas, where feasible and reasonable. Examples include: <ul style="list-style-type: none"> • Low noise water pumps for use in water treatment facilities • Low noise generators and compressors • Low noise air conditioner units for use of amenities buildings. | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|---|--|---------------------------|
| NV08 | Acoustic sheds | <p>For all sites where acoustic sheds are proposed, the sheds would be designed and constructed to minimise noise emissions. This would likely include the following considerations:</p> <ul style="list-style-type: none"> • All significant noise producing equipment that would be used during the night-time would be inside the shed, where feasible and reasonable • Noise generating ventilation systems such as compressors, scrubbers, etc, would also be inside the shed and external air intake/discharge ports would be appropriately acoustically treated • The door of the acoustic shed would be kept closed during the night-time period, where feasible and reasonable. Where night-time vehicle access is required, the doors would be designed and constructed to minimise noise breakout. | WMS, SOPMS, BNS, FDS, TBS |
| NV09 | Ground-borne noise | Feasible and reasonable measures would be implemented to minimise ground-borne noise where exceedances are predicted. This may require implementation of less ground-borne noise and less vibration intensive alternative construction methodologies. | All |
| NV10 | Ground-borne noise – cross passages | The proximity of cross passages to nearby receivers and the corresponding construction ground-borne noise and vibration impacts during the excavation works would be considered when determining locations. Relocation of cross passages to be further away from sensitive receivers to mitigate potential construction impacts would be considered, where feasible and reasonable. | Metro rail tunnels |
| NV11 | Ground-borne noise – underground rockbreaking | An activity specific Construction Noise and Vibration Impact Statement (in accordance with the requirements of the Construction Noise and Vibration Standard) would be developed for rockbreaking in the tunnel and at cross passages, specifically addressing the activity where it is required between 10pm-7am. | Metro rail tunnels |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|--|---|---|
| NV12 | Blasting Management Strategies | Blasting would be planned during hours that would cause the least disruption and disturbance to the nearest receivers. Notification protocols prior to blasting for the nearest sensitive receivers would be established. | WMS, PMS, SSF, SOPMS, NSMS, BMS, FDS, TBS |
| NV13 | Blasting Monitoring | Vibration and overpressure measurements would be completed at the start of any blasting activities to confirm that vibration levels are within the blasting criteria. | WMS, PMS, SSF, SOPMS, NSMS, BMS, FDS, TBS |
| NV14 | Construction traffic noise | <p>Further assessment of construction traffic would be completed during detailed design, including consideration of the potential for exceedances of the <i>NSW Road Noise Policy</i> base criteria (where greater than 2 dB increases are predicted). The potential impacts would be managed using the following approaches, where feasible and reasonable:</p> <ul style="list-style-type: none"> • On-site spoil storage capacity would be maximised to reduce the need for truck movements during sensitive times • Vehicle movements would be redirected away from sensitive receiver areas and scheduled during less sensitive times • The speed of vehicles would be limited and the use of engine compression brakes would be avoided • Heavy vehicles would not be permitted to idle near sensitive receivers. | All |
| NV15 | Noise impacts to horses at Rosehill Racecourse Stables | Consultation with the owners and operators of the horse stables near the Clyde stabling and maintenance facility construction site would be carried out so that potential impacts to horses are appropriately managed. | CSMF |

| Reference | Impact / issue | Mitigation measure | Applicable location |
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| NV16 | Construction vibration | Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure (in consultation with a structural engineer) and vibration monitoring would be carried out to ensure vibration levels remain below appropriate limits for that structure. For heritage items, the more detailed assessment would specifically consider the heritage values of the structure in consultation with a heritage specialist to ensure sensitive heritage fabric is adequately monitored and managed. | All |
| NV17 | Building condition surveys – construction vibration | Condition surveys of buildings and structures near to the tunnel and excavations would be undertaken prior to the commencement of excavation at each site, where appropriate. For heritage buildings and structures the surveys would consider the heritage values of the structure in consultation with a heritage specialist. | All |
| NV18 | Cumulative construction noise impacts | The likelihood of cumulative construction noise impacts would be reviewed during detailed design when detailed construction schedules are available. Co-ordination would occur between potentially interacting projects to minimise concurrent or consecutive works in the same areas, where possible. Specific mitigation strategies would be developed to manage impacts. Depending on the nature of the impact, this could involve adjustments to construction program or activities of Sydney Metro West or of other construction projects. | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|--|---|---------------------|
