Infrastructure approval

Section 115ZB of the *Environmental Planning & Assessment Act 1979*

I grant approval to the State significant infrastructure application referred to in Schedule 1, subject to the conditions in Schedule 2.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts including economic and social impacts;
- set standards and performance measures for acceptable environmental performance;
- ensure regular monitoring and reporting; and
- provide for the ongoing environmental management of the SSI.

The Hon Rob Stokes MP
Minister for Planning

Sydney 2016

SCHEDULE 1

Application no.:	SSI 6307
Proponent:	Roads and Maritime Services
Approval Authority:	Minister for Planning
Land:	Land in the suburbs of Sydney Olympic Park, Homebush West, Homebush, North Strathfield, Strathfield, Concord, Burwood, Croydon, Ashfield and Haberfield.
State Significant Infrastructure:	Development for the purposes of the WestConnex M4 East project being a new multi-lane road link from Homebush Bay Drive at Homebush to Parramatta Road and Wattle Street (City West Link) at Haberfield, including: • upgrade of the Homebush Bay Drive Interchange at Homebush; • construction of new interchanges at Concord Road at North Strathfield/Concord, Wattle Street (City West Link) at Haberfield, and Parramatta Road at Ashfield/Haberfield; • tunnel ventilation systems near Underwood Road at Homebush and the corner of Parramatta Road and Wattle Street at Haberfield; • fresh air supply intake and smoke emergency exhaust facility at Cintra Park, Concord; • motorway operations complex at Homebush adjacent to the M4 Motorway; • tunnel support systems and ancillary services including electricity substations, water treatment facilities, fire and emergency systems, and tolling gantries; • road works to facilitate connection to and from the proposed tunnels and surface road network; • an on-ramp at Powells Creek, North Strathfield providing access to the M4 westbound; • connections to WestConnex Stage 3 (M4-M5 link); • provisions of new and modified noise abatement facilities; • modifications to pedestrian and cyclist facilities; • temporary ancillary construction facilities; and • utility adjustments, modifications, relocations and/or protection.
Critical State Significant Infrastructure	The proposal is critical State significant infrastructure by virtue of Schedule 5, clause 4 of *State Environmental Planning Policy (State and Regional Development) 2011*.

SSI 6307 MOD 1 approved 15 December 2016
SSI 6307 MOD 2 approved 10 January 2017
SSI 6307 MOD 3 approved 16 June 2017
SSI 6307 MOD 4 approved 13 June 2018
SSI 6307 MOD 5 approved 04 July 2018

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DEFINITIONS

Act, the	*Environmental Planning and Assessment Act 1979*
AHD	Australian Height Datum
ancillary facility	Temporary facility for construction, including for example an office and amenities compound, construction compound, batch plant (concrete or bitumen), material crushing and screening, materials storage compound, maintenance workshop, testing laboratory or material stockpile area. *Note:* • *Where a stockpile management protocol has been approved by the Secretary for the SSI, material stockpile areas are not considered to be ancillary facilities.*
AQCCC	Air Quality Community Consultative Committee
ARI	Average Recurrence Interval: The average, or expected, value of the periods between exceedances of a given rainfall total accumulated over a given duration.
CEMP	Construction Environmental Management Plan
CO	Carbon monoxide
Conditions of approval	The Minister's conditions of approval for the SSI.
Construction	Includes all work in respect of the SSI, other than: (a) survey works including general alignment survey and survey controls (including installation of global positioning system (GPS)), repeater stations, survey of existing and future utilities or building/road/infrastructure dilapidation surveys; (b) further investigations including investigative drilling, excavation or salvage; treatment of contaminated sites or work undertaken in accordance with a strategy or salvage operation required by the conditions of this approval; (c) minor clearing or translocation of vegetation, as identified in the Environmental Impact Statement, Submissions Report, or in accordance with the approved strategies, plans, programs and other documents required by the conditions of this approval; (d) establishing (but not operating) ancillary facilities/construction work sites in locations meeting the locational criteria identified in the condition D52, or where the criteria are not fully satisfied those ancillary facility sites which have been assessed and approved in accordance with condition D53. This includes the establishment of ancillary facilities access roads and the provision of services to the facility and installation of erosion and sedimentation controls; (e) installation of environmental impact mitigation measures (including erosion and sedimentation control, temporary exclusion fencing for sensitive areas, and at-house acoustic treatment) and measures identified in approved strategies, plans, programs and other documents required by the conditions of this approval; (f) property acquisition adjustment works, including the installation of property fencing, demolition and removal of buildings; (g) relocation of utilities; and (h) other activities determined by the Environmental Representative to have minimal environmental impact (e.g. minor access roads, minor adjustments to services/ utilities, temporary relocation of pedestrian and cycle paths and property access, etc). Construction includes all work where heritage, heritage conservation areas, threatened species, populations and ecological communities would be impacted, unless otherwise approved by the Secretary in consultation with the Office of Environment and Heritage or NSW Heritage Council, whichever is the appropriate agency.

Contributory Item	A built form (e.g. house) that makes an important or significant contribution to the character and heritage values of a heritage conservation area as may be identified within a local government council's Development Control Plan.
DEC	Former Department of Environment and Conservation
DECC	Former Department of Environment and Climate Change
DECCW	Former Department of Environment, Climate Change and Water
Department, the	Department of Planning and Environment
DPI	Department of Primary Industries
EIS	Environmental Impact Statement
Environmental Representative	Refer to condition D1.
EPA	Environment Protection Authority
EPL	Environment Protection Licence under the *Protection of the Environment Operations Act 1997*.
Feasible and Reasonable	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. **Feasible** relates to engineering considerations and what is practical to build. **Reasonable** relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community expectations and nature and extent of potential improvements.
HAMU	Historical Archaeological Management Unit
Heritage	Those places, buildings, works, relics, archaeological sites, trees, movable objects, and precincts that have or may have World, National, Commonwealth, State or local heritage significance for their historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value. Those values can relate to Aboriginal history or non-Aboriginal (post-settlement) history or both (shared history).
Heritage Conservation Area	An area in which the historical origins and relationships between the various elements create a sense of place. The area is typically aesthetic, historic, scientific or socially significant and has been listed under one or more of the following registers: the State Heritage Register under the *Heritage Act 1977*; a State agency heritage and conservation register under section 170 of the *Heritage Act 1977*; a Local Environmental Plan under the *Environmental Planning and Assessment Act 1979*; the World, National or Commonwealth Heritage lists under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth); and/or an Aboriginal object or Aboriginal place as defined in Section 5 of the *National Parks and Wildlife Act 1974.* A heritage conservation area may be significant due to its: subdivision pattern; pattern of development; style, form type or use of buildings; age of its building stock; parks, gardens or urban spaces; landmark, historical or symbolic sites; streetscapes and skylines; or internal or external views. Usually a number of these elements work together to create a discrete locality of higher significance.
Heritage Item	A place, building, work, relic, archaeological site, tree, movable object or precinct of heritage significance, that is listed under one or more of the following registers: the State Heritage Register under the *Heritage Act 1977*; a State agency heritage and conservation register under section 170 of the *Heritage Act 1977*; a Local Environmental Plan under the *Environmental Planning and Assessment Act 1979*; the World, National or Commonwealth Heritage lists under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth); and/or an Aboriginal object or Aboriginal place as defined in Section 5 of the *National Parks and Wildlife Act 1974.*

Incident	A set of circumstances that causes or threatens to cause material harm to the environment; and/or breaches or exceeds the limits or performance measures/criteria in this approval.
Minister, the	Minister for Planning
Motorist	Includes drivers, passengers and motor bike riders.
NATA	National Association of Testing Authorities, Australia
NCA	Noise catchment area
NO	Nitric oxide
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NSW Heritage Council	Heritage Council of NSW or its delegate.
OEH	Office of Environment and Heritage
OEMP	Operation Environmental Management Plan
Operation	Means the operation of the SSI, but **does not** include commissioning trials of equipment or temporary use of parts of the SSI during construction, or maintenance.
ONVR	Operational Noise and Vibration Review
PAH	Polycyclic aromatic hydrocarbons
PM_{10}	Particulate matter (10 micrometres or less in diameter)
$PM_{2.5}$	Particulate matter (2.5 micrometres or less in diameter)
Pre-construction	All work in respect of the SSI that is excluded from the definition of construction.
Proponent	Roads and Maritime Services
Public housing	As defined under the *Housing Act 2001*.
Publicly Available	Available for inspection by a member of the general public (for example available on an internet site).
QA/QC	Quality Assurance/ Quality Control
Relevant authority	The relevant council(s), Sydney Olympic Authority
Relevant council(s)	Ashfield Council, Auburn Council, Burwood Council, Strathfield Council and City of Canada Bay Council, as applicable.
Residual land	Land considered non-essential to the construction and/or operation of the SSI, or any other road project and land that is no longer required.
Relocated persons	Any resident of property who is displaced or relocated, or otherwise impacted by acquisition for the purposes of the SSI.
RMS	Roads and Maritime Services
Secretary	Secretary of the Department of Planning and Environment.
Secretary's approval or agreement or submission to the Secretary	A written approval from the Secretary (or delegate). *Note: Where the Secretary's approval or agreement is required under a condition of this approval, the Secretary will endeavour to provide a response within one month of receiving an approval or agreement request. The Secretary may ask for additional information if the approval or agreement request is considered incomplete. When further information is requested, the time taken for the Proponent to respond in writing will be added to the one month period. The Secretary may ask for additional information where a document is required to be submitted to the Secretary and the document is considered incomplete or not fully addressing the requirements of a condition.*
Social facility	Any social infrastructure that is not open space (e.g. place of worship, hospital, educational establishment, child care centre).
SOPA	Sydney Olympic Park Authority
Sensitive Receiver	Residence, educational institution (e.g. school, university, TAFE college), health care facility (e.g. nursing home, hospital), religious facility (e.g. church) and children's day care facility.
SSI	Means the State significant infrastructure approved under this approval and as generally described in Schedule 1 (SSI 6307).
SSI Boundary	The boundary of the SSI as defined in the documents referred to in condition A2.

SSI Footprint	That area within the SSI boundary physically impacted by construction activities.
Threatened species, populations and ecological communities	Threatened species, populations and ecological communities as specified in Schedules 1, 1A and 2 of the *Threatened Species Conservation Act 1995.*
Tree	As defined in Australian Standard *AS 4970-2009 Protection of trees on development sites.*.
UDRP	Urban Design Review Panel
UDLP	Urban Design and Landscape Plan
VOC	Volatile organic compounds

SCHEDULE 2

PART A

ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

A1 In addition to meeting the specific performance criteria established under this approval, the Proponent must implement all feasible and reasonable measures to prevent and/or minimise any harm to the environment that may result from the construction or operation of the SSI.

TERMS OF APPROVAL

A2 The Proponent must carry out the SSI in accordance with the conditions of approval and generally in accordance with the:

(a) State significant infrastructure application (SSI 6307);
(b) *M4 East Environmental Impact Statement — Volumes 1A, 1B, 2A, 2B, 2C, 2D, 2E, 2F, 2G* and *2H* prepared by AECOM Australia Pty Ltd and GHD Pty Ltd, dated September 2015;
(c) *M4 East Submissions Report — Volumes 1A, 1B and 2* (WestConnex, 2015);
(d) *Modification Report, State Significant Infrastructure Approval (SSI_6307), Modification of existing SSI boundary to include the expanded construction footprint to facilitate two stormwater outlets into Iron Cove Creek* (Roads and Maritime Services, 2016); and
(e) *Modification Report, State Significant Infrastructure Approval (SSI_6307) Dobroyd Parade cul-de-sac and Parramatta Road kerb extension at Rogers Avenue (Roads and Maritime Services, 2018).*

A3 In the event of an inconsistency between:

(a) the conditions of this approval and any document listed in condition A2 inclusive, the conditions of this approval will prevail to the extent of the inconsistency; and
(b) any document listed in condition A2(a) to A2(e) inclusive, the most recent document will prevail to the extent of the inconsistency.

A4 The Proponent must comply with any reasonable requirement(s) of the Secretary arising from the Department's assessment of:

(a) any reports, plans or correspondence that are submitted in accordance with this approval; and
(b) the implementation of any actions or measures contained in these reports, plans or correspondence.

LIMITS OF APPROVAL

A5 This approval will lapse 5 years after the date on which it is granted, unless the works of this SSI approval are physically commenced on or before that date.

A6 Where requested by the Secretary, the Proponent must provide evidence as to how feasible and reasonable measures were considered and taken into account.

Note: Community expectations must be taken into account but it is not expected that specific community consultation will be required in every instance.

A7 This approval does not apply to the establishment of ancillary facilities where establishment has been assessed in accordance with any applicable requirements of the *Environmental Planning and Assessment Act, 1979* and site establishment works commenced prior to commencement of construction.

STATUTORY REQUIREMENTS

A8 The Proponent must ensure that all licences, permits and approvals are obtained as required by law and maintained as required throughout the life of the SSI. No condition of this approval removes the obligation for the Proponent to obtain, renew or comply with such licences, permits or approvals.

A9 This approval does not apply to the operation of off-site spoil receiving locations and facilities. The receipt of spoil at these location and facilities must be undertaken in accordance with approvals or licences applying to those locations or facilities.

STAGING

A10 The Proponent may elect to construct and/or operate the SSI in stages. Where staging is proposed, the Proponent must submit a **Staging Report** to the Secretary prior to the commencement of each proposed stage. The Staging Report must provide details of:

(a) how the SSI would be staged, including general details of work activities associated with each stage and the general timing of when each stage would commence; and

(b) details of the relevant conditions of approval, which would apply to each stage and how these will be complied with across and between the stages of the SSI.

Where staging of the SSI is proposed, these conditions of approval are only required to be complied with at the relevant time and to the extent that they are relevant to the specific stage(s).

A11 The Proponent must ensure that any strategy, plan, program, or other document, required by the conditions of this approval is submitted to the Secretary no later than one month prior to the commencement of construction or the relevant stage(s), if the SSI is to be staged, (as identified in the Staging Report), unless otherwise agreed by the Secretary.

Notes:

- *While any strategy, plan or program may be submitted on a progressive basis, the Proponent will need to ensure that the activities on site are covered by relevant and suitable strategies, plans or programs at all times; and*
- *If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.*

COMPLIANCE MONITORING AND TRACKING

A12 The Proponent will be responsible for any breaches of the conditions of approval resulting from the actions of all persons that it invites onto the site, including contractors, sub-contractors and visitors.

A13 In the event of a dispute between the Proponent and another public authority, in relation to an applicable requirement in this approval, either party may refer the matter to the Secretary for resolution. The Secretary's determination of any such dispute will be final and binding on the parties unless further statutory approval is required.

A14 The Proponent must prepare and implement a **Compliance Tracking Program** to track compliance with the requirements of this approval. The Compliance Tracking Program must be submitted to the Secretary for approval prior to the commencement of construction and operate for a minimum of 24 months following commencement of operation, subject to the Secretary's review of the outcomes of the Independent Environmental Audit Report required by condition E46. The operation of the program may be extended if the Secretary determines that there has been unsatisfactory compliance.

The Compliance Tracking Program must include, but not be limited to:

(a) provision for the notification of the Secretary prior to the commencement of construction and prior to the commencement of operation of the SSI (including prior to each stage, where works are being staged);

(b) provision for periodic review of the compliance status of the SSI against the requirements of this approval and the environmental management measures committed to in the document referred to in condition A2(c);

(c) provision for periodic reporting of compliance status to the Secretary, including but not limited to -
   (i) a Pre-Construction Compliance Report prior to the commencement of construction,
   (ii) quarterly Construction Compliance Reports, for the duration of construction, and
   (iii) a Pre-Operation Compliance Report prior to the commencement of operation;

(d) a program for independent environmental auditing in accordance with *AS/NZS ISO 19011:2014 - Guidelines for Auditing Management Systems*;

(e) mechanisms for recording environmental incidents during construction and actions taken in response to those incidents;

(f) provision for reporting environmental incidents to the Secretary during construction, in accordance with conditions A15 and A16;

(g) procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management; and

(h) provision for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

INCIDENT REPORTING

A15 The Proponent must notify the EPA in relation to any pollution incident in carrying out the SSI as required by the *Protection of the Environment Operations Act 1997.* The Proponent must provide the Secretary with a record of any such notification.

A16 The Proponent must notify the Secretary (using the contact name and phone number notified by the Department from time to time) of any incident (other than those relating to the *Protection of the Environment Operations Act 1997)* with actual, or potential, significant off-site impacts on people or the biophysical environment immediately of becoming aware of the incident on weekdays, or the following business day on weekends, public holidays and site shutdown. The Proponent must provide full written details of the incident to the Secretary within seven days of the date on which the incident occurred.

A17 The Proponent must meet the requirements of the Secretary or relevant public authority (as determined by the Secretary) to address the cause or impact of any incident, as it relates to this approval.

PART B

ENVIRONMENTAL PERFORMANCE

AIR QUALITY

Physical Requirements

B1 The ventilation outlets must be constructed at the locations specified in Appendices A and B.

B2 Unless otherwise approved by the Secretary, the ventilation outlets must be constructed at an approximate height of:

(a) the western ventilation outlet: RL 42.5 metres (AHD) being a height of 38.1 metres above the ground as measured from Underwood Road in the location shown as C in Appendix A; and

(b) the eastern ventilation outlet: RL 42 metres (AHD) being a height of 25.0 metres above the ground as measured from the locations shown as A and B in Appendix B.

B3 The ventilation outlet exit plane must have a minimum exit velocity or variable velocity, to be determined in the **Tunnel Ventilation, Incident Response and Traffic Management Systems Integration Protocol** required under condition B7, but only if an equivalent or better environmental outcome than presented in the Proponent's most up to date air assessment can be demonstrated to the Secretary, in consultation with the EPA.