| NV19 | Operational road traffic noise impacts | Further assessment of operational road traffic noise mitigation would be undertaken for receivers identified as being eligible for consideration of treatment. The mitigation would likely include at-property treatment. Receivers that are identified as requiring at-receiver noise mitigation would be identified and, where possible, offered treatment prior to the start of construction works which have the potential to affect them. | WMS |
| NV20 | Noise impacts to horses at the Rosehill Gardens Racecourse Stables (consultation) | <p>Undertake consultation with the Rosehill Gardens Racecourse and an equine veterinary expert to inform construction noise and vibration objectives for this sensitive receiver.</p> <p>Achievement of objectives are to be demonstrated in accordance with Noise and Vibration Construction Monitoring Program required by Conditions C15 and C16 and would include reference to equine behavioural responses where feasible.</p> | CSMF |
| NV21 | Noise impacts to horses at the Rosehill Gardens Racecourse Stables (additional mitigation) | Consider the use of additional noise mitigation measures such as noise barriers where feasible and reasonable. | CSMF |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|--------------------------------|--------------------|--|------------------------------------|
| Non-Aboriginal heritage | | | |
| NAH1 | Archival recording | <p>Archival recording and reporting of the following heritage and unlisted potential heritage items would be carried out in accordance with the NSW Heritage Office's <i>How to Prepare Archival Records of Heritage Items</i> (1998), and <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (2006):</p> <ul style="list-style-type: none"> • Shops (and potential archaeological site) (Parramatta LEP Item No. I703) • Kia Ora (and potential archaeological site) (Parramatta LEP Item No. I716) • RTA Depot (Parramatta LEP Item No. I576) • State Abattoirs (SEPP Listing No. A) • White Bay Power Station (SHR Listing No. 01015) • Rosehill Railway Station Footbridge (SHI no. 4801762) • Rosehill Railway Station (unlisted potential heritage item). | PMS, CSMF, SOPMS, TBS, CSMF |
| NAH2 | Demolition | A method for the demolition of existing buildings and/or structures at specified construction sites would be developed to minimise direct and indirect impacts to adjacent and/or adjoining heritage items. | PMS, CSMF, SOPMS, TBS |
| NAH3 | Salvage | Prior to commencement of demolition of heritage elements at White Bay Power Station within The Bays construction site, significant heritage fabric would be identified for salvage and reuse opportunities for salvaged fabric considered. | TBS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|-------------------------|--|---------------------|
| NAH4 | Visual impacts | The policies of the <i>White Bay Power Station Conservation Management Plan</i> would be considered in regard to visual impacts of the Stage 1 works, particularly the acoustic shed (or other acoustic measures) and any temporary structures. Significant view lines would be retained during Stage 1 works. | TBS |
| NAH5 | Heritage interpretation | Where heritage items, including significant archaeology are impacted by Stage 1 works, consideration would be given to their inclusion in the Heritage Interpretation Plan for future stages. | All |
| NAH6 | Archaeology | The archaeological research design would be implemented. Significant archaeological findings would be considered for inclusion in heritage interpretation (as per NAH5) for the project and be developed in consultation with the relevant local council. | All |
| NAH7 | Archaeology | An Archaeological Excavation Report would be prepared by the Excavation Director and be provided to the NSW Heritage Division within two years of the completion of archaeological excavations specified in the archaeological research design(s). | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|--------------------|--|---------------------|
| NAH8 | Archaeology | <p>In the event that State significant archaeology associated with early convict occupation is located at Parramatta metro station:</p> <ul style="list-style-type: none"> • In situ conservation would be considered. If in situ conservation is not feasible and reasonable, a strategy to mitigate impacts would be prepared in consultation with the NSW Heritage Council (or delegate) • An Archaeological Method Statement would be prepared in consultation with the NSW Heritage Council (or delegate) for management of the archaeological remains, whether for conservation or archaeological investigation and recording • An accessible publication would be prepared within two years of archaeological excavations to document the archaeological investigations • Sydney Metro would provide for the meaningful curation, display and public access of any artefacts collected. This may involve partnerships with museums, local heritage centres and/or universities. | PMS |
| NAH10 | Archival recording | <p>An assessment of significance would be prepared in consultation with the relevant local council for the following potential unlisted heritage items:</p> <ul style="list-style-type: none"> • 220 Church Street, Parramatta • 48 Macquarie Street, Parramatta • Pine Inn at 19 Parramatta Road, Concord • 338-340 Parramatta Road, Burwood • Former warehouse shed, Glebe Island. <p>If the assessment of significance confirms these items have local heritage value, an archival recording would be undertaken.</p> | PMS, BNS, TBS |
| NAH11 | Removal / Salvage | <p>Prior to commencement of demolition of heritage elements at Rosehill Railway Station and Rosehill Railway Footbridge, significant heritage fabric would be identified for salvage and reuse opportunities for salvaged fabric considered.</p> | CSMF |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|------------------------------|------------------------------------|--|------------------------|
| Aboriginal heritage | | | |
| AH1 | Consultation | Aboriginal stakeholder consultation would be carried out in accordance with the Heritage NSW, Department of Premier and Cabinet's <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010</i> (DECCW, 2010). | All |
| AH2 | Test excavation | Archaeological test excavation (and salvage when required) would be carried out where intact natural profiles with the potential to contain significant archaeological deposits are encountered at the specified construction sites and the Parramatta power supply route. Excavations would be conducted in accordance with the methodology outlined in the Aboriginal cultural heritage assessment report. | PMS, CSMF, TBS and PSR |
| AH3 | Aboriginal heritage interpretation | If Aboriginal archaeological remains are recovered during Stage 1, results would be incorporated into Aboriginal heritage interpretation for the Concept in consultation with registered Aboriginal parties. | All |
| AH4 | Unexpected finds | In the event that a potential burial site or potential human skeletal material is exposed during construction, the <i>Sydney Metro Exhumation Management Plan</i> would be implemented. | All |
| Property and land use | | | |
| LU1 | Temporary use | Except where required for subsequent construction activities associated with future stages of the Concept, temporary use areas for construction purposes would be stabilised and appropriately rehabilitated as soon as feasible and reasonable following completion of construction. This would be carried out in consultation with the relevant landowner. | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|---|---------------------------------|---|--|
| Landscape character and visual amenity | | | |
| LV1 | Visual impacts | Where feasible and reasonable, the elements within construction sites would be located to minimise visual impacts (for example storing materials and machinery behind fencing). | All |
| LV2 | Visual impacts | The design and maintenance of construction site hoardings would aim to minimise visual amenity and landscape character impact. | All |
| LV3 | Visual impacts | Graffiti would be removed promptly from hoardings and any other aspects of construction sites. | All |
| LV4 | Visual impacts | All structures (including acoustic sheds or other acoustic measures, site offices and workshop sheds) would be finished in a colour which aims to minimise their visual impact, if visible from areas external to the construction site. This finish is to be applied to all visible fixtures and fittings (including exposed downpipes). | WMS, PMS, SOPMS, SNMS, BNS, FDS, CSMF |
| LV5 | Lighting impacts | Lighting of construction sites would be orientated to minimise glare and light spill impacts on adjacent receivers. | All |
| LV6 | Public art | Construction site hoardings would be designed in accordance with <i>Sydney Metro Brand Design Guidelines</i> and opportunities for public art on hoardings would be considered in high pedestrian locations. | All |
| LV7 | Visual impacts affecting events | Works would be coordinated with the Department of Planning, Industry and Environment to manage the potential impact of construction on sporting events in other areas of Sydney Olympic Park. | SOPMS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|---------------------------------|---|---------------------|
| LV8 | Visual impacts affecting events | Works would be coordinated with City of Canada Bay Council to manage the potential impact of construction on sporting events at Concord Oval. | BNS |
| LV9 | Overshadowing | Where feasible and reasonable the location and height of the acoustic shed at the Five Dock Station (if required) would be designed to minimise overshadowing of Fred Kelly Place between 10am and 3pm in mid-winter. | FDS |
| LV10 | Activation of streetscapes | Opportunities to provide temporary activation in the vicinity of the Five Dock Station western construction site during construction would be explored in consultation with the City of Canada Bay Council. | FDS |
| LV11 | Trees | Opportunities for the retention and protection of existing street trees and trees within the site would be identified during detailed construction planning. | All |
| LV12 | Trees | Existing trees to be retained would be protected prior to the commencement of construction in accordance with Australian Standard AS4970 the Australian Standard for Protection of Trees on Development Sites and Adjoining Properties. | All |
| LV13 | Trees | Trees removed by Stage 1 would be replaced to achieve no net loss to tree numbers and/or canopy in proximity to the site as a minimum in the long term (and part of future stages of Metro West). | All |
| LV14 | Trees | Opportunities would be investigated with the relevant local council to provide plantings in proximity to the impacted areas prior to construction commencing where feasible and reasonable. | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-------------------------|---------------------------------------|--|---------------------|