B4 The tunnel ventilation system must be designed, constructed and operated to release emissions from the ventilation outlets only, and to avoid emissions from the portals and/or the tunnel support facility at Cintra Park, except for emergency smoke management purposes in the event of a fire in the tunnel and periodic testing of the system as defined in the Operation Environmental Management Plan required under condition E27.

B5 The tunnel must be designed and constructed so as to allow for future modification of the ventilation system if required. The Proponent must demonstrate, to the Secretary, how this will be allowed for prior to finalising detailed design.

B6 The Proponent must install ventilation outlet emission sampling points and associated safe access thereto, during construction of the ventilation outlet. The sampling points must be designed and located in accordance with the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* (EPA, 2007, or as updated), or an equivalent methodology approved by the Secretary in consultation with the EPA.

B7 Prior to operation, the Proponent must prepare and implement a **Tunnel Ventilation, Incident Response and Traffic Management Systems Integration Protocol** in consultation with the Transport Management Centre, for the approval of the Secretary. The Tunnel Ventilation, Incident Response and Traffic Management Systems Integration Protocol must be reviewed by a suitably qualified and experienced independent ventilation specialist to confirm that, before the tunnel is open to traffic, the ventilation/traffic management systems would operate together to ensure that the conditions of this approval are met. The Protocol should include a commissioning procedure to be completed before the tunnel is opened to traffic.

Note:

- *Tunnel ventilation design and operation, incident response triggers and procedures, and traffic management, should be fully integrated in accordance with the primary objective of ensuring the safety of motorists in the tunnel.*

B8 Prior to operation, the Proponent must install signage at each tunnel entrance and at regular intervals throughout the tunnel that instructs tunnel users to close windows and turn on recirculated air.

Relevant information about this instruction is to be provided on a website, operated by the Proponent, which is maintained throughout operation of the SSI.

Air Quality Community Consultative Committee

B9 Prior to finalising the detailed design of the SSI and the establishment of the ambient air quality monitoring stations required under condition E8 the Proponent must establish an **Air Quality Community Consultative Committee (AQCCC)** to provide input prior to and during the operation of the SSI. The AQCCC must:

(a) be comprised of:
  (i) two representatives from the Proponent and tunnel operator,
  (ii) one representative from each of the relevant councils, whose attendance is only required when considering matters relevant to their respective local government area,
  (iii) three representatives from the local community adjacent to the eastern ventilation facility or three representatives from the local community adjacent to the western ventilation facility whose attendance is only required when considering matters relevant to their respective local area, and whose appointment has been approved by an expression of interest process conducted by the Proponent in consultation with the Secretary, and
  (iv) a Chair who is an independent party put forward by the Proponent and approved by the Secretary;
(b) meet at least four times a year, or as otherwise agreed by the chair and the Secretary;
(c) review and provide advice on the location of the air quality monitoring stations required under condition E8, operation environmental management plans and other operation stage documents, compliance tracking reporting, audit reports, or complaints as they relate to air quality; and
(d) provide advice on the dissemination of monitoring results and other information on air quality issues.

The AQCCC must be operated for a period of two years from the commencement of operation, or as otherwise approved or directed by the Secretary, in consultation with the Chair.

SOIL, WATER QUALITY AND HYDROLOGY

B10 Except as may be provided by an EPL, the SSI must be constructed and operated to comply with section 120 of the *Protection of the Environment Operations Act 1997*, which prohibits the pollution of waters.

B11 All activities taking place in, on or under waterfront land, as defined in the *Water Management Act 2000* should be conducted generally in accordance with the *Guidelines for Controlled Activities on Waterfront Land (DPI, 2012)*.

B12 Watercourse crossings, including temporary work platforms, waterway crossings and/or coffer dams, where feasible and reasonable, must be consistent with the *NSW Guidelines for Controlled Activities Watercourse Crossings* (DPI, 2012), *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003), *Policy and Guidelines for Fish Friendly Waterway Crossings* (NSW Fisheries February, 2004), and *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI Fisheries, 2013). Where multiple cell culverts are proposed for crossings of fish habitat streams, at least one cell must be provided for fish passage, with an invert or bed level that mimics watercourse flows.

B13 The Proponent must take all feasible and reasonable measures to limit operational groundwater inflows into each tunnel to no greater than one litre per second across any given kilometre.

Flood Mitigation

B14 A **Flood Mitigation Strategy** must be prepared and implemented in respect of the flood prone land and overland flow paths for the waterways and catchments in the vicinity of the SSI. The Flood Mitigation Strategy must be designed to ensure that the SSI, where feasible and

reasonable, does not worsen existing flooding characteristics in the vicinity of the SSI during construction and operation. The Flood Mitigation Strategy must include but not be limited to:

(a) the identification of flood risks to the SSI and adjoining areas, including further modelling and the consideration of local drainage catchment assessments, and climate change implications on rainfall and drainage characteristics. This must consider blockages of waterway structures from floating debris in its flood level modelling;

(b) the identification of design and mitigation measures that would be implemented to protect proposed operations and not worsen existing flooding characteristics within and in the vicinity of the SSI boundary during construction and operation, including soil erosion and scouring;

(c) consideration of limiting flooding characteristics to the following levels:

  (i) a maximum increase in inundation time of one hour in a 1 in 100 year ARI rainfall event;

  (ii) a maximum increase of 10 mm in inundation at properties where floor levels are currently exceeded in a 1 in 100 year ARI rainfall event;

  (iii) a maximum increase of 50 mm in inundation at properties where floor levels would not be exceeded in a 1 in 100 year ARI rainfall event; and

  (iv) no inundation of floor levels which are currently not inundated in a 1 in 100 year ARI rainfall event,

  or else provide alternative flood mitigation solutions consistent with the intent of these limits;

(d) the processes and actions committed to in the mitigation measures referred to in conditions A2(b) and A2(c);

(e) the identification of measures to be implemented to minimise scour and dissipate energy at locations where flood velocities are predicted to increase as a result of the SSI and cause localised soil erosion or scour;

(f) identification of drainage system upgrades including those upgrades considered as mitigation measures and identified during the processes outlined in condition B20; and

(g) identification of the timing and maintenance responsibility of any necessary works.

The Flood Mitigation Strategy must be prepared by a suitably qualified and experienced person in consultation with directly affected landowners, Sydney Water, OEH, and relevant councils.

The Flood Mitigation Strategy must be peer reviewed and confirmed as meeting the requirements of this condition by a suitably qualified and experienced independent hydrological engineer. The Flood Mitigation Strategy must be submitted to the Secretary and the relevant council prior to the commencement of construction in the vicinity of the flood prone land and overland flow paths for the waterways and catchments in the vicinity of the SSI, or as otherwise agreed by the Secretary.

B15 All relevant information must be provided to the relevant council and/or NSW State Emergency Service, to assist in the preparation of any new or necessary update(s) to the relevant plans and documents in relation to flooding, to reflect changes in flooding levels, flows and characteristics as a result of the SSI.

B16 Unless otherwise agreed by the Secretary, a **Flood Review Report(s)** must be prepared after the first defined flood event for any of the following flood magnitudes – the 5 year ARI event, 20 year ARI event, 100 year ARI event and probable maximum flood - to assess the actual flood impact against those predicted in Appendix Q of the document referred to in condition A2(b). The Flood Review Report(s) must be prepared by an appropriately qualified person(s) and include:

(a) identification of the properties and infrastructure affected by flooding during the reportable event;

(b) a comparison of the actual extent, level, velocity and duration of the flooding event against the impacts predicted in Appendix Q of the document referred to in condition A2(b),or as otherwise altered by the Flood Mitigation Strategy; and

(c) where the actual extent and level of flooding exceeds the predicted level with the consequent effect of adversely impacting of property(ies), structures and infrastructure, identification of the measures to be implemented to reduce future impacts of flooding related to the SSI works including the timing and responsibilities for implementation.

Flood mitigation measures must be developed in consultation with the affected property/structure/infrastructure owners, OEH, UrbanGrowth NSW and the relevant council.

A copy of the Flood Mitigation Report(s) must be submitted to the Secretary, UrbanGrowth NSW and relevant council(s).

Groundwater

B17 The Proponent must undertake further modelling of groundwater drawdown, tunnel inflows and saline water migration prior to finalising the design of the tunnel. The scope of modelling must be developed in consultation with DPI (Water) and include the results of all groundwater monitoring, including additional baseline data collected post exhibition of the EIS. The results of the modelling must be documented in a **Groundwater Modelling Report**. The Groundwater Modelling Report must be finalised in accordance with the *Australian Groundwater Modelling Guidelines* (National Water Commission, 2012) and prepared in consultation with DPI (Water). The Groundwater Modelling Report must include, but not be limited to:

(a) justification for model and layer choice;
(b) specification of matrix hydraulic and storage parameters for each layer;
(c) statistical evaluation of the model's calibration;
(d) details of the groundwater monitoring data inputs (levels and quality);
(e) assessment of impacts of groundwater drawdown, taking into consideration the *NSW Aquifer Interference Policy* (DPI, 2012), including potential impacts on the Mason Park and Homebush Bay saltmarsh/wetlands and licensed bores potentially affected by the SSI;
(f) a comparison of the results with the modelling results detailed in the document referred to in condition A2(b); and
(g) documentation of any additional measures that would be implemented to manage and/or mitigate groundwater impacts not previously identified or identified but at a smaller scale.

A copy of the Groundwater Modelling Report must be submitted to the Secretary prior to finalising the tunnel design. The Groundwater Modelling Report must include details of consultation with DPI (Water).

Water Quality Plan and Monitoring Program

B18 A **Water Quality Plan and Monitoring Program** must be prepared and implemented to monitor and avoid or mitigate impacts on surface and groundwater quality and resources, during construction and operation. The Water Quality Plan and Monitoring Program must be developed in consultation with the EPA, DPI (Water), Sydney Water and relevant councils, and must include, but not be limited to:

(a) identification of works and activities during construction and operation of the SSI, including tunnel discharge, runoff, emergencies and spill events, that have the potential to impact on groundwater quality, levels or potentiometric pressure (in confined aquifers), and surface water quality of potentially affected watercourses and riparian land;
(b) a risk management framework for evaluation of the risks to groundwater and surface water resources and dependent ecosystems as a result of groundwater inflows to the tunnels, including definition of impacts that trigger contingency and ameliorative measures;
(c) the identification of environmental management measures relating to surface waters and groundwater during construction and operation, including water treatment, erosion and sediment control and stormwater management measures consistent with Water Sensitive Urban Design measures, where relevant, and consistent with the measures detailed in the documents listed in conditions A2(b) and A2(d) inclusive;
(d) details of construction water treatment plants and the operational water treatment plant at Cintra Park, including treatment processes, discharge water quality criteria (taking into consideration any water uses and proposed rehabilitation measures downstream of the discharge locations), discharge locations and rates (and justification for their location), treatment capacity, and any proposed on-site storage of flows;
(e) commitment to designing discharge points into watercourses affected by the SSI to emulate a natural stream system, where feasible and reasonable, or where emulation cannot be achieved, adequate scour protection measures are to be implemented;

(f) consideration of any naturalisation or rehabilitation programs occurring upstream or downstream of waterways or drainage lines intersected by the SSI;
(g) the presentation of water quality objectives, standards and parameters against which any changes to water quality will be assessed, having regard to the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (Agriculture and Resource Management Council of Australia and New Zealand and the Australian and New Zealand Environment and Conservation Council, 2000), and Strathfield Council's pollutant reduction targets for St Luke's Canal. Where alternate guidelines are used to establish water quality goals, justification for this must be provided;
(h) representative background monitoring data (including but not limited to representative data collected by the relevant councils, where readily available) for surface and groundwater quality, levels and potentiometric pressures (in confined aquifers), to establish baseline water conditions prior to the commencement of construction;
(i) identification of construction and operational phase surface water and groundwater monitoring locations including watercourses, waterbodies and wetlands (including Mason Park and Homebush Bay saltmarsh/wetlands) which are representative of the potential extent of impacts from the SSI, including the relevant analytes and frequency of monitoring;
(j) details on the condition and status of licensed bores likely to be impacted by the SSI;
(k) commitment to a minimum monitoring period of three years following the completion of construction or until the affected waterways and/or groundwater resources are certified by a suitably qualified and experienced independent expert as being rehabilitated to an acceptable condition, unless otherwise approved or directed by the Secretary. The monitoring must also confirm the establishment of operational water control measures (such as sedimentation basins and vegetation swales);
(l) contingency and ameliorative measures in the event that adverse impacts to water quality or groundwater flows, levels or potentiometric pressures (in confined aquifers) are identified, with reference to the impact triggers defined in accordance with B18(b);
(m) identification of and commitment to 'make good' provisions for groundwater users to be implemented in the event of a decline in water supply levels from existing bores associated with groundwater changes from either construction and/or ongoing operational dewatering caused by the SSI;
(n) procedures for monitoring and annual reporting of extracted groundwater volumes to DPI (Water) for a minimum monitoring period of three years following completion of construction, unless otherwise approved or directed by the Secretary; and
(o) procedures for annual reporting of the monitoring results to the Secretary, EPA, and the relevant councils;

The Water Quality Plan and Monitoring Program must be submitted to the Secretary for approval prior to the commencement of construction of the SSI, unless otherwise agreed by the Secretary. A copy of the Water Quality Plan and Monitoring Program must be submitted to the EPA, DPI (Water), Sydney Water and relevant councils prior to its implementation.

Nothing in this condition prevents the Proponent from preparing separate Water Quality and Monitoring Programs for the construction and operational stages of the SSI. Where a separate Water Quality and Monitoring Program is prepared for the operation of the SSI, this must be submitted to the Secretary for approval at least six months prior to the commencement of operation of the SSI.

B19 As part of the Water Quality Plan and Monitoring Program required by condition B18, the Proponent must provide details of how the potential impact of discharges on receiving waters would be avoided or minimised, including, but not be limited to:
(a) characterisation of current water quality in any receiving waters that could be affected by the SSI;
(b) a statement of the ambient water quality objectives and the environmental values for the receiving waters;
(c) a statement of the indicators and associated trigger values or criteria for the identified environmental values;

(d) details of the significance of any identified impacts on surface waters including consideration of the relevant ambient water quality outcomes;
(e) demonstration of how the SSI will be designed and operated to protect existing water quality and, where feasible and reasonable, enhance water quality over time; and
(f) demonstration that any groundwater discharge water quality is consistent with supporting a slightly to moderately disturbed level of aquatic ecosystem protection for receiving waters as defined in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (Agriculture and Resource Management Council of Australia and New Zealand and the Australian and New Zealand Environment and Conservation Council, 2000).

Stormwater Drainage

B20 The Proponent must undertake further hydrological and hydraulic modelling based on the detailed design of the SSI to determine the ability of the receiving drainage systems to effectively convey pavement drainage from the SSI. The modelling must be undertaken in consultation with the relevant council(s) and the outcomes documented in a **Stormwater Drainage Report.** The Stormwater Drainage Report must:

(a) confirm the location, size and capacity of all drainage basin structures associated with the operation of the SSI;
(b) assess the potential impacts of pavement drainage discharges from the SSI drainage systems on the receiving environment including the hydrology (water quality and quantity) of receiving waterways, riparian vegetation, aquatic ecology and property;
(c) identify all feasible and reasonable mitigation measures to be implemented where pavement drainage from the SSI drainage systems is predicted to adversely impact on the receiving environment;
(d) where pavement drainage from the SSI flows to a council stormwater drainage system, confirm the location of the cross drainage point and, where available, use drainage information obtained from the relevant council, to -
    (i) confirm the capacity of the council's drainage system and its ability to receive and convey the flows,
    (ii) identify any consequent upstream and downstream impacts on cross drainage infrastructure capacity,
    (iii) assess the impacts on the receiving environment at the final outflow point resulting from any additional flow volume (including, but not limited to, scour, flooding, water quality impacts, and impacts on riparian vegetation, aquatic ecology and property), and
    (iv) identify all feasible and reasonable mitigation measures to be implemented where increased flows through cross drainage systems adversely impact on council drainage infrastructure and the receiving environment; and
(e) set out a clear time frame for the implementation of mitigation measures.

The Stormwater Drainage Report must be submitted to the Secretary at least four weeks prior to the commencement of any new drainage works, modifications to existing drainage works, or construction of hard surfaces that would result in runoff to existing stormwater drainage systems, unless otherwise agreed by the Secretary.

B21 The Proponent must prepare a Water Reuse Strategy which sets out feasible and reasonable options for the reuse of collected stormwater and groundwater during construction and operation of the SSI. The Water Reuse Strategy must include, but not be limited to:

(a) evaluation of all feasible and reasonable reuse options;
(b) details on the preferred reuse option(s), including volumes of water to be reuse, proposed reuse locations and/or activities, proposed treatment (if required), and any additional licences or approvals that may be required; and
(c) a time frame for the implementation of the preferred reuse option(s).

Justification must be provided in the event that it is concluded that no feasible or reasonable reuse options prevail.

A copy of the Water Reuse Strategy must be submitted to the Secretary for approval prior to commencement of tunnelling works.

Land Contamination

B22 Prior to the commencement of site preparation and excavation activities, or as otherwise agreed by the Secretary, in areas identified as having a moderate to high risk of contamination, a **Soil Contamination Report** must be prepared by a suitably qualified person(s) in accordance with the requirements of the *Contaminated Land Management Act 1997* and associated guidelines, detailing the outcomes of Phase 2 contamination investigations within these areas. The Soil Contamination Report must detail, where relevant, whether the soil is suitable (for the intended land use) or can be made suitable through remediation and/or outline the potential contamination risks from the SSI to human health and receiving waterways.

For land to be disturbed by the SSI, where the investigations identify that the site is suitable for the intended operations and that there is no need for a specific remediation strategy, measures to identify, handle and manage potential contaminated soils, materials and groundwater must be identified in the Soil Contamination Report and incorporated into the Construction Environmental Management Plan. Should a remediation strategy be required, the Soil Contamination Report must include a **Remediation Plan** for addressing the disturbed area, and how the environmental and human health risks will be managed during the disturbance, remediation and/or removal of contaminated soil or groundwater.