| LV15 | Visual impacts | Investigate the opportunity for early installation of screening vegetation along the eastern boundary of the former rail corridor alongside the Rosehill Gardens Racecourse and west of the Kay Street and Unwin Street road bridge where feasible. | CSMF |
| LV16 | Visual impacts | Provide vegetation that assists in the screening and visual softening of the road, bridge and other permanent engineered structures where feasible. | CSMF |
| Business impacts | | | |
| BI1 | General business impacts | Small business owner engagement would be undertaken to assist small business owners adversely impacted by construction. | All |
| BI2 | Power and utility interruptions | Planned power and utility interruptions would be scheduled to before or after typical business hours where feasible and reasonable. Prior notice would be provided to all affected business owners of the interruptions. | All |
| BI3 | Business visibility and accessibility | Hoarding and screening impacting the visibility of business would be minimised where feasible and reasonable, without compromising public safety or the effective management of construction airborne noise. Clear pathways and signage would be implemented around construction sites to maximise visibility of retained businesses, including sufficient lighting along pedestrian footpaths during night-time where relevant. | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------------------|-------------------------------------|--|---|
| Social impacts | | | |
| S1 | Impacts on social infrastructure | Consultation would be carried out with managers of social infrastructure located near construction sites about the timing and duration of construction works and management of potential impacts, with the aim of minimising potential disruptions to the use of the social infrastructure from construction activity. | WMS, PMS, CSMF, SSF, SOPMS, NSMS, BNS, FDS, TBS |
| S2 | Loss of social infrastructure | Engagement would be carried out with Parramatta City Council to identify alternative locations for the Parramatta Artist Studios to provide opportunities for facilitating local creative and cultural activities. | PMS |
| S3 | Social impacts | A Community Benefit Plan would be developed to guide the development of community benefit initiatives (by Principal Contractors) during construction of Stage 1 to make a positive contribution to the potentially affected community. The key objectives of the plan would include: <ul style="list-style-type: none"> • Identify opportunities to create environmental and community benefits and provide positive social outcomes • Respond to community priorities and needs in the locality of each relevant construction site. | WMS, PMS, SOPMS, NSMS, BNS, FDS, TBS |
| S4 | Impacts on events or festivals | In addition to mitigation measure TT17, consultation would be carried out with festival and event organisers in proximity to construction sites to mitigate potential impacts on the operation of the festival or event. | PMS, FDS |
| S5 | Promote local cultural and identity | In addition to mitigation measure LV16, consultation would be carried out with stakeholders to identify opportunities for public art to reflect community values, culture and identity of the local community. | WMS, PMS, SOPMS, NSMS, BNS, FDS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
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| S6 | Activation of streetscapes | In addition to mitigation measure LV10, potential temporary activation in the vicinity of the Five Dock Station western construction site would include opportunities to provide spaces and places for the community to gather and meet each other, culture and identity. | FDS |
| S7 | Potential impacts on school infrastructure | In addition to mitigation measure S1, ongoing engagement would be undertaken with NSW Department of Education to continue to investigate feasible and reasonable mitigation measures related to construction traffic, pedestrian safety, construction noise and vibration, and air quality. | WMS, PMS, BNS, FDS |
| Groundwater and ground movement | | | |
| GW1 | Loss of groundwater available to existing groundwater (bore supply) users | Site inspection would be carried out on private domestic supply bore GW305646 to confirm the current viability of that bore. If found to be viable and predicted to be significantly impacted by the project, make good measures would be implemented if a loss of yield were to occur. | BNS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|---|--|------------------------|
| GW2 | Potential reduced baseflow to Toongabbie Creek, Domain Creek, A'Becketts Creek, Duck Creek, Haslams Creek, Powells Creek and the Mason Park wetlands, Bicentennial Park wetlands, Brickpit and Powells Creek Reserve | A review of additional geotechnical and hydrogeology data would be undertaken to confirm the geological and groundwater conditions and determine, based on these local conditions, whether predicted groundwater drawdown from Stage 1 is likely to occur in the vicinity of these creeks. Where the additional data review shows local conditions and predicted groundwater drawdown are likely to cause surface water/groundwater interaction, then additional site investigations (in accordance with GW3) would be undertaken for those creeks or surface water bodies. | WMS, CSMF, SOPMS, NSMS |
| GW3 | Potential reduced baseflow to Toongabbie Creek, Domain Creek, A'Becketts Creek, Duck Creek, Haslams Creek, Powells Creek and the Mason Park wetlands, Bicentennial Park wetlands, Brickpit and Powells Creek Reserve Requirements for baseline monitoring of hydrological attributes | Additional site investigations would be carried out at creeks or surface water bodies where the additional data review in GW2 shows there is a likely surface water/groundwater interaction. This would involve baseline monitoring of creek flows (streamflow gauging) prior to construction, and baseflow streamflow analysis to confirm the existing groundwater baseflow contribution to streamflow for each creek. Where a significant reduction in baseflow is predicted due to Stage 1, design responses would be implemented at station and shaft excavations to reduce potential baseflow loss. | WMS, CSMF, SOPMS, NSMS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|--|--|---|
| GW4 | Requirements for baseline monitoring of hydrological attributes. Migration of contaminants in groundwater and reduction in beneficial uses of aquifers | Monitoring of groundwater levels and quality at the site area would occur before, during and after construction. This would also include monitoring of potential contaminants of concern. Groundwater level data would be regularly reviewed during and after construction by a qualified hydrogeologist. Groundwater monitoring data would be provided to the NSW Environment Protection Authority and Department of Planning, Industry and Environment and the Natural Resources Access Regulator for information. | WMS, PMS, CSMF, SSF, SOPMS, NSMS, BNS, FDS, TBS |
| GW5 | Ground movement and settlement | <p>A detailed geotechnical and hydrogeological model for Stage 1 would be developed and progressively updated during design and construction. The detailed geotechnical and hydrogeological model would include:</p> <ul style="list-style-type: none"> • Assessment of the potential for damage to structures, services, basements and other sub-surface elements through settlement or strain • Predicted groundwater inflows, groundwater take and changes to groundwater levels including at nearby water supply works. • Where building damage risk is rated as moderate or higher (as per the CIRIA 1996 risk-based criteria), a structural assessment of the affected buildings/structures would be carried out and specific measures implemented to address the risk of damage. • Where a significant exceedance of target changes to groundwater levels are predicted at surrounding land uses and nearby water supply works, an appropriate groundwater monitoring program would be developed and implemented. The program would aim to confirm no adverse impacts on groundwater levels or to appropriately manage any impacts. Monitoring at any specific location would be subject to the status of the water supply work and agreement with the landowner. | Where required |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|--------------|--------------------------------|--|---------------------|
| GW6 | Ground movement and settlement | Condition surveys of buildings and structures in the vicinity of the tunnel and excavations would be carried out prior to the commencement of excavation at each site. | Where required |
| Soils | | | |
| SSWQ1 | Acid sulfate soils | Prior to ground disturbance in areas of potential acid sulfate soil occurrence, testing would be carried out to determine the presence of actual and/or potential acid sulfate soils. If acid sulfate soils are encountered, they would be managed in accordance with the <i>Acid Sulfate Soil Manual</i> (ASSMAC, 1998). | PMS, CSMF, TBS |
| SSWQ2 | Soil salinity | Prior to ground disturbance in high probability salinity areas, testing would be carried out to determine the presence of saline soils. If salinity is encountered, excavated soils would not be reused or would be managed in accordance with <i>Book 4 Dryland Salinity: Productive Use of Saline Land and Water</i> (NSW DECC, 2008). Erosion controls would be implemented in accordance with the 'Blue Book' (Landcom, 2004). | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
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| Surface water quality | | | |
| SSWQ3 | Erosion and sedimentation | Erosion and sediment measures would be implemented at all construction sites in accordance with the principles and requirements in <i>Managing Urban Stormwater – Soils and Construction, Volume 1</i> (Landcom, 2004) and <i>Volume 2D</i> (NSW Department of Environment, Climate Change and Water 2008), commonly referred to as the 'Blue Book'. Additionally, any water collected from construction sites would be appropriately treated and discharged to avoid any potential contamination or local stormwater impacts. Temporary sediment basins would be designed in accordance with <i>Managing Urban Stormwater: Soils and Construction and Managing Urban Stormwater, Volume 2D: Main Road Construction</i> (DECC, 2008). | All |
| SSWQ4 | Working in waterways and surrounding low lying areas | Works in waterways and surrounding low lying areas would be carried out in accordance with progressive erosion and sediment control plans. | CSMF |
| SSWQ5 | Wastewater discharge | The water treatment plants would be designed so that wastewater is treated to a level that is compliant with the ANZECC/ARMCANZ (2000), ANZG (2018) and draft ANZG (2020) default guidelines for 95 per cent species protection and 99 per cent species protection for toxicants that bioaccumulate unless other discharge criteria are agreed with relevant authorities. | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