If remediation is required, the Soil Contamination Report must be accompanied by a **Site Audit Statement**(s), prepared by an accredited Site Auditor under the *Contaminated Land Management Act 1997*, verifying that the disturbed area has been or can be remediated to a standard consistent with the intended land use. Where land is remediated, a final Site Audit Statement(s) must be prepared by an accredited Site Auditor, certifying that the contaminated disturbed areas have been remediated to a standard consistent with the intended land use. The final Site Audit Statement must be submitted to the Secretary and relevant councils prior to operation of the SSI, unless otherwise agreed to by the Secretary.

HERITAGE

B23 The Proponent must not destroy, modify or otherwise physically affect any heritage items, including human remains, outside of the SSI footprint. This approval does not allow the Proponent to harm, modify, or otherwise impact human remains uncovered during the construction and operation of the SSI.

B24 The Proponent must salvage items and materials from heritage items (excluding potential heritage items) as advised by an independent heritage consultant. How the items are reused in the project is to be detailed in the Urban Design and Landscape Plan required by condition B45**.**

Any residual items and materials must be made available, through a process to be developed by the Proponent in consultation with the relevant council(s), to property owners within the locality or heritage conservation area from where the item or material originated.

B25 The Proponent must not demolish the dwellings located at 18, 20 and 22 Walker Avenue, Haberfield.

Non-Aboriginal Heritage Items and Conservations Areas

B26 The Proponent must not destroy, modify or otherwise physically affect the buildings or land known as Yasmar Estate or Ashfield Park. Where visual impacts or other impacts to the setting of these heritage items are expected, these are to be mitigated through measures outlined within the Urban Design and Landscape Plan as required by condition B45.

B26A All physical works on Dobroyd Canal must be undertaken in consultation with a suitably qualified and experienced heritage consultant and Sydney Water's Lead Heritage Advisor. The consultation process must include consultation on the final design and location of the works. All reasonable steps must be undertaken to ensure that the lateral extent and degree of impact to the canal fabric is minimised.

B27 Identified impacts to heritage items and heritage conservation areas must be minimised through both detailed design and construction. The measures for ensuring this are to be detailed in the Construction Heritage Management Plan required by condition D57(c).

B28 Any buildings or structures identified as potential heritage items in the documents listed in conditions A2(b) and A2(c) or identified during detailed design or construction of the SSI, must be dealt with as though they are a locally listed heritage item.

B29 Prior to conducting acoustic treatment at any heritage items in accordance with this approval, the Proponent must obtain and implement the advice of an appropriately qualified and experienced heritage expert to ensure such work is carried out in a manner sympathetic to the heritage values of the item.

B30 The Proponent must, where feasible and reasonable, design and construct the SSI to avoid impacts to trees that are heritage items or are associated with the heritage significance of heritage items or heritage conservation areas. In particular, the Proponent must consider avoidance or minimisation of impacts to the street trees within Sydney Street and Edward Street, Concord, and street trees within the Haberfield Heritage Conservation Area.

Where impacts to street trees in these areas cannot be avoided, the Proponent must further investigate feasible and reasonable options for relocation of those trees, prior to the commencement of works that may impact the relevant trees. Details of the replacement of any removed or damaged street trees are to be detailed in the Urban Design and Landscape Plan as required by condition B45, and in consultation with the relevant council(s).

B31 The Proponent must not cause impact that would result in the removal, harm or modification of any heritage listed fig tree adjacent to or within the confines of the area identified as Cintra Park, Concord or Concord Oval, during construction of the SSI.

B32 The Proponent must prepare a **Heritage Interpretation Plan** which identifies and interprets the key heritage values and stories of heritage items and heritage conservation areas impacted by the SSI. The Heritage Interpretation Plan must include, but not be limited to:

(a) a discussion of the key interpretive themes, stories and messages proposed to interpret the history and significance of the affected heritage items and sections of heritage conservation areas including, but not limited to, Yasmar Estate, Powells Creek Heritage Conservation Area, Thornleigh House gates and driveway, Longbottom Stockade (Concord Oval) and the Haberfield Heritage Conservation Area; and

(b) identification and confirmation of interpretive initiatives implemented to mitigate impacts to archaeological relics, heritage items and conservation areas affected by the SSI.

The Heritage Interpretation Plan must be prepared in consultation with the NSW Heritage Council and submitted to the Secretary.

TRANSPORT AND ACCESS

B33 The SSI is to be designed with the objective of improving, on balance, impacts to:

- existing traffic performance; and
- existing access arrangements and services for other transport modes, where feasible and reasonable, including consideration of speed and reliability of public transport services.

B34 Consistent with the modelling contained in the documents referred to in condition A2(b), the *Sydney CBD to Parramatta Strategic Transport Plan* (Transport for NSW, 2015, or as updated) and in consultation with Transport for NSW, at least two lanes of Parramatta Road, from Burwood

Road to Haberfield, are to be solely dedicated for the use of public transport unless an alternative dedicated public transport route that provides an improved public transport outcome for the area, when compared to two dedicated public transport lanes on Parramatta Road, is approved by the Secretary.

B35 In relation to new or modified local road, parking, pedestrian and cycle infrastructure, the SSI (including ancillary facilities) must be designed:
(a) in consultation with the relevant roads authority;
(b) in consultation with UrbanGrowth NSW for areas within the project boundary adjacent to Parramatta Road (excluding ancillary facilities and temporary traffic changes);
(c) on consultation with SOPA in relation to the operation of the eastbound cycleway and the Mousehole in the vicinity of Sydney Olympic Park;
(d) (c) in consideration of existing and future demand, road and pedestrian safety and traffic network impacts; and
(e) (d) to meet relevant design, engineering and safety guidelines, including *Austroads Guide to Traffic Engineering Practice.*

An independent **Road Safety Audit(s)** is to be undertaken by an appropriately qualified and experienced person during detailed design to assess the safety performance of any new or modified local road, parking, pedestrian and cycle infrastructure provided as part of the SSI (including ancillary facilities) to ensure that they meet the requirements of item (d) this condition. Audit findings and recommendations must be actioned prior to construction of the relevant infrastructure and must be made available to the Secretary on request.

WASTE MANAGEMENT

B36 Waste generated outside the site must not be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence or waste exemption under the *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.

B37 The reuse and/or recycling of waste materials generated on site must be maximised as far as practicable, to minimise the need for treatment or disposal of those materials off site.

B38 All liquid and/or non-liquid waste generated on the site must be assessed and classified in accordance with *Waste Classification Guidelines* (DECCW, 2009) or any superseding documents.

B39 All waste materials removed from the SSI site must only be directed to a waste management facility or premises lawfully permitted to accept the materials.

B40 The handling of spoil generated during construction of the SSI is to be conducted in accordance with the Spoil Management Plan required under condition D46.

UTILITIES AND SERVICES

B41 Utilities, services and other infrastructure potentially affected by construction and operation must be identified prior to construction to determine requirements for access to, diversion, protection, and/or support. Consultation with the relevant owner and/or provider of services that are likely to be affected by the SSI must be undertaken to make suitable arrangements for access to, diversion, protection, and/or support of the affected infrastructure as required.

DILAPIDATION REPORTING

B42 The Proponent must undertake dilapidation surveys and prepare dilapidation reports on the current condition of buildings, services and utilities identified as at risk from settlement or vibration. The dilapidation surveys and reports must be prepared by a suitably qualified and

experienced person(s) and must be provided to the owners of the buildings, services and utilities for review prior to the commencement of potentially impacting construction activities.

Following completion of construction, subsequent dilapidation surveys must be undertaken to assess damage to the building, services and utilities that may have resulted from the construction of the SSI. The Proponent must carry out rectification at its expense and to the reasonable requirements of the property, services and utility owner(s).

B43 Upon determining the access route(s) for construction vehicles associated with the SSI a suitably qualified and experienced independent expert must prepare a **Local Road Dilapidation Report** for local roads within control of the relevant councils. The Local Road Dilapidation Report must assess the current condition of the road and describe mechanisms to restore any damage that may result due to its use by traffic and transport related to the construction of the SSI. The Local Road Dilapidation Report must be submitted to the Secretary for information and the relevant council for review prior to the use of local roads by construction traffic.

Following completion of construction, a subsequent Local Road Dilapidation Report must be prepared to assess any damage to the road that may have resulted from the construction of the SSI.

Measures undertaken to restore or reinstate roads affected by the SSI must be undertaken in a timely manner, in accordance with the reasonable requirements of the relevant council, and at the full expense of the Proponent.

Note:

- *Nothing in these conditions restricts the Proponent commencing adjustments and minor upgrades to the existing road network to cater for construction traffic and installation of temporary project signage prior to the commencement of construction.*

URBAN DESIGN, VISUAL AMENITY AND LANDSCAPE

Urban Design Review Panel

B44 Within three months of the date of this approval, unless otherwise agreed by the Secretary, the Proponent must establish an **Urban Design Review Panel (UDRP)** to provide advice and guidance during detailed design and the preparation of the Urban Design and Landscape Plan and its component sub-plans as required by conditions B45 and B46, respectively. The UDRP is to provide advice in relation to architecture, heritage values, urban and landscape design and artistic aspects of the SSI and must:

(a) be comprised of -
  (i) representatives from the Proponent, including the Head of Urban Design;
  (ii) where the works affect places of heritage significance, an independent heritage architect;
  (iii) two independent architects one of which is a landscape architect;
  (iv) representatives from the relevant council(s);
  (v) depending on the works being considered, one representative from UrbanGrowth NSW;
  (vi) where the works affect places of heritage significance, one representative from the Heritage Council of NSW (or delegate);
  (vii) a maximum of two experts, relevant to the works being considered, as selected by the Proponent, where relevant; and
  (viii) the NSW Government Architect as Chair;
(b) meet at least four times a year, or as otherwise agreed by the UDRP;
(c) review and provide advice on the detailed design of the SSI including architectural, sympathetic heritage design, landscape and urban design elements and final review of the Urban Design and Landscape Plan as required by condition B45; and
(d) keep a record of meeting minutes and a schedule of action items arising from the meeting,

The Proponent may establish a separate UDRP for each precinct.

Urban Design and Landscape Plan

B45 Prior to commencement of permanent built works and/or landscaping, or as otherwise agreed by the Secretary, an **Urban Design and Landscape Plan (UDLP)** must be prepared and implemented for the SSI. The UDLP must be prepared by a suitably qualified and experienced person(s), in consultation with the relevant council(s) and community, SOPA, NSW Heritage Council, UrbanGrowth NSW and the UDRP (as established under condition B44). The UDLP must be approved by the Secretary. The UDLP must present an integrated urban and landscape design for the SSI, and must include, but not be limited to:

(a) identification of design objectives, principles and standards based on -
  (i) local environmental and heritage values,
  (ii) urban design context,
  (iii) sustainable design and maintenance,
  (iv) community safety, amenity and privacy, including 'safer by design' principles where relevant,
  (v) relevant design standards and guidelines, and
  (vi) the urban design principles outlined in the documents listed in conditions A2(b) and (c);

(b) landscaping and building design opportunities to mitigate the visual impacts of the operational fixed facilities (including the ventilation facilities, emergency smoke extraction outlets and the Motorway Operations Complex), and impacts to visual amenity or setting of the Haberfield Heritage Conservation Area, the Powells Creek Heritage Conservation Area, Yasmar Estate and Ashfield Park, in accordance with the following design considerations
  (i) design and proportions of building facades, fences and landscaping should have regard to the surrounding urban context and built form and streetscape character,
  (ii) providing sympathetic designs, built form and landscaping integration with areas of heritage value,
  (iii) opportunities for deep soil zone should be retained to sustain vegetation, including large trees,
  (iv) design should have regard to breaking up building massing and articulating buildings and fences, and
  (v) variations in materials and finishes should be used;

(c) details on the location of existing vegetation and proposed landscaping (including use of endemic and advanced tree species where practicable). Details of species to be replanted/revegetated must be provided, including their appropriateness to the area and habitat for threatened species. Where feasible and reasonable, vegetation to be removed must be reused;

(d) a description of disturbed areas (including compounds) and details of the strategies to progressively rehabilitate, regenerate and/ or revegetate these areas;

(e) a description of the design features, built elements, lighting and building materials;

(f) information on the reuse of heritage items and materials as required by condition B24;

(g) an assessment of the visual screening effects of existing vegetation and the proposed landscaping and built elements. Where receivers have been identified as likely to experience high visual impact as a result of the SSI, the Proponent must in consultation with affected receivers, identify opportunities for providing at-receiver landscaping to further screen views of the SSI. Where agreed to with the landowner, these measures must be implemented during the construction of the SSI;

(h) measures to mitigate and/or offset impacts to trees that are heritage items or associated with the heritage significance of heritage items or heritage conservation areas;

(i) an assessment of the location, design and impacts of all operational lighting associated with the SSI and measures proposed to minimise lighting impacts;

(j) details of where and how recommendations from the UDRP have been incorporated into the plan;

(k) graphics such as sections, perspective views and sketches for key elements of the SSI, including, but not limited to, built elements of the SSI;

(l) monitoring and maintenance procedures for the built elements, rehabilitated vegetation and landscaping (including weed control) including performance indicators,

responsibilities, timing and duration and contingencies where rehabilitation of vegetation and landscaping measures fail;

(m) the sub-plans identified in condition B46; and

(n) evidence of consultation with the UrbanGrowth NSW and community on the proposed urban design and landscape measures, prior to finalisation of the Plan.

A copy of the UDLP must be provided to UrbanGrowth NSW and have regard to the *Draft Parramatta Road Urban Transformation Strategy* (UrbanGrowth NSW, 2015, or as updated).

Note:

- *The UDLP may be submitted in stages to suit a staged construction program of the SSI or in stages to address the built elements of the SSI and landscaping aspects of the SSI.*

B46 The **Urban Design and Landscape Plan** must include the following Sub-plans:

(a) an **Access and Connectivity Management Sub-plan** to facilitate the provision of connectivity and accessibility enhancements along the SSI and surrounding areas. The Access and Connectivity Sub-plan must include an assessment of each accessibility and connectivity opportunity taking into account their effectiveness and any additional impacts they may generate, and a time commitment for the delivery of each opportunity identified.

(b) a **Concord Road Interchange Urban Design and Landscape Sub-plan** for the precincts referred to as the Concord Road Precinct and Edward Street Precinct in the document listed in condition A2(b). The Concord Road Interchange Urban Design and Landscape Sub-Plan must detail the final landscape of the precincts, and must consider heritage impacts to Powells Estate Heritage Conservation Area.

(c) a **Wattle Street Interchange Urban Design and Landscape Sub-plan** for the precincts referred to as the Haberfield Precinct, Wattle Street Precinct and Dobroyd Parade Precinct in the document listed in condition A2(b), the eastern ventilation facility and associated ancillary infrastructure, and noise walls and surface road infrastructure within this area. The Wattle Street Interchange Urban Design and Landscape Sub-plan must detail the final landscaping of the precincts, and must consider heritage impacts to the Haberfield Heritage Conservation Area and provide a design consistent with the adjoining Reg Coady Reserve.

(d) an **Arnotts Reserve Urban Design and Landscape Sub-plan** for the area within Arnotts Reserve impacted by the SSI. The Arnotts Reserve Urban Design and Landscape Sub-plan must ensure the design outcomes are aligned with Strathfield Council's *Powells Creek Master Plan* (August, 2008), where feasible and reasonable, and detail how the visual bulk of any permanent infrastructure will be minimised. The Arnotts Reserve Urban Design and Landscape Sub-plan must take into consideration Sydney Water's naturalisation project for Powells Creek.

The Arnotts Reserve Urban Design and Landscape Sub-plan must provide for pre- and post-construction dilapidation surveys of the Arnotts Reserve and the dilapidation surveys are to be reviewed and agreed to by Strathfield Council. The cost of any required rehabilitation as identified in dilapidation surveys must be borne by the Proponent. Within six months of the completion of construction, the Proponent must ensure the portion of Arnotts Reserve, temporarily acquired for the purposes of the SSI, is returned to Strathfield Council in at least a pre-construction condition that contributes to the progression of works required under the *Powells Creek Master Plan*.

Any work in Arnotts Reserve must be carried out in consultation with Strathfield Council and approved by the Secretary.

(e) a **Cintra Park Precinct Urban Design and Landscape Sub-plan** for the area defined as the Cintra Park Precinct within the document listed in condition A2(b). The Cintra Park Precinct Urban Design and Landscape Sub-plan must detail the final site layout and

landscape design for the Cintra Park operational facility and assess the feasibility of locating the facility away from the Taylor Street boundary allowing the use of residual land for improved recreational or other functional open space uses. The design of any recreational or functional open space is to be completed in consultation with the relevant council and be consistent with the *Cintra and St Luke's Park Management Action Plan*, as revised.

(f) a **Noise Barrier Location and Design Sub-plan** which includes -

(i) identification and confirmation of all noise barrier locations associated with the SSI including new, relocated or modified barriers,

(ii) the consultation and decision making process for all new, relocated or modified noise barriers associated with the SSI,

(iii) assessment of the potential impacts of the barriers including visual amenity, overshadowing and connectivity and community cohesion,

(iv) consideration of safer safety by design principles, the WestConnex Urban Design Framework, RMS Design Guidelines,

(v) adjacent property owner concerns and preferences regarding barrier design and location, and

(vi) justification for the final design of new, relocated or modified barriers.

The barrier design options must be developed in consultation with the UDRP and presented to landowners adjacent to the barriers for consultation prior to the adoption of a final design.

All sub-plans required under this condition must be sympathetic to the relevant council's local open space design guidelines, policies and programs as applicable and must consider and be consistent with the *Draft Parramatta Road Urban Transformation* Strategy (UrbanGrowth, 2015, or as updated).