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| SSWQ6 | Water quality monitoring | A surface water monitoring program would be implemented to observe any changes in surface water quality that may be attributable to Stage 1 and inform appropriate management responses. The program would be developed in consultation with the EPA and relevant Councils. The program would consider monitoring being undertaken as part of other infrastructure projects such as the WestConnex M4 East monitoring. Monitoring would occur during pre-construction and during construction at all waterways with the potential to be impacted. Monitoring sites could be located upstream and downstream of the potential discharges and would include sampling for key indicators of concern. | All |
| SSWQ7 | Local stormwater capacity | Further design development would confirm the local stormwater system capacity to receive construction water treatment plant inflows. In the event there is a stormwater infrastructure capacity issue with existing infrastructure, mitigation measures such as storage detention to control water outflow during wet weather events would be implemented. | All |
| Contamination | | | |
| C1 | Management of low risk contamination | For sites where potential contamination risk is moderate, high or very high, a further review of data would be performed. Where the additional data review provides sufficient information to confirm that contamination is likely to have a very low or low risk, the site would then be managed in accordance with the Soil and Water Management Plan. This would typically occur where there is minor, isolated contamination that can be readily remediated through standard construction practices such as excavation and off-site disposal. | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-----------|-----------------------------|--|-----------------------|
| C2 | Detailed Site Investigation | <p>Where data from the additional data review (mitigation measure C1) is insufficient to understand the risk of contamination, a Detailed Site Investigation would be carried out in accordance with the <i>National Environment Protection Measure</i> (2013) and other guidelines made or endorsed by the NSW EPA.</p> <p>The sites requiring a Detailed Site Investigation would be confirmed following the additional data review (mitigation measure C1), however on the basis of the Stage 1 assessment, it is anticipated that Detailed Site Investigations would be required at the specified application locations.</p> | CSMF, SSF, SOPMS, TBS |
| C3 | Remediation | <p>Where data from the additional data review (mitigation measure C1) or the Detailed Site Investigation (mitigation measure C2) confirms that contamination would have a moderate, high or very high risk, a Remediation Action Plan would be developed for the area of the construction footprint.</p> <p>Each Remediation Action Plan would detail the remediation works required to mitigate risks from contamination throughout and following completion of construction. The Remediation Action Plan would be prepared in accordance with relevant NSW EPA guidelines and where applicable, detail remediation methodologies in accordance with Australian Standards and other relevant government guidelines and codes of practice.</p> <p>Remediation would be performed as an integrated component of construction and to a standard commensurate with the proposed end use of the land.</p> <p>The sites requiring Remediation Action Plans and remediation would be confirmed following the additional data review (mitigation measure C1) and Detailed Site Investigation (mitigation measure C2), however on the basis of the Stage 1 assessment, it is anticipated that Remediation Action Plans and remediation could be required at the specified application locations.</p> | CSMF, SSF, SOPMS, TBS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
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| C4 | Site Audit Statement | Where contamination is highly complex, such as significant groundwater contamination; contamination associated with vapour; contamination that requires specialised remediation techniques; or contamination that requires ongoing active management during and beyond construction, an accredited Site Auditor would review and approve the Remediation Action Plan, and would develop a Site Audit Statement and Site Audit Report upon completion of remediation. The sites requiring Site Audit Statements would be confirmed following the preparation of Remediation Action Plans (mitigation measure C3), however on the basis of the Stage 1 assessment, it is anticipated that Site Audit Statements would be required at the specified application locations. | CSMF, SOPMS, TBS, and as applicable |
| C5 | Residual contamination following construction | Ongoing management and monitoring measures would be documented in an appropriate form and implemented for any areas where minor, residual contamination remains following construction. | As applicable |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|-------------------------------|----------------------------|--|---------------------------|
| Hydrology and flooding | | | |
| HF1 | Flooding behaviour impacts | <p>Detailed construction planning would consider flood risk at construction sites. This would include:</p> <ul style="list-style-type: none"> • Identification of measures to not worsen flood impacts on the community and on other property and infrastructure during construction up to and including the one per cent AEP flood event • Provide flood-proofing to excavations at risk of flooding or coastal inundation during construction, where feasible and reasonable, such as raised entry into shafts and/or pump-out facilities to minimise ingress of floodwaters into shafts and the dive structure • Review of site layout and staging of construction works to avoid or minimise obstruction of overland flow paths and limit the extent of flow diversion required. This includes design of site hoardings to minimise disruption to flow paths (if possible). Not worsen is defined as: <ul style="list-style-type: none"> • A maximum increase in flood levels of 50mm in a one per cent AEP flood event • A maximum increase in time of inundation on one hour in a one per cent AEP flood event • No increase in potential soil erosion and scouring from any increase in flow velocity in a one per cent AEP flood event. | PMS, CSMF, SSF, NSMS, TBS |
| HF3 | Flooding behaviour impacts | <p>Further design refinement at the Clyde stabling and maintenance facility construction site would occur during detailed design to mitigate the identified potential impacts including:</p> <ul style="list-style-type: none"> • The increases in flood levels of up to 0.03 metres in Duck Creek and adjacent properties in the one per cent AEP flood event • Increases in flow velocities and the potential increased risk of scour at the proposed creek crossings and in the downstream channels • The potential flooding impacts from filled features. | CSMF |

| Reference | Impact / issue | Mitigation measure | Applicable location |
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| HF4 | Flooding behaviour impacts | Drainage at construction sites would be designed, where feasible and reasonable, to mitigate potential alterations to local runoff conditions due to construction sites. | All |
| HF5 | Flooding behaviour impacts | Detailed construction planning for The Bays Station construction would aim to minimise changes to existing levels in relation to potential impacts on flood behaviour, along the north-western side of site adjacent to low-lying property, to minimise reduction in floodplain storage. | TBS |
| HF6 | Flood protection | Consultation would occur with the proponent of the Camellia Town Centre redevelopment to understand potential flood impacts from the redevelopment on Stage 1 and to identify any additional flood protection (if required). | PMS |
| HF7 | Flooding emergency management | Construction planning regarding flooding matters would be carried out in consultation with the NSW State Emergency Service and the relevant local council. | PMS, CSMF, TBS |
| HF8 | Impacts to flood mitigation works | Detailed construction planning for The Bays Station construction site would aim to avoid conflicts with the potential construction of flood mitigation works in Robert Street, Rozelle in consultation with Inner West Council. | TBS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
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| Biodiversity | | | |
| B1 | Impacts to fish passage | During construction, sufficient flow and fish passage would be maintained similar to current conditions during in-stream works where feasible and reasonable. | CSMF |
| B2 | Impacts of proposed creek crossings | <p>The A'Becketts Creek and Duck Creek crossings would be designed to:</p> <ul style="list-style-type: none"> • Provide sufficient fish passage in accordance with <i>Policy and guidelines for fish habitat conservation and management Update 2013</i> (DPI (Fisheries NSW) 2013) • Incorporate suitable scour protection • Avoid worsening existing flow velocities downstream from the crossing locations • Incorporate a vegetated riparian zone within the realigned open channel sections where feasible and reasonable. | CSMF |
| B3 | Impacts to groundwater dependent ecosystems | Additional investigations and assessment would be completed to confirm the potential for impacts to groundwater dependant ecosystems due to groundwater drawdown, and to identify any required mitigation through design. | WMS, PMS, CSMF, NSMS, BNS, FDS |

| Reference | Impact / issue | Mitigation measure | Applicable location |
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| Air quality | | | |
| AQ1 | Dust impacts | <p>The following best-practice dust management measures would be implemented during all construction works:</p> <ul style="list-style-type: none"> • Regularly wet-down exposed and disturbed areas including stockpiles, especially during dry weather • Adjust the intensity of activities based on measured and observed dust levels and weather forecasts • Minimise the amount of materials stockpiled and position stockpiles away from surrounding receivers • Regularly inspect dust emissions and apply additional controls as required • Consider all relevant measures listed in the UK IAQM corresponding to the highest level of risk determined around each Stage 1 construction site. | All |
| AQ2 | Exhaust emissions from the combustion of fossil fuels | Plant and equipment would be maintained in a proper and efficient manner. Visual inspections of emissions from plant would be carried out as part of preacceptance checks. | All |