B47 The SSI must be designed to retain as many trees as possible. Where trees are to be removed, the Proponent must provide a net increase in the number of replacement trees. Replacement trees must be planted within, and on public land up to 500 metres from, the SSI boundary. Replacement tree plantings can be undertaken beyond 500 metres on public land within the local government areas to which the SSI approval applies if no more plantings are practicable within and up to 500 metres from the SSI boundary. The location of the trees must be determined in consultation with the relevant authority(s).

B47A Replacement trees are to have a minimum pot size of 75 litres except where the plantings are consistent with the pot sizes specified in a relevant authority's plans / programs/ strategies for vegetation management, street planting, or open space landscaping, or as agreed by the relevant authority.

B47B The Proponent must submit to the Secretary a report which details the type, size, number and location of replacement trees. The report must demonstrate how any replacement plantings with a pot size less than 75 litres are consistent with the requirements of condition B47A. The report must be submitted to the Secretary prior to operation unless otherwise agreed by the Secretary.

OVERSHADOWING

B48 Existing residential properties (and approved residential developments) that are affected by overshadowing from the final detailed design of the SSI (including any noise mitigation measures) are to receive a minimum of three hours of direct sunlight in habitable rooms and in at least 50% of the principal private open space area between 9:00 am and 3:00 pm on 21 June. Such properties must be identified for further consideration in a **Solar Access and Overshadowing Report**.

The Proponent must prepare a Solar Access and Overshadowing Report to assess compliance with the above requirements. The Solar Access and Overshadowing Report must be submitted to the Secretary within 12 months of the SSI approval and must include:

(a) identification of potentially affected properties;
(b) assessment of the detailed design's compliance at each property, informed by -
    (i) a review of the habitable rooms within structures,
    (ii) the size and nature of private open spaces, and
    (iii) shadow diagrams in plan and elevation at hourly intervals between 9.00 am and 3.00 pm on 21 June; and
(c) a consultation plan to detail how potential impacts and mitigation measures will be discussed and negotiated with potentially affected property owners in the event that compliance with this condition is not achieved.

Where existing residential development currently receives less than the required amount of solar access, existing access to sunlight should not be unreasonably reduced.

Where affected properties include dwellings held under strata or community title, this condition must be interpreted in relation to individual units within those properties.

PROPERTY AND LAND USE

B49 The Proponent must design and construct the SSI with the objective of minimising impacts to, and interference with, third party property and infrastructure and that such infrastructure and property is protected during construction and operation. Any damage caused to property as a result of the SSI must be rectified or the landowner compensated, within a timeframe defined in the Construction Environmental Management Plan.

B50 The Proponent must construct and operate the SSI with the objective of minimising light spillage to residential properties and be generally consistent with the requirements of *Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting*. Notwithstanding, the Proponent must provide mitigation measures to manage any residual night lighting impacts to protect properties adjoining or adjacent to the project, in consultation with affected landowners.

SUSTAINABILITY

B51 The SSI must be designed and constructed to achieve an excellent 'Design' and 'As built' rating under the Infrastructure Sustainability Council of Australia infrastructure rating tool.

B52 Opportunities to reduce operational greenhouse gas emissions must be investigated during detailed design. The sustainability initiatives identified must be regularly reviewed, updated and implemented throughout the design development and construction phase, and annually during the operational phases.

SOCIO-ECONOMIC

B53 The SSI must be designed to achieve a net increase of comparable and functional open space, unless otherwise agreed by the Secretary. For all new open space and where replacement open space is required, the Proponent must, in consultation with the relevant council(s), UrbanGrowth NSW and community groups, provide adequate and appropriate open space of a higher standard within reasonable distances from any open space that has been permanently acquired. The final design and likely time of delivery of all replacement open space must be submitted to the Secretary for approval.

Note:

- *This condition has been included as part of a suite of measures aimed at mitigating operational social impacts specific to the SSI.*

B54 The SSI must not result in the demolition or modification of any social facility that may result in an impact to the functioning or capacity of the facility except for those identified as being directly impacted in the documents referred to in conditions A2(b) and A2(c), or as otherwise agreed by the Secretary.

B55 The Proponent must work with the Cheil Uniting Church at Concord to locate alternative, permanent and fit-for-purpose facilities, and ensure these are operational, prior to undertaking activities associated with the SSI that result in the diminishing of capacity or functioning of the Church, unless otherwise agreed to by the Church and the Secretary.

Social Impact Management

B56 No later than 12 months after the commencement of construction, unless otherwise agreed to by the Secretary, the Proponent must prepare a **Community and Social Management Plan** for precincts directly impacted by the SSI**.** The Community and Social Management Plan must be prepared by a suitably qualified and experienced person(s) and in consultation with relevant council(s) and the community and submitted to the Secretary for approval. The Community and Social Management Plan must include but is not limited to:

(a) identification of the social impacts of the SSI, including cumulative impacts resulting from the various stages of the SSI (including construction and operation) in directly affected precincts including -
  (i) at what stage the identified impact is likely to occur,
  (ii) identification of stakeholders and communities directly affected by each identified impact,
  (iii) assessment of the identified social impacts including type, probability and consequence,
  (iv) details of management and mitigation measures, including responsibilities for the implementation of each measure, and an assessment of the likely effectiveness of the measures,
  (v) identification of access and connectivity enhancements or new provisions to assist in mitigating community cohesion impacts directly resulting from the SSI,
  (vi) mechanisms for monitoring social impacts and reviewing the effectiveness of mitigation measures;
  (vii) mechanisms for the reporting of social impacts during construction and operation of the SSI, and
  (viii) mechanisms for ongoing consultation with communities and key stakeholders; and
(b) a **Community Cohesion Program** to enhance community cohesion in precincts directly affected by the SSI through initiatives including, but not limited to
  (i) enhancement of open space,
  (ii) accessibility of the public realm in accordance with condition B46(a),
  (iii) active community involvement and engagement,
  (iv) support of community initiatives and programs, and
  (v) provision of grants to local community groups.

The Proponent must maintain and implement the Community and Social Management Plan throughout construction and for the first three years of operation of the SSI.

Residual Land Management

B57 The Proponent must prepare a **Residual Land Management Plan** prior to the commencement of operation of the SSI. The Residual Land Management Plan must be prepared in consultation with relevant councils and UrbanGrowth NSW and submitted to the Secretary. The Residual Land Management Plan must include, but not be limited to:

(a) identification and illustration on a map, of all residual land following construction of the SSI, including the physical location, land use characteristics, size and adjacent land uses;
(b) identification of proposed uses for the each piece of residual land with consideration given to the provision of additional community uses, public recreation uses and/or affordable or social housing and the justification for the uses chosen;
(c) preparation of an Urban Design and Landscape Plan for land that will be used for public purposes; and

(d) time frames for implementing the various components of the Residual Management Plan

B58 The Proponent must ensure that all residual land set aside for open space uses in accordance with condition B57 be available to the relevant council within 12 months of the completion of construction, unless otherwise agreed to by the Secretary. The residual land is to be in a condition that does not incur additional cost to council to reasonably rehabilitate or remediate the land for future open space development.

PART C

COMMUNITY INFORMATION AND REPORTING

COMMUNITY INFORMATION, CONSULTATION AND INVOLVEMENT

C1 Prior to the commencement of construction, or as otherwise agreed by the Secretary, the Proponent must prepare and implement a **Community Communication Strategy**. The Community Communication Strategy must be submitted to the Secretary for approval. The Community Communication Strategy must provide mechanisms to facilitate communication between the Proponent (and its contractor(s)), the Environmental Representative (refer condition D1), the relevant council(s) and community stakeholders (particularly adjoining landowners) on the design and construction environmental management of the SSI. The Community Communication Strategy must include, but not be limited to:

(a) identification of stakeholders to be consulted as part of the Community Communication Strategy, including affected and adjoining landowners, key community and business groups, and community and social service organisations;
(b) procedures and mechanisms for the regular distribution of accessible information to community stakeholders on construction progress and matters associated with environmental management, including provision of information in appropriate community languages;
(c) the formation of community-based forums that focus on key environmental management issues for the SSI. The Community Communication Strategy must provide detail on the structure, scope, objectives and frequency of the community-based forums;
(d) procedures and mechanisms through which the community stakeholders can discuss or provide feedback to the Proponent and/or Environmental Representative in relation to the environmental management and delivery of the SSI;
(e) procedures and mechanisms through which the Proponent can respond to enquiries or feedback from the community stakeholders in relation to the environmental management and delivery of the SSI;
(f) procedures and mechanisms that would be implemented to resolve issues/disputes that may arise between parties on the matters relating to environmental management and the delivery of the SSI. This may include the use of a suitably qualified and experienced independent mediator; and
(g) procedures and mechanisms to manage the ongoing provision of services for the WestConnex Acquisition Assistance Line, as required by condition C2, and procedures for the notification of the contact details for this assistance line to relocated persons.

Issues that must be addressed through the **Community Communication Strategy** include (but are not limited to):

(a) traffic management (including property access, pedestrian access);
(b) air quality;
(c) heritage matters;
(d) landscaping and urban design matters;
(e) construction staging, hours and activities;
(f) noise and vibration mitigation and management; and
(g) water quality, hydrology and flooding matters.

The Proponent must maintain and implement the Community Communication Strategy throughout construction of the SSI.

WestConnex Acquisition Assistance Line

C2 The Proponent must maintain and operate a toll-free **WestConnex Acquisition Assistance Line** for a period of up to six months following completion of the final acquisition required for the SSI, unless otherwise agreed by the Secretary. The WestConnex Acquisition Assistance Line must provide an ongoing dispute resolution, counselling program and contact information to relevant services for all relocated persons. The WestConnex Acquisition Assistance Line must also provide first language support for households with English as a second language.

The management of the assistance line is to be outlined within the Community Communication Strategy as required by condition C1 and is to be maintained and operated separately from the standard complaints and enquiries procedure.

The Proponent must provide all relevant contact details for the WestConnex Acquisition Assistance Line to relocated persons prior to the commencement of construction.

Complaints and Enquiries Procedure

C3 Prior to the commencement of pre-construction and construction, or as otherwise agreed by the Secretary, the Proponent must ensure that the following are available for community enquiries and complaints for the duration of construction:

(a) a toll-free 24 hour telephone number(s) on which complaints and enquiries about the SSI may be registered;
(b) a postal address to which written complaints and enquires may be sent;
(c) an email address to which electronic complaints and enquiries may be transmitted;
(d) a mediation system for complaints unable to be resolved; and
(e) a mechanism for community members to make enquiries in common community languages of the area.

The telephone number, the postal address and the email address must be published in newspaper(s) circulating in the local area including in newspapers of culturally and linguistically diverse communities affected by the SSI prior to the commencement of construction and prior to the commencement of operation. This information must also be provided on the website (or dedicated pages) required by this approval and available in common community languages.

C4 Prior to the commencement of construction, or as otherwise agreed by the Secretary, the Proponent must prepare and implement a **Construction Complaints Management System** consistent with *AS/NZS 10002:2014 Guidelines for Complaint management in Organisations* and maintain the Construction Complaints Management System for the duration of construction and up to 12 months following completion of construction of the SSI.

Information on all complaints received, including the means by which they were addressed and whether resolution was reached, with or without mediation, must be maintained in a complaints register and included in the construction compliance reports required by this approval. The information contained within the Construction Complaints Management System must be made available to the Secretary on request.

Provision of Electronic Information

C5 Prior to the commencement of construction, or as otherwise agreed by the Secretary, the Proponent must establish and maintain a new website, or dedicated pages within an existing website, for the provision of electronic information associated with the SSI, for the duration of construction and for 12 months following completion of the SSI. The Proponent must, subject to confidentiality, publish and maintain up-to-date information on the website or dedicated pages including, but not limited to:

(a) information on the current implementation status of the SSI;
(b) a copy of the documents listed in condition A2, and any documentation supporting modifications to this approval that may be granted from time to time;
(c) a copy of this approval and any future modification to this approval;
(d) a copy of each relevant environmental approval, licence or permit required and obtained in relation to the SSI;
(e) a copy of each current report, plan, or other document required under this approval;
(f) the outcomes of compliance tracking in accordance with condition A14 of this approval;
(g) details of contact point(s) to which community complaints and enquiries may be directed, including a telephone number, a postal address and an email address; and
(h) information on how to receive important information in the common community languages of the area.

PART D

CONSTRUCTION ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL REPRESENTATIVE

D1 Prior to the commencement of construction of the SSI, or as otherwise agreed by the Secretary, the Proponent must appoint a suitably qualified and experienced Environmental Representative(s) that is independent of the design and construction personnel, and that has been approved by the Secretary. The Proponent must employ the Environmental Representative(s) for the duration of construction, or as otherwise agreed by the Secretary. The Environment Representative(s) must:

(a) be the principal point of advice in relation to the environmental performance of the SSI;
(b) monitor the implementation of environmental management plans and monitoring programs required under this approval and advise the Proponent upon the achievement of these plans/programs;
(c) have responsibility for considering, and advising the Proponent on, matters specified in the conditions of this approval, and other licences and approvals related to the environmental performance and impacts of the SSI;
(d) ensure that environmental auditing is undertaken (but not undertake the audit) in accordance with the Proponent's Environmental Management System(s);
(e) be given the authority to approve/reject minor amendments to the Construction Environment Management Plan. What constitutes a "minor" amendment must be clearly explained in the Construction Environment Management Plan;
(f) be given the authority and independence to require reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts; and
(g) be consulted in responding to the community concerning the environmental performance of the SSI where the resolution of points of conflict between the Proponent and the community is required.

D2 The Environmental Representative must prepare and submit to the Secretary a monthly report on the Environmental Representative's actions and decisions on matters specified in condition D1 for the preceding month. The reports must be submitted within seven days for the end of each month for the duration of construction of the SSI, or as otherwise agreed by the Secretary. Notwithstanding, the Environmental Representative must be given the independence to report to the Secretary at any time and/or at the request of the Secretary.

SOIL, WATER QUALITY AND HYDROLOGY

Construction Soil and Water Management

D3 Soil and water management measures consistent with *Managing Urban Stormwater - Soils and Construction Vols 1 and 2, 4th Edition* (Landcom, 2004) must be employed during the construction of the SSI to minimise soil erosion and the discharge of sediment and other pollutants to land and/or waters.

Where available and practicable, and of appropriate chemical and biological quality, stormwater, recycled water or other water sources must be used in preference to potable water for construction activities, including dust control.

D4 The Proponent must ensure any siphonic based water management system implemented during construction is removed and, where applicable, replaced with an adequate permanent drainage system.

D5 The Proponent must immediately notify DPI (Water) of any groundwater bores removed or damaged during construction and operation of the SSI. In the event that a groundwater bore is removed or damaged, the Proponent must repair or replace the bore, as applicable within a timeframe agreed to by DPI (Water).

Settlement

D6 A geotechnical model of representative geological and groundwater conditions must be prepared prior to excavation and tunnelling in subject area(s) to identify geological structures and groundwater features. This model must include details of proposed excavations and tunnels, construction staging, and identify surface and sub-surface structures and infrastructure which may be impacted by the SSI, including the specific attributes of those structures. The Proponent must use this model to assess the predicted settlement, ground movement, stress redistribution and horizontal strain profiles caused by excavation and tunnelling on adjacent property and infrastructure.

D7 The Proponent must undertake a review of property and infrastructure at risk from damage to determine appropriate settlement criteria to prevent damage prior to commencement of construction that may pose a risk.

D8 Should the geotechnical model in condition D6 identify exceedances of the criteria established in condition D7 or in **Table 1** (whichever is the lower), the Proponent must identify and implement mitigation measures such as appropriate support and stabilisation structures in consultation with the relevant land and/or infrastructure owners prior to the commencement of construction to ensure where possible that underground services, infrastructure and adjacent buildings will not experience settlements exceeding the criteria.

Table 1 — Settlement Criteria

Beneath Structure/Facility	Maximum Settlement	Maximum Angular Distortion
Buildings - Low or non-sensitive properties (i.e. ≤ 2 levels and carparks)	30 mm	1 in 350
Buildings - High or sensitive properties (i.e. ≥ 3 levels and heritage items)	20 mm	1 in 500
Roads and Parking areas	40 mm	1 in 250
Parks	50 mm	1 in 250

The above criteria do not remove any responsibility from the Proponent for the protection of existing structures or for rectifying any damage resulting from the SSI.

D9 Settlement criteria for individual utility structures and infrastructure must be determined in consultation with the relevant authorities prior to the commencement of any construction potentially affecting the individual utility structure or infrastructure.

NOISE AND VIBRATION

Land Use Survey

D10 A detailed land use survey must be undertaken to confirm sensitive receivers potentially exposed to construction vibration, construction ground-borne noise and operational noise. The survey may be undertaken on a progressive basis but must be undertaken in any one area prior to the commencement of construction works which generate construction vibration or ground-borne noise in that area. The results of the survey must be included in the (or an updated) Construction Noise and Vibration Management Plan as required by condition D57(b)

D11 The noise levels within each Noise Catchment Area (NCA) identified in the EIS should be refined utilising the noise data collected during the exhibition of the EIS to confirm the range of background noise levels and existing traffic noise levels within each NCA.

D12 The Proponent must determine whether further noise mitigation beyond what may have been approved in the development application for 17-35 Parramatta Road and 5 Powell Street, Homebush (2015SYE045 DA) is required to achieve relevant noise goals within the *NSW Road Noise Policy* (DECCW, 2011) and *NSW Industrial Noise Policy* (EPA, 2000) during construction and operation. The cost of any additional noise attenuation at this location is to be borne by the

Proponent and the noise mitigation must be installed where reasonable, within the construction schedule of the development at this location.

This development is to be included in all future modelling, monitoring and review of noise and mitigation measures during operation of the SSI.

Vibration and Building Condition Survey

D13 Prior to construction, properties that are at risk from construction vibration must be identified and incorporated into the Construction Noise and Vibration Management Plan as required by condition D57(b).

Construction Hours

D14 Construction activities associated with the SSI must be undertaken during the following standard construction hours:
(a) 7:00 am to 6:00 pm Mondays to Fridays, inclusive; and
(b) 8:00 am to 1:00 pm Saturdays;
(c) at no time on Sundays or public holidays.

D15 Notwithstanding condition D14, tunnelling may be undertaken 24 hours, seven days per week. Other activities associated with tunnelling (such as spoil haulage only if approved under the Spoil Management Plan, deliveries, work area establishment, temporary road and intersection modifications, roads/cut-and-cover/dive structures and approach roads and ramps, excavation and ground support, civil, mechanical, and electrical, and ventilation facilities construction) may be undertaken outside of the hours specified in condition D14 where allowed in accordance with condition D17.

D16 Activities resulting in impulsive or tonal noise emissions must only be undertaken:
(a) between the hours of 8:00 am to 6:00 pm Monday to Friday;
(b) between the hours of 8:00 am to 1:00 pm Saturday; and
(c) in continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block.

For the purposes of this condition, 'continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing any of the work the subject of this condition.

D17 Notwithstanding conditions D14 and D16, construction works associated with the SSI may be undertaken outside the hours specified under those conditions in the following circumstances:
(a) construction works that cause $L_{Aeq\ (15\ minute)}$ noise levels that are
  (i) no more than 5 dB(A) above rating background level at any residence in accordance with the *Interim Construction Noise Guideline* (DECC, 2009*), and*
  (ii) no more than the noise management levels specified in Table 3 of the *Interim Construction Noise Guideline* (DECC, 2009) at other sensitive land uses, and
  (iii) continuous or impulsive vibration values, measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.2 of *Assessing vibration: a technical guideline* (DEC, 2006), and
  (iv) intermittent vibration values measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.4 of *Assessing vibration: a technical guideline* (DEC, 2006)*;* or
(b) where a negotiated agreement has been reached with affected receivers, where the prescribed noise and/or vibration levels cannot be achieved;
(c) for the delivery of materials required by the police or other authorities for safety reasons; or
(d) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or
(e) construction works approved through an Out-Of-Hours Work Protocol prepared as part of the Construction Noise and Vibration Management Plan required by condition D57(b), provided the relevant council, local residents and other affected stakeholders and sensitive

receivers are informed of the timing and duration at least 48 hours prior to the commencement of the works; or

(f) construction works approved through an EPL.

Construction Noise and Vibration

D18 The Proponent must implement all reasonable and feasible noise mitigation measures with the aim of achieving the following construction noise management levels and vibration criteria:

(a) construction noise management levels established using the *Interim Construction Noise Guideline* (DECC, 2009);

(b) vibration criteria established using the *Assessing vibration: a technical guideline* (DEC, 2006) (for human exposure); and

(c) the vibration limits set out in the *German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures* (for structural damage).

Any construction activities identified as exceeding the construction noise management levels and/or vibration criteria must be managed in accordance with the Construction Noise and Vibration Management Plan required by condition D57(b).

Note:

- *The* Interim Construction Noise Guideline *identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction NML.*

D19 Feasible and reasonable noise mitigation measures should be applied to construction activities when the following residential ground-borne noise levels are exceeded:

(a) evening (6:00 pm to 10:00 pm) — internal $L_{Aeq(15\ minute)}$: 40 dB(A); and

(b) night (10:00 pm to 7:00 am) — internal $L_{Aeq(15\ minute)}$: 35 dB(A).

The mitigation measures should be outlined in the Construction Noise and Vibration Management Plan**,** including the Out-of-Hours Work Protocol, required by condition D57(b).

D20 Wherever practical, piling activities that affect sensitive receivers must be undertaken using quieter alternative methods than impact or percussion piling, such as bored piles or vibrated piles.

D21 The Proponent must implement operational noise mitigation measures at receivers, or suitable temporary measures, prior to commencement of construction where feasible and reasonable, and in areas where the documents listed in conditions A2(b) and A2(c) have identified high noise impacts (including at or adjacent to construction work sites or ancillary facilities), and where existing noise barriers are to be altered.

D22 The Proponent must conduct vibration testing and monitoring to identify minimum working distances to retained heritage items to prevent cosmetic damage to these items. In the event that the vibration testing and monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional feasible and reasonable mitigation measures, unless otherwise agreed to by the Secretary.

D23 The Proponent must consult with potentially-affected community, religious, educational institutions and vibration-sensitive business and critical working areas (such as theatres, laboratories and operating theatres) to ensure that, where feasible and reasonable, noise generating construction works in the vicinity of the affected receivers are not timetabled during sensitive periods, unless other reasonable arrangements to the affected institutions are made at no cost to the affected institution.

D24 During construction, proponents of other construction works in the vicinity of the SSI must be consulted and reasonable steps taken to coordinate works to minimise impacts on, and maximise respite for, affected sensitive receivers.

Construction Traffic Noise

D25 The Proponent is to ensure that construction vehicle contractors operate so as to minimise any sleep disturbance impacts. Measures that could be used include toolbox talks, contracts that include provisions to deal with unsatisfactory noise performance for the vehicle and/or the operator, and specifying non-tonal movement alarms in place of reversing beepers or alternatives such as reversing cameras and proximity alarms, or a combination of these, where tonal alarms are not mandated by legislation.

D26 Use of compression brakes must not be permitted for construction vehicles associated with the SSI during construction, unless in an emergency situation.

Blasting

D27 No blasting must occur without the prior approval of the Secretary. Should blasting be required, the Proponent must prepare a **Blast Management Strategy** in consultation with the EPA and submit the Blast Management Strategy to the Secretary for approval. The Blast Management Strategy must demonstrate that all blasting and associated activities will be undertaken in a manner that will not generate unacceptable noise and vibration impacts or pose a significant risk impact to residences and sensitive receptors. The Blast Management Strategy must also address the principles outlined in *Hazardous Industry Planning Advisory Paper No 6: Hazard Analysis* (Department of Planning, January 2011) and *Assessment Guideline: Multi-Level Risk Assessment* (Department of Planning and Infrastructure, May 2011) for the handling and storage of hazardous materials. Issues to be considered in the Blast Management Strategy must include, but not be limited to:

(a) details of blasting to be performed, including location, method and justification of the need to blast;
(b) identification of any potentially affected noise and vibration sensitive sites including heritage buildings and utilities;
(c) establishment of appropriate criteria for blast overpressure and ground vibration levels at each category of noise sensitive site;
(d) details of the storage and handling arrangements for explosive materials and the proposed transport of those materials to the construction site;
(e) identification of hazardous situations that may arise from the storage and handling of explosives, the blasting process and recovery of the blast site after detonation of the explosives;
(f) determination of potential noise and vibration and risk impacts from blasting and appropriate monitoring and best management practices to minimise and manage any blasting impacts and assess compliance with conditions D33 and D34; and
(g) community consultation procedures.

D28 The vibration levels for blasting activities, including both above ground and underground work, must meet the requirements of conditions D33 and D34.

D29 Blasts must be limited to an average of one single detonation in any one day, per sensitive receiver, and a maximum of six per week per sensitive receiver, unless otherwise agreed by the EPA through consultation on the Blast Management Strategy.

Note:

- *For the purposes of this condition a single detonation may involve a number of individual blasts fired in quick succession in a discrete area.*

D30 For any section of tunnel construction where blasting is proposed, a series of initial trials at reduced scale must be conducted prior to production blasting to determine site-specific blast response characteristics and to define allowable blast sizes to meet the airblast overpressure and ground vibration limits in conditions D33 and D34.

D31 Blasting associated with the project must only be undertaken during the following hours:

(a) 9:00 am to 5:00 pm, Monday to Friday, inclusive;
(b) 9:00 am to 1:00 pm Saturday; and

(c) at no time on Sunday or on a public holiday,
or as otherwise allowed for by the EPA and outlined in the Blast Management Strategy.

This condition does not apply in the event of a direction from police or other relevant authority for safety or emergency reasons to avoid loss of life, property loss and/or to prevent environmental harm.

D32 Where vibration levels generated by blasting exceed the acceptable vibration dose values, feasible and reasonable mitigation measures must be considered and implemented.

D33 Airblast overpressure generated by blasting associated with the SSI must not exceed the criteria specified in **Table 2** when measured at the most affected residence or other sensitive receiver.

Table 2 — Airblast Overpressure Criteria

Airblast overpressure (dB(Lin Peak))	Allowable exceedance
115	5% of total number of blasts over a 12 month period
120	0%

D34 Ground vibration generated by blasting associated with the SSI must be limited for human comfort to the criteria specified in **Table 3** when measured at the most affected residence or other sensitive receiver.

Table 3 — Ground Vibration Limits for Human Comfort (AS 2187.2)

Receiver	Type of blasting operations	Peak component particle velocity (mm/s)
Sensitive site*	Operations lasting longer than 12 months or more than 20 blasts	5 mm/s for 95% blasts per year 10 mm/s maximum unless agreement is reached with the occupier that a higher limit may apply
Sensitive site*	Operations lasting for less than 12 months or less than 20 blasts	10 mm/s maximum unless agreement is reached with occupier that a higher limit may apply
Occupied non-sensitive sites, such as factories and commercial premises	All blasting	25 mm/s maximum unless agreement is reached with occupier that a higher limit may apply. For sites containing equipment sensitive to vibration, the vibration should be kept below manufacturer's specifications or levels that can be shown to adversely affect the equipment operation

Notes:

- *A sensitive site includes houses and low rise residential buildings, theatres, schools, and other similar buildings occupied by people.*
- *The recommendations in Table J4.5(A) of AS 2187.2 – 2006 Explosives – Storage and Use – Use of Explosives are intended to be informative and do not override statutory requirements with respect to human comfort limits set by various authorities. They should be read in conjunction with any such statutory requirements and with regard to their respective jurisdictions.*

HERITAGE

Non-Aboriginal Heritage Items and Conservation Areas

D35 Prior to the commencement of construction in proximity to, or affecting, a heritage item or contributory item in a heritage conservation area, the Proponent must complete the archival recordings, including photographic recording of the heritage items, unless otherwise agreed by the Secretary.

The archival recording must be undertaken by a qualified and experienced heritage consultant, in accordance with the *How to Prepare Archival Records of Heritage Items (2003)* guidelines issued by the NSW Heritage Council. Within 12 months of completing the archival recording, or as otherwise agreed by the Secretary, the Proponent must submit a **Heritage and Contributory Item Archival Recording and Research Report** containing the archival and photographic recordings and historical research, to the Department, the NSW Heritage Council, the local library, the local Historical Society in the respective local government area(s) and UrbanGrowth NSW.

D36 The Proponent must complete archival recordings for any impacted part of the heritage conservation area prior to the commencement of construction within a respective heritage conservation area. Consultation with the NSW Heritage Council (or its delegate), the National Trust and the relevant council is to be carried out to determine the objectives and approaches to the archival recording. The archival recording of heritage conservation areas is to include, but not be limited to:

(a) comprehensive photographic recording of buildings, structures, open spaces, public realm, architecture, urban design, landscaping and streetscapes;
(b) surveying and mapping of land use arrangements, street patterns and layouts, subdivision layouts, landscape design and street tree plantings; and
(c) any other feasible recording requested and agreed to following consultation with the aforementioned stakeholders.

The archival recording of heritage conservation areas must be undertaken by a qualified and experienced heritage consultant, and should be undertaken in a manner generally reflective of the *How to Prepare Archival Records of Heritage Items (2003)* guidelines issued by the NSW Heritage Council. Within 12 months of completing the archival recording, or as otherwise agreed by the Secretary, the Proponent must submit a **Heritage Conservation Area Archival Recording and Research Report**, for each relevant heritage conservation area, containing the archival and photographic recordings, mapping and historical research, to the Department, the NSW Heritage Council, the local library, the local Historical Society in the respective local government area(s) and UrbanGrowth NSW.

Non-Aboriginal Historical Archaeology

D37 Prior to construction within a Historical Archaeological Management Unit (HAMU), the Proponent must engage a suitably qualified archaeologist whose experience complies with the NSW Heritage Council's *Criteria for Assessment of Excavation Directors* (July, 2011) (referred to as the Excavation Director) to oversee and advise on matters associated with historic archaeology and to prepare an **Archaeological Research Design and Excavation Methodology**. The Archaeological Research Design and Excavation Methodology is to be submitted to the Heritage Council of NSW for review and comment prior to finalisation and must be approved by the Secretary. The Archaeological Research Design and Excavation Methodology must:

(a) be consistent with the *NSW Heritage Council's Archaeological Assessments Guideline (1996);*
(b) provide for the detailed analysis of any heritage items discovered during the investigations;
(c) include management options for discovered heritage items (including options for relocation and display); and
(d) if the findings of the investigations are significant, provide for the preparation and implementation of a heritage interpretation plan.

Where excavation works are required in the vicinity of potential archaeological sites, the Excavation Director must be present to advise on archaeological issues and oversee excavation works. The Excavation Director must be given the authority to advise on the duration and extent of oversight required during excavation.

D38 In the event that archaeological relics are discovered unexpectedly during construction, all work must cease in the affected area and the Excavation Director must be immediately notified and attend the site to assess the find/s, identify their significance level and provide mitigation advice according to the assessed significance and the impact proposed. In the event unexpected relics are identified by the Excavation Director as being of State or local significance, the NSW Heritage

Council must be notified in writing in accordance with section 146 of the *Heritage Act 1977.*

Where unexpected relics of State Heritage Significance are identified, an **Archaeological Relics Management Plan** must be prepared in consultation with the NSW Heritage Council, which must outline all feasible and reasonable measures to be implemented to avoid and/or minimise harm to the State significant relic/s. Work within the vicinity of the find of the State significant relic/s must not recommence without the written approval from the NSW Heritage Council or its delegate.

Where unexpected and expected relics are identified to be of local heritage significance, or expected relics of State significance are identified, these must be managed in accordance with the Historical Archaeological Research Design approved for this project under condition D37 and the Construction Heritage Management Plan approved under condition D57(c). Works within the vicinity of the find must not recommence until the relevant requirements of the Historical Archaeological Research Design and Construction Heritage Management Plan have been met.

The Proponent must notify the Secretary in writing of any such encounter of an archaeological relic triggering this condition. The Proponent must also notify the Secretary of the outcome of consultation with the NSW Heritage Council regarding the find of unexpected relics of State significance.

D39 In the event that archaeological relics are discovered, within 12 months of completing all archaeological investigations, unless otherwise agreed by the Secretary, the Proponent must prepare an **Excavation Report** containing the findings of any excavations, including artefact analysis and the identification of a final repository of any finds. The Excavation Report must be submitted to the Department, the NSW Heritage Council, and the local library and the local Historical Society in the relevant local government area(s). A copy of the Excavation Report must be retained with the relics at all times.

Aboriginal Heritage

D40 The Proponent must take all reasonable steps so as not to harm, modify or otherwise impact any Aboriginal heritage item associated with the SSI.

D41 Where previously unidentified Aboriginal objects are discovered during construction of the SSI, all work should stop in the affected area and a suitably qualified and experienced Aboriginal heritage expert should be contacted to provide specialist heritage advice. The measures to consider and manage this process must be specified in the Construction Heritage Management Plan required by condition D57(c) and, where relevant, include registration in the OEH's Aboriginal Heritage Information Management System (AHIMS) register.

TRANSPORT AND ACCESS

D42 Unless otherwise approved by the Secretary, heavy vehicle movements associated with the construction of the SSI (including but not limited to spoil haulage, materials delivery and access to and from ancillary construction compounds) are not permitted on local roads. When seeking the Secretary's approval, justification must be provided as to why use of the local road(s) is the only feasible and reasonable route.

D43 Construction vehicles (including staff vehicles) associated with the SSI must be managed so that:

(a) parking or queuing on public roads is minimised;
(b) idling and queuing in local residential streets is minimised, where practicable;
(c) heavy vehicles adhere to the nominated haulage routes identified in the Construction Traffic and Access Management Plan required under condition D57(a); and
(d) access and egress from construction compounds is undertaken in a safe and lawful manner, with particular regard be given to this compounds located in the vicinity of schools and the potential implementation of traffic management or signalisation, in consultation with the relevant council.

D44 Safe pedestrian and cyclist access through and around worksites must be maintained during construction. In circumstances where pedestrian and cyclist access is restricted due to construction activities, a satisfactory alternate route must be provided and signposted, including provision of footpaths where pedestrian access is reliant on grassed verges.

D45 Access to all properties must be maintained during construction, where feasible and reasonable, unless otherwise agreed by the relevant property owner or occupier. Any access physically affected by the SSI must be reinstated to at least an equivalent standard, unless agreed with by the property owner.

Spoil Management

D46 Prior to commencement of any tunnelling works, the Proponent must prepare and implement a **Spoil Management Plan** for the SSI. The Spoil Management Plan is to be developed, in consultation with EPA and the relevant council(s), for the approval of the Secretary. The Spoil Management Plan must incorporate detailed information on the handling and transport of spoil generated during construction of the SSI, and provide information regarding each of the broad parameters specified in the documents listed in conditions A2(b) and (c).

The Spoil Management Plan is to be prepared separate to, but consistent with, the Construction Traffic and Access Management Plan required under condition D57(a).

BIODIVERSITY

D47 The clearing of native vegetation must be minimised with the objective of reducing impacts to any threatened species, populations and ecological communities to the greatest extent practicable. Impacted vegetation must be rehabilitated with endemic species (in the first instance) and locally native species to the greatest extent practicable.

Pre-Clearing Surveys

D48 Prior to construction, pre-clearing surveys and inspections for threatened species, populations and ecological communities must be undertaken to confirm the on-site location of those entities. The surveys and inspections, and any subsequent relocation of species and associated management/offset measures, must be undertaken under the guidance of a suitably qualified and experienced ecologist. Methodologies must be incorporated into the Construction Flora and Fauna Management Plan required under condition D57(d). The agreement of OEH or DPI, whichever is the relevant agency, is required for any proposed amendments to the location or reclassification of threatened species, populations and ecological communities.