| AQ3 | Odour emissions | <p>The following best-practice odour management measures would be implemented during relevant construction works:</p> <ul style="list-style-type: none"> • The extent of opened and disturbed contaminated soil at any given time would be minimised • Temporary coverings or odour suppressing agents would be applied to excavated areas where appropriate • Regular monitoring would be conducted during excavation to verify that no offensive odours are being detected beyond the site boundary. | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
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| Spoil, waste management and resource use | | | |
| WR1 | Compliance with legislative and policy requirements | All waste would be assessed, classified, managed, transported and disposed of in accordance with the <i>Waste Classification Guidelines</i> and the <i>Protection of the Environment Operations (Waste) Regulation 2014</i> . | All |
| WR2 | Disposal of hazardous materials | A hazardous material survey would be completed for those buildings and structures suspected of containing hazardous or special waste materials (particularly asbestos) prior to their demolition. If hazardous waste or special waste (e.g. asbestos) is encountered, it would be handled and managed in accordance with relevant legislation, codes of practice and Australian standards. | All |
| WR3 | Waste minimisation | Construction waste would be minimised by accurately calculating materials brought to the site and limiting materials packaging. | All |
| WR4 | Reuse and recycling | Waste streams would be segregated to avoid cross-contamination of materials and maximise reuse and recycling opportunities. | All |
| WR5 | Reuse on Sydney Metro West sites | A materials tracking system would be implemented for material transferred between Sydney Metro West sites and to offsite locations such as licensed waste management facilities. | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
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| Hazards | | | |
| HA1 | Risks to people, property and the environment associated with transport and storage of explosives | The method for delivery of explosives would be developed prior to the commencement of blasting (if proposed) in consultation with the Department of Planning, Industry and Environment and be timed to avoid the need for on-site storage. | All |
| HA2 | Impacts on underground utilities | Dial before you dig searches and non-destructive digging would be carried out to identify the presence of underground utilities. | All |
| HA3 | Impacts on underground utilities | Ongoing consultation would be carried out with utility providers for high pressure gas or petroleum pipelines to identify appropriate construction methodologies to be implemented. Any interaction with high pressure gas or petroleum pipelines would comply with the relevant standards, including AS 2885 Pipelines – Gas and Liquid Petroleum. | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
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| Sustainability and climate change | | | |
| SCC1 | Sustainability implementation | Sustainability initiatives would be incorporated into the detailed design and construction to support the achievement of the Sydney Metro West sustainability objectives. | All |
| SCC2 | Sustainability implementation | Best practice level of performance would be achieved using market leading sustainability rating tools during design and construction. | All |
| SCC3 | Climate change risks | Climate change risk treatments would be confirmed and incorporated into the detailed design. | All |
| SCC4 | Greenhouse gas emissions | An iterative process of greenhouse gas assessments and design refinements would be carried out during detailed design and construction to identify opportunities to minimise greenhouse gas emissions. Performance would be measured in terms of a percentage reduction in greenhouse gas emissions from a baseline inventory calculated at the detailed design stage. | All |
| SCC5 | Greenhouse gas emissions | 25 per cent of the greenhouse gas emissions associated with consumption of electricity during construction would be offset. | All |

| Reference | Impact / issue | Mitigation measure | Applicable location |
|---------------------------|----------------------------------|--|---------------------|
| Cumulative impacts | | | |
| CI1 | Occurrence of cumulative impacts | <p>Co-ordination and consultation with the following stakeholders would occur where required to manage the interface of projects under construction at the same time:</p> <ul style="list-style-type: none"> • Transport for NSW including Transport Coordination • Department of Planning, Industry and Environment • Sydney Trains • NSW Trains • Sydney Buses • Sydney Water • Port Authority of NSW • Sydney Motorways Corporation • Emergency service providers • Utility providers • Construction contractors. <p>Co-ordination and consultation with these stakeholders would include:</p> <ul style="list-style-type: none"> • Provision of regular updates to the detailed construction program, construction sites and haul routes • Identification of key potential conflict points with other construction projects • Developing mitigation strategies in order to manage conflicts. <p>Depending on the nature of the conflict, this could involve:</p> <ul style="list-style-type: none"> - Adjustments to the Sydney Metro construction program, work activities or haul routes; or adjustments to the program, activities or haul routes of other construction projects - Co-ordination of traffic management arrangements between projects. | All |