HAZARDS AND RISK

D49 Dangerous goods, as defined by the Australian Dangerous Goods Code, must be stored and handled strictly in accordance with:

(a) all relevant Australian Standards;
(b) for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume, within the bund; and
(c) the *Environment Protection Manual for Authorised Officers: Bunding and Spill Management,* technical bulletin (EPA, 1997).

In the event of an inconsistency between the requirements listed from (a) to (c) above, the most stringent requirement must prevail to the extent of the inconsistency.

PROPERTY AND LANDUSE

D50 The Proponent must provide boundary screening within all construction sites that adjoin or are adjacent to residential and/or commercial properties, consistent with the surrounding context, in consultation with affected property owners.

ANCILLARY FACILITIES

D51 Prior to the establishment of the ancillary facilities described in the documents listed in conditions A2(b) and A2(c), the Proponent must prepare and implement an **Ancillary Facilities Management Plan** which outlines the environmental management practices and procedures for the establishment and operation of the ancillary facilities. The Ancillary Facilities Management Plan must be prepared in consultation with the EPA and the relevant council and submitted to the Secretary for approval. The Ancillary Facilities Management Plan must detail the management of these ancillary facilities, and include, but not be limited to:

(a) a description of each ancillary facility (including a site layout plan), its components and details of the existing environment on and in the vicinity of the site;
(b) details of the activities to be carried out at each facility, including the hours of operation, staging of operation and predicted date of commissioning;
(c) a description of the plant, equipment and materials to be used and/or stored on each site, including dangerous and hazardous goods;
(d) a summary of the potential environmental impacts associated with the establishment and operation of the facility;
(e) details of the mitigation, monitoring and management procedures specific to each facility that would be implemented to minimise environmental and amenity impacts or, where this is not possible, feasible and reasonable measures to offset these impacts;
(f) a description of how the management and mitigation measures set out in the documents listed in conditions A2(b) and A2(c) will be implemented on each site, and if not, justification for any departures from those management and mitigation measures;
(g) in the case of the construction compound at Cintra Park, Concord, details on the procedures and management protocols to be implemented on occasions when Concord Oval is in use for training or sporting events;
(h) identification of the timing for the completion of site activities at each facility and how each site will be decommissioned (including any necessary rehabilitation); and
(i) mechanisms for the monitoring, review and amendment of the Ancillary Facilities Management Plan.

In considering the approval of the Ancillary Facilities Management Plan, the Secretary will take into account the Proponent's response to public authority and relevant council comments on the plan.

The Proponent must update the Ancillary Facilities Management Plan to incorporate the site establishment and operation practices required for any additional ancillary facilities approved by the Secretary under condition D53.

No construction works are to be undertaken on the ancillary facility sites prior to approval of the Construction Environment Management Plan required under condition D56.

D52 Other than ancillary facilities described in the documents listed in conditions A2(b) and A2(c), or those ancillary facilities approved by the Secretary under condition D53, or allowed under condition D54, the location of ancillary facilities must comply with the following locational criteria:

(a) be located more than 50 metres from a waterway;
(b) be located within or adjacent to land where the SSI is being carried out;
(c) have ready access to the road network;
(d) be located to minimise the need for heavy vehicles to travel on local streets and/or through residential areas;
(e) be sited on relatively level land;
(f) be separated from nearest residences by at least 200 metres (or at least 300 metres for a temporary batching plant);
(g) not require vegetation clearing beyond that already required by the SSI;
(h) not impact on heritage items (including areas of archaeological sensitivity) beyond those already impacted by the SSI;
(i) not unreasonably affect the land use of adjacent properties;

(j) be above the 20 ARI flood level unless a contingency plan to manage flooding is prepared and implemented; and
(k) provide sufficient area for the storage of raw materials to minimise, to the greatest extent practical, the number of deliveries required outside standard construction hours.

D53 Prior to establishment of any ancillary facility not described in the documents listed in conditions A2(b) and A2(c) and which does not meet the locational criteria in condition D52, the Proponent must prepare and implement a **Site-Specific Ancillary Facilities Management Plan**. The Site-Specific Ancillary Facilities Management Plan must be prepared for the approval of the Secretary, and include:
(a) a detailed description of the ancillary facility, including proposed use and access arrangements;
(b) a review of the environmental and social impacts of the ancillary facility, including an analysis of compliance with the locational criteria specified in condition D52;
(c) measures to avoid, mitigate and manage environmental and social impacts associated with the ancillary facility; and
(d) demonstration that, with the measures proposed in accordance with (c), the impacts of the ancillary site are consistent with -
  (i) the overall project impacts described in documents listed in conditions A2(b) and A2(c) , and
  (ii) all relevant conditions of this approval.

D54 The Secretary's approval is not required for minor ancillary facilities (e.g. lunch sheds, office sheds, and portable toilet facilities, etc.) that do not comply with the criteria set out in condition D52 of this approval and which:
(a) are located within an active construction zone within the approved SSI footprint; and
(b) have been assessed by the Environmental Representative to have -
  (i) minimal amenity impacts to surrounding residences, with consideration to matters such as noise and vibration impacts, traffic and access impacts, dust and odour impacts, and visual (including light spill) impacts, and
  (ii) minimal environmental impact in respect to waste management, and no impacts on flora and fauna, soil and water, and heritage beyond those approved for the SSI; and
(c) have environmental and amenity impacts that can be managed through the implementation of environmental measures detailed in the Construction Environment Management Plan required under condition D56.

D55 All ancillary facilities and supporting infrastructure must be rehabilitated to at least their pre-construction condition or better, unless otherwise agreed by the landowner where relevant. Where the rehabilitated site is residual land then condition B57 applies.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

D56 Prior to the commencement of construction, or as otherwise agreed by the Secretary, the Proponent must prepare and implement a **Construction Environmental Management Plan (CEMP)** for the SSI. The CEMP is to be prepared in consultation with the EPA, OEH, and the relevant council. The CEMP must outline the environmental management practices and procedures that are to be followed during construction. The CEMP is to be prepared in accordance with the *Guideline for the Preparation of Environmental Management Plans* (Department of Infrastructure, Planning and Natural Resources, 2004). The CEMP must include, but not be limited to:
(a) a description of activities to be undertaken during construction of the SSI (including staging and scheduling);
(b) statutory and other obligations that the Proponent is required to fulfil during construction, including approvals, consultations and agreements required from authorities and other stakeholders under key legislation and policies;
(c) a description of the roles and responsibilities for relevant employees involved in the construction of the SSI, including relevant training and induction provisions for ensuring

that employees, including contractors and sub-contractors, are aware of their environmental and compliance obligations under these conditions of approval;

(d) an environmental risk analysis to identify the key environmental performance issues associated with the construction phase; and

(e) details of how environmental performance would be managed and monitored to meet acceptable outcomes, including what actions will be taken to address identified potential adverse environmental impacts (including any impacts arising from the staging of the construction of the SSI). In particular, the following environmental performance issues must be addressed in the CEMP -

(i) measures to monitor and manage dust emissions including dust from stockpiles, blasting, traffic on unsealed public roads and materials tracking from construction sites onto public roads,

(ii) measures for the handling, treatment and management of hazardous and contaminated materials (including asbestos),

(iii) measures to monitor and manage waste generated during construction including but not limited to general procedures for waste classification, handling, reuse, and disposal, use of secondary waste material in construction wherever feasible and reasonable, procedures or dealing with green waste including timber and mulch from clearing activities. and measures for reducing demand on water resources (including potential for reuse of treated water from sediment control basins);

(iv) measures to monitor and manage hazard and risks,

(v) measures to monitor and rectify any impacts to third party property and infrastructure, including details of the process for rectification or compensation of affected landowners, and timeframes for rectification works or compensation processes, and

(vi) the sub-plans identified in condition D57.

The CEMP must include procedures for its periodic review and update (including the sub-plans required under condition D57), as necessary (including where minor changes can be approved by the Environmental Representative).

Nothing in this condition prevents the Proponent from preparing a Stockpile Management Protocol as part of the CEMP.

The CEMP must be submitted for the approval of the Secretary no later than one month prior to the commencement of construction, or as otherwise agreed by the Secretary. The CEMP may be prepared in stages; however, construction works must not commence until written approval of the relevant stage has been received from the Secretary.

The approval of a CEMP does not relieve the Proponent of any requirement associated with this SSI approval. If there is an inconsistency with an approved CEMP and the conditions of this SSI approval, the requirements of this SSI approval will prevail.

Construction Environmental Management Plan — Sub Plans

D57 As part of the CEMP for the SSI, the Proponent must prepare and implement:

(a) a **Construction Traffic and Access Management Plan** to ensure traffic and access controls are implemented to avoid or minimise impacts on traffic, pedestrian and cyclist access, and the amenity of the surrounding environment. The Construction Traffic and Access Management Plan must be developed in consultation with the relevant council(s), emergency services, SOPA, road user groups, and pedestrian and bicycle user groups, and include, but not be limited to:

(i) identification of construction traffic routes including any known road closures and consideration of alternate routes and construction traffic volumes (including heavy vehicle/spoil haulage) on these routes;

(ii) details of vehicle movements for construction sites and ancillary facilities including parking, dedicated vehicle turning areas, and ingress and egress points;

(iii) discussion of construction impacts that could result in disruption of traffic, public transport, pedestrian and cycle access, access to public land, property access,

including details of oversize load movements, and the nature and duration of those impacts;

(iv) details of management measures to minimise traffic impacts, including temporary road work traffic control measures, onsite vehicle queuing and parking areas and management measures to minimise peak time congestion and measures to ensure safe pedestrian and cycle access;

(v) details of measures to maintain or provide alternative safe and accessible routes for pedestrians throughout the duration of construction;

(vi) details of measures to maintain connectivity for cyclists, with particular emphasis on providing adequate access between key existing cycle routes for commuter cyclists;

(vii) a parking strategy detailing reductions in on-street parking consequent to construction activities and at Concord Oval, Concord, proposed construction staff parking arrangements including opportunities for accommodating construction parking at the Roads and Maritime owned car park at Railway Lane, North Strathfield, and measures to reduce on-street parking impacts including working with the relevant councils to introduce parking restrictions adjacent to work sites and compounds;

(viii) details of measures to manage traffic movements, parking, loading and unloading at ancillary facilities during out-of-hours work;

(ix) details of methods to be used to communicate proposed future traffic changes to affected road users, pedestrians and cyclists, consistent with the Community Communication Strategy required under condition C1;

(x) an adaptive response plan which sets out a process for response to any traffic, construction or other incident; and

(xi) mechanisms for the monitoring, review and amendment of the Construction Traffic and Access Management Plan.

(b) a **Construction Noise and Vibration Management Plan** to detail how construction noise and vibration impacts will be minimised and managed. The Plan must be consistent with the guidelines contained in the *Interim Construction Noise Guidelines* (DECC, 2009). The Construction Noise and Vibration Management Plan must be developed in consultation with the EPA and must include, but not be limited to:

(i) identification of the work areas, site compounds and access points;

(ii) identification of sensitive receivers and relevant construction noise and vibration goals applicable to the SSI and stipulated in the conditions above;

(iii) details of construction activities and an indicative schedule for construction works, including the identification of key noise and/or vibration generating construction activities (based on representative construction scenarios, including at ancillary facilities) that have the potential to generate noise and/or vibration impacts on surrounding sensitive receivers, particularly residential areas;

(iv) details of the predicted worst-case noise and vibration levels based on the refined background noise levels determined under condition D11, including cumulative impacts arising from concurrent construction works and potential for sleep disturbance;

(v) figures illustrating the predicted safe working distances for vibration intensive activities and equipment;

(vi) an **Out-of-Hours Work Protocol** for the assessment, management and approval of works outside of standard construction hours as defined in condition D14 of this approval, for the Secretary's approval. The Out-of-Hours Work Protocol must be consistent with the out-of-hours work procedure detailed in the *Construction Noise Strategy* (Transport Construction Authority, 2011) and-

(A) provide an assessment of out-of-hours works against the relevant noise and vibration criteria,

(B) provide detailed mitigation measures for any residual impacts (that is, additional to general mitigation measures), including extent of at-receiver treatments, and

(C) set out proposed notification arrangements;

(vii) identification of feasible and reasonable measures proposed to be implemented to minimise and manage construction noise and vibration impacts, especially sleep disturbance (including construction traffic noise impacts), including, but not limited to, acoustic enclosures, erection of noise walls (hoardings), respite periods and the limiting of truck movements during night periods;

(viii) identification of feasible and reasonable procedures and mitigation measures to ensure relevant vibration and blasting criteria are achieved, including a suitable blast program, applicable buffer distances for vibration intensive works, use of low-vibration generating equipment/vibration dampeners or alternative construction methodology, and pre- and post- construction dilapidation surveys of sensitive structures where blasting and/or vibration is likely to result in damage to buildings and structures (including surveys being undertaken immediately following a monitored exceedance of the criteria);

(ix) details of tunnelling including associated impacts, management and mitigation measures;

(x) a description of how the effectiveness of mitigation and management measures would be monitored during the proposed works, clearly indicating how often this monitoring would be conducted, the locations where monitoring would take place, how the results of this monitoring would be recorded and reported, and, if any exceedance is detected, how any noncompliance would be rectified; and

(xi) mechanisms for the monitoring, review and amendment of the Construction Noise and Vibration Monitoring Plan.

(c) a **Construction Heritage Management Plan** to ensure, and provide detail of how, construction impacts on Aboriginal and non-Aboriginal heritage will be appropriately minimised and managed. The Construction Heritage Management Plan must include, but not be limited to:

(i) in relation to Aboriginal Heritage -

(A) procedures for dealing with previously unidentified Aboriginal objects (excluding human remains), including cessation of works in the vicinity, assessment of the significance of the item(s) and determination of appropriate mitigation measures, including when works can re-commence, by a suitably qualified and experienced archaeologist in consultation with the OEH, and Aboriginal stakeholders, and assessment of the consistency of any Aboriginal heritage impacts against the approved impacts of the SSI,

(B) procedures for dealing with human remains, including cessation of works in the vicinity, notification of, NSW Police Force, OEH and Aboriginal stakeholders, and commitment to cease recommencing any works in the area unless authorised by OEH and/or the NSW Police Force,

(C) heritage training and induction processes for construction personnel (including procedures for keeping records of inductions and obligations under this approval) including site identification, protection and conservation of Aboriginal cultural heritage, and

(D) procedures for ongoing Aboriginal consultation and involvement for the duration of the SSI, in the event that previously unidentified Aboriginal objects are discovered; and

(ii) In relation to non-Aboriginal Heritage -

(A) identification of heritage items directly and indirectly affected by the SSI,

(B) details of management measures to be implemented to prevent and minimise impacts on heritage items (including further heritage investigations, archival recordings and/or measures to protect unaffected sites during construction works in the vicinity),

(C) details of monitoring and reporting requirements for impacts on heritage items,

(D) procedures for dealing with previously unidentified heritage objects and relics, including cessation of works in the vicinity, assessment of the significance of the item(s) and determination of appropriate mitigation measures including when works can recommence by a suitably qualified and experienced

archaeologist in consultation with the NSW Heritage Council, and assessment of the consistency of any heritage impacts against the approved impacts of the SSI,

(E) processes and mechanisms for the reuse and recycling of building and landscape components from contributory, potential and locally listed heritage items within other built or landscaped components of the SSI, and

(F) heritage training and induction processes for construction personnel (including procedures for keeping records of inductions and obligations under this approval) including site identification, protection and conservation of non-Aboriginal cultural heritage; and

(iii) mechanisms for the monitoring, review and amendment of the Construction Heritage Management Plan.

The Construction Heritage Management Plan must be developed in consultation with the OEH, NSW Heritage Council (for non-Aboriginal heritage) and Registered Aboriginal Groups (for Aboriginal heritage).

(d) **a Construction Flora and Fauna Management Plan** to detail how construction impacts on ecology will be minimised and managed. The Construction Flora and Fauna Management Plan must be endorsed by a suitably qualified and experienced ecologist and be prepared in consultation with the OEH, and must include, but not be limited to:

(i) detailed maps showing the location of impacted and adjoining flora and fauna habitat areas;

(ii) detailed maps showing where pre-clearing surveys will be undertaken to confirm the location of threatened species, populations and ecological communities;

(iii) the identification of areas to be impacted and details of management measures to avoid residual habitat damage or loss and to minimise or eliminate time lags between the removal and subsequent replacement of habitat such as -

(A) clearing minimisation procedures (including fencing),

(B) clearing procedures,

(C) removal and relocation of fauna during clearing (including microbat management plan),

(D) habitat tree management, and

(E) construction worker education;

(iv) rehabilitation details, including identification of flora species and sources, and measures for the management and maintenance of rehabilitated areas;

(v) a **Weed Management Strategy**, incorporating weed management measures focusing on early identification of invasive weeds and effective management controls;

(vi) a description of how the effectiveness of the flora and fauna management measures would be monitored;

(vii) a procedure for dealing with unexpected threatened species, populations and ecological communities identified during construction, including cessation of work and notification to the OEH, determination of appropriate mitigation measures in consultation with the OEH (including relevant re-location measures) and updating of ecological monitoring and/ or biodiversity offset requirements; and

(viii) mechanisms for the monitoring, review and amendment of the Construction Flora and Fauna Management Plan.

(e) a **Construction Air Quality Management Plan** to detail how construction impacts on local air quality will be minimised and managed. The Construction Air Quality Management Plan must include, but not be limited to:

(i) identification of sources (including stockpiles and open work areas) and quantification of airborne pollutants;

(ii) key performance indicators for local air quality during construction;

(iii) details of monitoring methods, including location, frequency and duration of monitoring;

(iv) mitigation measures to minimise impacts on local air quality including, but not limited to, the relevant revised environmental mitigation measures set out in the documents listed in condition A2(c);
(v) procedures for record keeping and reporting against key performance indicators;
(vi) provisions for implementation of additional mitigation measures in response to issues identified during monitoring and reporting; and
(vii) mechanisms for the monitoring, review and amendment of the Construction Air Quality Management Plan.

(f) a **Construction Soil and Water Management Plan** to manage surface and groundwater impacts during construction of the SSI. The Construction Soil and Water Management Plan must be developed in consultation with the EPA, DPI (Water) and relevant councils, and include, but not be limited to:
(i) details of construction activities and their locations, which have the potential to impact on water courses and riparian land, storage facilities, stormwater flows, and groundwater, including identification of all pollutants that may be introduced into the water cycle;
(ii) potential impacts on watercourse bank stability and the development of appropriate mitigation measures as required;
(iii) measures to manage and/or minimise sediment and erosion, groundwater impacts and surface water quality impacts (including stormwater runoff and groundwater treatment);
(iv) contingency plan in the event that the unanticipated discovery of contaminated groundwater or soils;
(v) where acid sulfate soils are known to occur or potentially occur, an **Acid Sulfate Soils Management Plan**, including measures for the management, handling, treatment and disposal of acid sulfate soils, including monitoring of water quality at acid sulfate soils treatment areas, should the project impact on acid sulfate soils;
(vi) a description of how the effectiveness of the actions and measures for managing soil and water impacts would be monitored during the proposed works, clearly indicating how often this monitoring would be undertaken, the locations where monitoring would take place, how the results of the monitoring would be recorded and reported, and, if any exceedance of the criteria is detected how any non-compliance can be rectified; and
(vii) mechanisms for the monitoring, review and amendment of this Construction Soil and Water Management Plan.

PART E

OPERATIONAL ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

AIR QUALITY

In-Tunnel Air Quality

E1 The Proponent must monitor (by sampling and obtaining results by analysis) the pollutants, within the tunnel, specified in **Table 4**. The Proponent must use the sampling method, units of measurement and sample at the frequency specified opposite in the other columns.

The number and siting of the monitoring stations inside the tunnel must be determined to permit an accurate calculation, per the requirements of conditions E2, E3 and E4, and be independently verified in accordance with a methodology approved by the Secretary in consultation with the EPA. As a minimum there should be monitoring stations at the entry portals, the base of the ventilation outlets, ramp junctions and at the Cintra Park emergency smoke extraction facility.

Sampling points and visibility monitoring points established under this condition must be audited prior to its commencement of monitoring for compliance with the requirements set out in **Table 4**. Verification and compliance auditing is to be undertaken by an independent person(s) or organisation(s) approved by the Secretary, and paid for by the Proponent. Monitoring must take place in accordance with this condition throughout operation of the SSI.

Air quality data is to be made available in as close to real time as possible, under the website reporting requirements of condition E22.

Table 4 – In-Tunnel monitoring methodology

Pollutant/parameter	Units of measure	Frequency	Method[1]
CO	ppm	Continuous	Special Method 1[1]
NO_2	ppm	Continuous	Special Method 1[1]
Visibility	m^{-1}	Continuous	Special Method 1[1]

Note:

1. *Special Method 1 means a method approved by the Secretary in consultation with the EPA.*

In-Tunnel Air Quality — Limits

E2 The tunnel ventilation system must be designed and operated so that the average concentration of CO and NO_2, calculated along the length of the tunnel, does not exceed the concentration limit specified for that pollutant in **Table 5**.

Table 5 – In-tunnel average limits along length of tunnel

Pollutant	Concentration Limit	Units of measurement	Averaging period
CO	87	ppm	Rolling 15-minute
CO	50	ppm	Rolling 30–minute
NO_2	0.5	ppm	Rolling 15-minute

E3 The tunnel ventilation system must be designed and operated so that the concentration of CO as measured at any single point in the tunnel must not exceed the concentration limit specified for that pollutant in **Table 6** under all conditions (including congested conditions).

Table 6 – In-tunnel single point exposure limits

Pollutant	Concentration Limit	Units of measurement	Averaging period
CO	200	ppm	Rolling 3–minute

E4 The tunnel ventilation system must be designed and operated so that the visibility in the tunnel does not exceed the level specified in **Table 7**.

Table 7 — In-tunnel visibility limits along length of tunnel

Parameter	Average extinction co-efficient Limit	Units of measurement	Averaging period
Visibility	0.005	m^{-1}	Rolling 15–minute

In-Tunnel Air Quality — Limits — Optimisation

E5 An independent person or organisation approved by the Secretary must:

(a) verify that compliance with in-tunnel limits detailed in E2, E3 and E4, will:
  (i) supplement/not preclude compliance with the predicted air quality outcomes presented in the documents listed in condition A2, and
  (ii) not result in air quality impacts greater than predicted in the documents listed in condition A2;

(b) undertake an appropriate assessment to indicate how the ventilation system has been optimised in consideration of energy requirements and air quality impacts for tunnel users; and

(c) validate recorded monitoring data and certify compliance with the in-tunnel air quality limits.

The information required in paragraphs (a) - (c) of this condition will be made available to the Secretary on request.

In-Tunnel Air Quality — Notification and Reporting

E6 In addition to the general reporting requirements specified in condition E21, the Proponent must, within 24 hours, notify the Secretary, EPA and NSW Health of any recordings above the limits specified in conditions E2, E3 and E4. The notification must detail the nature of the event, the concentration or visibility levels that occurred, the duration of the event, and the measures employed to minimise the concentration levels and/or improve the visibility levels.

Upon receipt of this notification, the Secretary must consider the circumstances of the event, including:

(a) the nature of the event, including any details relating to the cause;
(b) the duration of the event;
(c) the extent and severity of the event; and
(d) the frequency of the event, including whether an event with the same or similar circumstances has occurred previously.

Based on consideration of the circumstances of the event, the Secretary may request the Proponent to prepare a Tunnel Air Quality Management Systems Effectiveness Report, in accordance with condition E7.

E7 Within 20 working days of any request by the Secretary under condition E6 the Proponent must prepare and submit to the Secretary a **Tunnel Air Quality Management Systems Effectiveness Report** on the overall system performance and cause and major contributor of any exceedances, detailing the following:

(a) the overall performance and concentration levels in the tunnel for the preceding six month period (or since commencement of operation, where the SSI has operated for under six months), including average and maximum levels and time periods;
(b) details of any instances throughout the operation of the SSI where pollutant concentration levels in the tunnel have exceeded the limits specified in conditions E2, E3 and E4; and
(c) consideration of improvements to the tunnel air quality management system.

The Tunnel Air Quality Management Systems Effectiveness Report is to be prepared by the Proponent and reviewed by a suitably qualified and experienced independent specialist(s). The Secretary must approve the independent specialist /organisation.

The Proponent must comply with any requirements arising from the Secretary's review of the Tunnel Air Quality Management Systems Effectiveness Report.

Ambient Air Quality — Monitoring

E8 The Proponent must monitor (by sampling and obtaining results by analysis) the pollutants and parameters specified in Column 1 of **Table 8** at the following locations as a minimum:

(a) two ground level receptors near the eastern ventilation outlet, at locations suitable for detecting any impact on air quality from the outlet;
(b) two ground level receptors near the western ventilation outlet, at locations suitable for detecting any impact on air quality from the outlet;
(c) one location along Parramatta Road, at a location suitable for detecting any impact on air quality along Parramatta Road; and
(d) one location, away from any of the locations at (a), (b) and (c), suitable for providing background ambient air quality reference data for the project area.

In selecting the monitoring locations, consideration is to be given to the desirability of like-to-like comparison of monitoring results to available pre-construction data, and the requirement in condition E46 for the independent team of experts to review the accuracy of predicted environmental outcomes discussed in the documents listed in conditions A2(b) and A2(c) .

All monitoring stations must be established subject to the land owner's and occupier's agreement. The Proponent must use the sampling method, units of measure, and sampling frequency specified in **Table 8**.

The Proponent must commence monitoring for at least twelve continuous months prior to operation. The locations are to be agreed to by the AQCCC. The Proponent must meet all operating costs associated with the stations.

The Proponent, following consultation with the AQCCC, must review the need for the continuation of the ambient monitoring stations after a period of two years from commencement of operation. Any recommendation to close the stations will require the approval of the Secretary in consultation with the EPA.

The establishment and operation of the stations is to be undertaken in accordance with recognised Australian standards and undertaken by an organisation accredited by NATA for this purpose and approved by the Secretary in consultation with the EPA and the AQCCC. The quality of the monitoring results must be assured through a NATA accredited process prior to the data being considered as a basis for compliance/auditing purposes.

Monitoring results must be made publicly available and must be subject to an independent audit at six-monthly intervals (or at a longer interval, if approved by the Secretary). The auditor must be approved by the Secretary in consultation with the EPA and the AQCCC, and the auditor's report must be directly provided to the Proponent and the AQCCC.

Table 8 — Ambient Air Quality Monitoring Methodologies

Pollutant	Units of measurement	Averaging Period	Frequency	Method[1]
NO	pphm	1-hour	Continuous	AM-12
NO_2	pphm	1-hour	Continuous	AM-12
NO_x	pphm	1-hour	Continuous	AM-12
PM_{10}	$\mu g/m^3$	24-hour	Continuous	AS3580.9.8-2008[2]
$PM_{2.5}$[5]	$\mu g/m^3$	24-hour	Continuous	AS3580.9.13-2013[3] or as otherwise agreed by the Secretary in consultation with the EPA
CO	ppm	1-hour,8-hour	Continuous	AM-6
Parameter[4]	**Units of measurement**	**Averaging Period**	**Frequency**	**Method[1]**
Wind Speed @ 10 m	m/s	1-hour	Continuous	AM-2 & AM-4
Wind Direction @ 10 m	°	1-hour	Continuous	AM-2 & AM-4
Sigma Theta @ 10 m	°	1-hour	Continuous	AM-2 & AM-4
Temperature @ 2m	K	1-hour	Continuous	AM-4
Temperature @ 10 m	K	1-hour	Continuous	AM-4
Other	**Units of measurement**	**Averaging Period**	**Frequency**	**Method[1]**
Siting	NA	NA	NA	AM-1 & AM-4

Notes:

1. *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (EPA, 2007) or as otherwise agreed to in writing by the Secretary in consultation with the EPA.*
2. *AS3580.9.8-2008, Methods for the Sampling and Analysis of Ambient Air – Determination of Suspended Particulate Matter – PM_{10} Continuous Direct Mass Method using Tapered Element Oscillating Microbalance Analyser* (Standards Australia, 2008).
3. *AS 3580.9.13-2013, Methods for the Sampling and Analysis of Ambient Air – Determination of Suspended Particulate Matter – $PM_{2.5}$ Continuous Direct Mass Method using a Tapered Element Oscillating Microbalance Analyser* (Standards Australia, 2013).
4. *TBD - location for meteorological monitoring station(s) to be representative of weather conditions likely to occur in the vicinity of the northern and southern ventilation outlets.*
5. *Appropriately modified to include size selective inlet for $PM_{2.5}$ or as otherwise approved by the Secretary.*

Ambient Air Quality — Goals

E9 Should ambient monitoring of air pollutants exceed the following goals, the provisions of conditions E10, E11 and E12 will apply:

(a) CO – 8 hour rolling average of 9.0 ppm (NEPM);
(b) NO_2 – One hour average of 0.12 ppm (245 µg/m3) (NEPM);
(c) PM_{10} – 24 hour average of 50 $\mu g/m^3$ (NEPM);
(d) $PM_{2.5}$ – 24 hour average of 25 $\mu g/m^3$ (proposed NEPM)
(e) PM_{10} – annual average of 25 $\mu g/m^3$ (Meeting of Environment Ministers – Agreed Statement); and
(f) $PM_{2.5}$ – annual average of 8 $\mu g/m^3$ (Meeting of Environment Ministers – Agreed Statement).

Note:

- *Ambient monitoring of pollutants for the purposes of notification and reporting obligations under conditions E10, E11 and E12 will commence at the commencement of operation of the SSI. As such, the first annual average of pollutants will be available 12 months following the commencement of operations.*

Ambient Air Quality — Notification and Reporting

E10 In addition to the general reporting requirements specified in condition E21, the Proponent must prepare a **Ambient Air Quality Goal Protocol** for the evaluation of a potential measurement that exceeds the goals. The Ambient Air Quality Goal Protocol must be developed by the Proponent in consultation with the AQCCC and approved by the Secretary.

The Ambient Air Quality Goal Protocol must include:

(a) the form of and process for providing a Notification of Above-Goal Recording, subject to condition E11;
(b) the form and contents of a Report on Above-Goal Reading, subject to condition E12; and
(c) a process for appointing an independent person/organisation to prepare the Report on Above-Goal Reading. The process must include -
    (i) approval of the independent person/organisation by the Secretary prior to preparation of the report, and
    (ii) the appointment of the independent person/organisation prior to the commencement of operation, or at some other time prior to preparation of the report with the agreement of the Secretary.

E11 The Ambient Air Quality Goal Protocol must provide a **Notification of Above-Goal Recording** if ambient monitoring of air pollutants records an exceedance of the goals in condition E9. The Notification of Above-Goal Recording is to be submitted within 24 hours of the recording, to the Secretary, EPA and NSW Health. The Notification of Above-Goal Recording must detail:

(a) the nature of the event;
(b) the concentration that occurred;
(c) the duration of the event;
(d) the measures employed to minimise the concentration levels; and
(e) the Proponent's commitment to prepare and submit a Report on Above-Goal Reading in accordance with condition E12.

E12 Within 20 working days of any Notification of Above-Goal Reading, the Proponent must prepare and submit to the Secretary a **Report on Above-Goal Reading** that details the cause and major contributor of the exceedance and the options available to prevent recurrence.

Where the operation of the tunnel is identified to be a significant contributor to the recorded above-goal reading, the Report on Above-Goal Reading must include consideration of improvements to the tunnel air quality management system so as to achieve compliance with the ambient air quality goals, including but not limited to installation of the additional ventilation management facilities allowed for under condition B5, and discussion of whether those improvements are feasible and reasonable.

The Proponent must comply with any requirements arising from the Secretary's review of the Report on Above-Goal Reading.

Ventilation Outlets — Monitoring

E13 The Proponent must install monitoring equipment to monitor pollutants from the ventilation outlets. Pollutant monitoring from the ventilation outlets (by sampling and obtaining results by analysis) must be for the pollutants and parameters specified in

E14 **Table** 9.

The Proponent must use the sampling method, units of measures and sample at the frequency specified in the other columns. Monitoring equipment installed under this condition is to be independently audited prior to its commencement of monitoring for compliance with the requirements set out in

Table 9.

Auditing is to be undertaken by an independent person(s) or organisation(s) approved by the Secretary and paid for by the Proponent. Monitoring must take place in accordance with this condition throughout operation of the SSI.

Table 9 — Ventilation Outlet Emission Monitoring Methodologies

Pollutant	**Units of measure**	**Frequency**	**Method[1]**
Solid particles	mg/m^3	Continuous	Special Method 1[4]
Solid particles	mg/m^3	Quarterly	TM-15
PM_{10}	mg/m^3	Quarterly	OM-5
$PM_{2.5}$	mg/m^3	Quarterly	OM-5
NO_2 or NO or both, as NO_2 equivalent	mg/m^3	Continuous	CEM-2
NO_2	mg/m^3	Continuous	CEM-2
CO	mg/m^3	Continuous	CEM-4
VOC[2]	mg/m^3	Continuous	CEM-8
Speciated VOC	mg/m^3	Annual	TM-34
Speciated PAH[3]	$\mu g/m^3$	Annual	OM-6
Parameter	**Units of measure**	**Frequency**	**Method[1]**
Velocity	m/s	Continuous	CEM-6
Volumetric flow rate	m^3/s	Continuous	CEM-6
Moisture	%	Continuous	TM-22
Temperature	°C	Continuous	TM-2
Other	**Units of measure**	**Frequency**	**Method[1]**
Selection of sampling locations	N/A	N/A	TM-1

Notes:

1. *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* (EPA 2007) *or an alternative method approved by the Secretary in consultation with the EPA.*
2. *Must include, but not be limited to: Benzene, Toluene, Xylenes, 1,3-Butadiene, Formaldehyde and Acetaldehyde.*
3. *Must include, but not limited to; 16 USEPA priority PAHs, namely; Naphthalene, Phenanthrene, Benz(a)anthracene, Benzo(a)pyrene, Acenapthylene, Anthracene, Chrysene, Indeno(1,2,3-cd)pyrene, Acenaphthene, Fluoranthene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Fluorene, Pyrene, Benzo(k)fluoranhtene, Benzo(g,h,i)perylene.*
4. *Special Method 1 means a method approved by the Secretary in consultation with the EPA.*

Ventilation Outlets — Limits

E15 The concentration of a pollutant discharged from the ventilation outlets referred to must not exceed the respective limits specified for that pollutant in **Table 10**.

Table 10 — Ventilation Outlet Mass Pollutant Concentrations

Pollutant	**100 percentile limit**	**Units of measurement**	**Averaging period**	**Reference conditions**
Solid particles	1.1	mg/m^3	1 hour, or the minimum sampling period specified in the relevant test method, whichever is the greater	Dry, 273K, 101.3kPa
NO_2 or NO or both, as NO_2 equivalent	20	mg/m^3	1 hour block	Dry, 273K, 101.3kPa
NO_2	2.0	mg/m^3	1 hour block	Dry, 273K, 101.3kPa
CO	40	mg/m^3	1 hour rolling	Dry, 273K, 101.3kPa
VOC (as propane)	4.0	mg/m^3	1 hour rolling	Dry, 273K, 101.3kPa

Ventilation Outlets — Limits — Optimisation

E16 An independent person or organisation approved by the Secretary must:

(a) verify that compliance with ventilation outlet limits detailed in **Table 10** will:

(i) supplement/not preclude compliance with the predicted air quality outcomes presented in the documents listed in conditions A2(b) and A2(c), and

(ii) not result in air quality impacts greater than predicted in the documents listed in conditions A2(b) and A2(c); `

(b) undertake an appropriate assessment to indicate how ventilation outlet discharge velocities have been optimised in consideration of energy requirements and air quality impacts at all sensitive receivers; and,

(c) validate recorded monitoring data and certify compliance with the ventilation outlet limits.

The information required in paragraphs (a) - (c) in this condition will be made available to the Secretary on request.

The ventilation outlet limits detailed in **Table 10** must be reviewed on a five-yearly basis and may be lowered (i.e. made more stringent), subject to a sustainability assessment and there being improvements in vehicle fleet emissions, if the Proponent is directed to do so by the Secretary following consultation with the EPA.

Ventilation Outlets — Notification and Reporting

E17 Should the results of monitoring show that any of the ventilation outlet limits specified in conditions E15 have been exceeded, the Proponent must immediately notify the Secretary, EPA and NSW Health. The notification must be followed up with a detailed report within 20 working days, which must be prepared by the Proponent, reviewed by a suitably qualified and experienced independent specialist(s), and submitted to the Secretary, on the cause and major contributor of the exceedance and the options available to prevent recurrence. The Secretary must approve the independent person/organisation prior to the commencement of operation, or at some other time prior to preparation of the report.

Where the operation of the tunnel is identified to be a significant contributor to the recorded exceedance, this report must include consideration of improvements to the tunnel air quality management system so as to achieve compliance with the ambient air quality goals, including but not limited to installation of the additional ventilation management facilities allowed for under condition B5, and discussion of whether those improvements are feasible and reasonable.

The Proponent must comply with any requirements arising from the Secretary's review of the Report.

Emergency Discharge

E18 Conditions E2, E3, E4, E9 and E15 do not apply in an emergency (as defined in the OEMP required by condition E27).

The Proponent must, as soon as reasonably practicable, notify the Secretary and the EPA of any such discharge.

Local and Sub-Regional Air Quality

E19 The Proponent must assist the relevant council(s) in developing an air quality assessment process for inclusion in a Development Control Plan or other appropriate planning instrument, in considering planning and building approvals for new development in the area adjacent to the eastern and western ventilation outlets which would be within a potential three-dimensional zone of affectation (buffer volume). This process must include procedures for identifying the width and height of buildings that are likely to be either affected by the plume from the ventilation outlet or affect the dispersion of the plume from the ventilation outlet through building wake effects. The Proponent must meet all reasonable costs for the development of this process and any necessary amendments to the planning instrument(s) required to implement the process.

E20 Prior to operation, the Proponent must investigate, in consultation with the EPA the measures for smoky vehicle enforcement in areas surrounding the SSI, taking into consideration cost effectiveness. Any measures implemented as a result of investigation recommendations must be in accordance with current RMS smoky vehicle enforcement programs. The effectiveness of the smoky vehicle enforcement measures must be documented in the Independent Environmental Audit required under condition E46.

Air Quality — General Reporting

E21 The Proponent must develop and implement a reporting system for in-tunnel, ambient and ventilation outlet limits in consultation with the EPA. The reporting system must be approved by the Secretary and fully implemented and operational prior to operation. Minimum analytical reporting requirements for air pollution monitoring stations must be as specified in the *Approved Methods of Modelling and Assessment of Air Pollutants in NSW* (EPA 2007, or as updated).

Air Quality — Public Access to Monitoring Results

E22 Results of hourly updated real-time ambient monitoring of PM_{10}, $PM_{2.5}$, NO_2, and CO at the approved monitoring stations, in-tunnel CO/NO_2 and visibility, ventilation outlet measurements, and relevant meteorological data, must be provided on a website and made publicly available each month in hard copy format in an easy to interpret format. This data must be preliminary until a quality assurance check has been undertaken by a person or organisation accredited by NATA for this purpose. The availability of this data must be conveyed to the local community by way of newsletter (including translation into common community languages in the area) and newspaper advertisement at least one month prior to the commencement of operation.

Air Quality — Auditing and Quality Assurance

E23 The provision, operation and maintenance (including all auditing and validation of data) of all air quality monitoring and reporting must be funded by the Proponent.

E24 All continuous emissions monitoring systems installed and operated as a requirement of condition E13 must undergo relative accuracy test audits at an interval not exceeding 12 months, or as otherwise agreed to by the Secretary in consultation with the EPA.

E25 The Proponent must appoint an external auditor to conduct an audit of the air quality monitoring (in tunnel and external) at six-monthly intervals or at any longer interval if approved by the Secretary. Air quality audits must commence six months from commencement of operation. The auditor must ensure that the operating procedures and equipment to acquire air monitoring, meteorological data and emission monitoring data and monitoring reporting comply with NATA (or equivalent) requirements and sound laboratory practice. The Proponent must document the results of the audit and make available all audit data for inspection by the Secretary upon request. A copy of the audit report must also be issued to the Proponent and AQCCC. The auditor must be approved by the Secretary in consultation with the EPA and the AQCCC, and the auditor's report must be directly provided to the Proponent and the AQCCC.

E26 The Proponent must undertake appropriate quality assurance (QA) and quality control (QC) measures for air quality and ventilation outlet emission monitoring data. This must include, but not be limited to: accreditation/quality systems, staff qualifications and training, auditing, monitoring procedures, service and maintenance, equipment or system malfunction and records/reporting. The QA/QC measures must be approved by an independent expert approved by the Secretary prior to monitoring of air quality and ventilation outlet emissions as appropriate.

OPERATION ENVIRONMENTAL MANAGEMENT PLAN

E27 Prior to the commencement of operation, or as otherwise agreed by the Secretary, the Proponent must prepare and implement an **Operation Environmental Management Plan (OEMP)** for the SSI. The OEMP must outline the environmental management practices and procedures that are to be followed during operation, and must be prepared in consultation with relevant agencies and in accordance with the *Guideline for the Preparation of Environmental Management Plans*

(Department of Infrastructure, Planning and Natural Resources, 2004). The OEMP must include, but not be limited to:

(a) a description of activities to be undertaken during operation of the SSI (including staging and scheduling);
(b) statutory and other obligations that the Proponent is required to fulfil during operation, including approvals, consultations and agreements required from authorities and other stakeholders under key legislation and policies;
(c) overall environmental policies, guidelines and principles to be applied to the operation of the SSI;
(d) a description of the roles and responsibilities for relevant employees involved in the operation of the SSI, including relevant training and induction provisions for ensuring that employees are aware of their environmental and compliance obligations under these conditions of approval;
(e) an environmental risk analysis to identify the key environmental performance issues associated with the operation phase;
(f) details of periodic testing of the tunnel ventilation system;
(g) a definition of emergency as it applies to conditions B4, E18 and E39; and
(h) details of how environmental performance would be managed and monitored to meet acceptable outcomes, including what actions will be taken to address identified potential adverse environmental impacts, including those safeguards and mitigation measures detailed in Section 8 the document referred to in condition A2(c) (and any impacts arising from the staging of the construction of the SSI). In particular, the following environmental performance issues must be addressed in the OEMP:
    (i) air quality;
    (ii) noise and vibration, through preparation of the Operational Noise Management Plan required under condition 0;
    (iii) traffic;
    (iv) climate change and energy use;
    (v) visual amenity and landscaping;
    (vi) groundwater level/pressure, inflows, treatment and discharge, soil, and subsidence; and
    (vii) surface water quality and hydrology, including stormwater management.

The OEMP must be submitted for the approval of the Secretary no later than one month prior to the commencement of operation, or as otherwise agreed by the Secretary. Operation must not commence until written approval of the OEMP has been received from the Secretary.

Note:

- *The approval of an OEMP does not relieve the Proponent of any requirement associated with this SSI approval. If there is an inconsistency with an approved OEMP and the conditions of this SSI approval, the requirements of this SSI approval prevail.*

OPERATIONAL NOISE AND VIBRATION

E28 The SSI must be designed and operated with the objective of meeting the requirements of the *NSW Road Noise Policy* (DECCW, 2011) and must include the provision of at-property treatment to all affected receivers in multi-level dwellings where the project noise criteria are exceeded, unless otherwise agreed to by the owner of the noise-affected residence.

E29 The Proponent must design and operate all fixed facilities, including the tunnel portals; ventilation facilities and the emergency smoke extraction outlets with the objective of not exceeding the requirements of the *NSW Industrial Noise Policy* (EPA, 2000) and the *Sleep Disturbance Application Note to the NSW Industrial Noise Policy*. The Proponent must apply mitigation at existing receivers where the noise requirements cannot be achieved.

E29 A detailed **Operational Noise Management Plan** must be prepared as part of the Operational Environmental Management Plan required by condition E26 and submitted to the Secretary for approval. The Operational Noise Management Plan must provide details of noise and vibration control measures to be undertaken during the operation stages, sufficient to address the technical requirements of the EPA, and generally in accordance with the *NSW Road Noise Policy* (DECCW, 2011) and the *NSW Industrial Noise Policy* (EPA, 2000).

The Operational Noise Management Plan must include, but not be limited to:

(a) tests for ascertaining acoustic parameters;
(b) predicted noise levels;
(c) noise criteria for operation of the project based on the objectives of the *NSW Road Noise Policy* (DECCW, 2011) and the *NSW Industrial Noise Policy* (EPA, 2000);
(d) location, type and timing of erection of permanent noise barriers and/or other noise mitigation measures demonstrating best practice including silencers and building treatments for associated plant rooms and enclosures for exposed plant;
(e) specific physical and managerial measures for controlling noise;
(f) noise monitoring, reporting and response procedures including the monitoring on surrounding roads which experience significantly increased traffic volumes as a result of the project, and including operational facilities;
(g) procedures for operational noise and vibration complaints management, including investigation and monitoring (subject to complainant agreement); and
(h) an **Operational Ancillary Facility Noise Management Sub-Plan** including, but not limited to -
    (i) identification of the final location of all operational ancillary facilities and plant including the Motorway Complex, ventilation facilities, tunnel jet fans and water treatment plants,
    (ii) the sound power levels of all chosen equipment and plant to be utilised during operation including spectral sound characteristics and frequency data,
    (iii) identification and/or confirmation of sensitive receivers and appropriate categorisation of the surrounding area in accordance with the INP,
    (iv) identification of the applicable noise goals, including spectral frequency, for all sensitive receivers identified as being potentially impacted by any operational ancillary facility,
    (v) presentation of noise assessment and predicted impacts including the use of mapping and noise contours,
    (vi) identification and implementation of appropriate mitigation measures including building treatment, site layout, attenuators and demonstration that chosen mitigation measures can adequately achieve relevant noise goals, and
    (vii) details of maintenance and inspection schedules to ensure plant, equipment and other operational ancillary facilities are operating at optimal levels; and
(i) mechanisms for the monitoring and review of the Operational Noise Management Plan.

E30 For the purpose of assessment of noise criteria specified in the **Operational Noise Management Plan** required under condition 0, noise from the development arising from ventilation facilities and plant must be:

(a) measured at the most affected point on or within the site boundary at the most sensitive locations to determine compliance with $L_{Aeq,T}$ noise limits;
(b) measured in the free field at least three to five metres from any vertical reflecting surface in line with the worst-affected dwelling facade to determine compliance with L_{Amax} noise limits; and
(c) subject to the modification factors provided in Section 4 of the *NSW Industrial Noise Policy* (EPA, 2000), where applicable.

Notwithstanding, should direct measurement of noise from the fixed facilities be impractical, the Proponent may employ an alternative noise assessment method deemed acceptable by the EPA (refer to Section 11 of the *NSW Industrial Noise Policy* (EPA, 2000)). Details of such an alternative noise assessment method accepted by the EPA must be submitted to the Secretary prior to the implementation of the assessment method.

E31 Monitoring of operational noise must be undertaken in accordance with the Operational Noise Management Plan.

E32 The Proponent must design and operate the SSI with the objective, where feasible and reasonable, of not exceeding the vibration goals for human exposure for existing receivers, as presented in *Assessing vibration: a technical guideline* (DECC, 2006).

E33 Unless otherwise agreed by the Secretary, within six months of commencing construction, the Proponent must prepare an **Operational Noise and Vibration Review (ONVR**) to confirm noise and vibration control measures that would be implemented for the project. The ONVR must be prepared in consultation with the Department, the EPA, relevant councils, other relevant stakeholders and the community and must:

(a) confirm the appropriate operational noise and vibration objectives and levels for adjoining development, including existing sensitive receivers;
(b) confirm the operational noise predictions of the project based on the final design. Confirmation must be based on an appropriately calibrated noise model (which has incorporated additional noise monitoring, and concurrent traffic counting, where necessary for calibration purposes). The assessment must specifically include verification of noise levels at all fixed facilities, based on additional noise monitoring undertaken at appropriately identified noise catchment areas surrounding the facilities;
(c) confirm the operational noise and vibration impacts at adjoining development based on the final design of the project, including operational daytime $L_{Aeq\ 15\ hour}$ and night-time $L_{Aeq\ 9\ hour}$ traffic noise contours;
(d) review the suitability of the operational noise mitigation measures identified in the documents listed at conditions A2(b) and A2(c) and, where necessary, investigate and identify additional feasible and reasonable noise and vibration mitigation measures required to achieve the noise criteria outlined in the *NSW Road Noise Policy* (DECCW, 2011) and *NSW Industrial Noise Policy* (EPA, 2000), including the timing of implementation; and
(e) include a consultation strategy to seek feedback from directly affected property owners (including educational institutions) on the noise and vibration mitigation measures.

The ONVR is to be verified by a suitably qualified and experienced noise and vibration expert. The scope of the verification exercise undertaken by the noise and vibration expert is to be developed by the Proponent in consultation with EPA. The ONVR is to be submitted to the Secretary for approval prior to the commencement of construction of physical noise mitigation structures, unless otherwise agreed by the Secretary.

The Proponent must implement the identified noise and vibration control measures and make the ONVR publicly available.

E34 Within 12 months of the commencement of the operation of the SSI, or as otherwise agreed by the Secretary, the Proponent must undertake operational noise and vibration monitoring to compare the actual noise and vibration performance of the SSI against the noise performance predicted in the Operational Noise and Vibration Review required by condition E33 and the documents referred to in conditions A2(b) and A2(c). Development of the monitoring program must be undertaken in consultation with the EPA. The monitoring program must be documented in an **Operational Noise and Vibration Compliance Report**. The Operational Noise and Vibration Compliance Report must include, but not be limited to:

(a) details of the noise and vibration monitoring program including methodology, location and frequency of noise monitoring;
(b) results of the monitoring program and an assessment of these against the operational noise criteria specified in the Operational Noise Management Plan required by condition 0 and noise levels predicted in the Operational Noise Review required by condition E33 and the documents referred to in conditions A2(b) and A2(c);
(c) details of any complaints received relating to operational noise and vibration impacts;

(d) any required calibration of the noise and vibration model taking account considerations such as traffic numbers and land use change (if applicable);
(e) an assessment of the performance and effectiveness of the applied noise and vibration mitigation measures with regard to the operational noise criteria specified in the Operational Noise Management Plan required by condition 0; and
(f) identification of any further feasible and reasonable noise and vibration mitigation measures required to meet the noise criteria specified in the Operational Noise Management Plan, where the criteria are exceeded.

The Proponent must provide the Secretary and the EPA with a copy of the Operational Noise and Vibration Compliance Report within 60 days of completing the operational noise monitoring, or as otherwise agreed by the Secretary.

E35 The Proponent must implement further feasible and reasonable mitigation measures (where required) as identified in the Operational Noise and Vibration Compliance Report in consultation with affected property owners.

TRANSPORT AND ACCESS

E36 At both 12 months and 5 years after the commencement of operation of the SSI, or as otherwise agreed to by the Secretary, the Proponent must prepare a **Road Network Performance Review Plan** in consultation with relevant councils that includes:
(a) an updated analysis, including modelling of traffic impacts to the adjoining road network (including impacts on local roads and rat-running), as a consequence of the SSI. This must include a review of new information available about potential land use changes, including those associated with the *Draft Parramatta Road Urban Transformation Strategy* (Transport for NSW, 2015, or as updated), and any traffic changes as a result of other major road projects within the project area;
(b) further detailed investigations at the following intersections or sections of the road network -
    (i) potential 'pinch-points' at the Parramatta Road and Wattle Street Interchanges where merging of tunnel exit traffic and surface traffic would occur,
    (ii) Parramatta Road/George Street,
    (iii) Parramatta Road/Pomeroy Street,
    (iv) Parramatta Road/Frederick Street/Wattle Street,
    (v) Parramatta Road/Concord Road,
    (vi) Concord Road/Patterson Street/Sydney Street,
    (vii) the intersection of the Concord Road off-ramps and Parramatta Road, and
    (viii) the intersection of the Pomeroy Street on- ramp and Parramatta Road;
(c) updated consideration of potential mitigation measures to manage any predicted traffic performance deficiencies, particularly on Parramatta Road and in association with the investigations undertaken within E36(b);
(d) details on bus priority measures;
(e) the predicted traffic performance improvements from these measures, including any cumulative improvements;
(f) justification of why the predicted 'do minimum' performance of any intersection on the adjoining road network cannot be maintained (if necessary); and
(g) an updated description and proposed timing of potential mitigation measures.

The Proponent is responsible for the implementation of the identified measures, if required.

The Road Network Performance Review Plan must be submitted to the Secretary, Transport for NSW (in relation to impacts on bus services) and to relevant council(s) within 60 days of its completion and made publicly available.

The purpose of the Road Network Performance Review Plan is to optimise road network performance including public transport access and times, and manage the performance impacts of the SSI on the adjoining road network by identifying or confirming mitigation improvements

that could be required in areas where traffic performance may be unsatisfactory at time of completion of construction.

Note:

- *Identified mitigation measures may need to be further assessed under the Environmental Planning and Assessment Act, 1979. Works will need to meet relevant design standards and be subject to independent road safety audits.*

E37 The Proponent must liaise with relevant councils and UrbanGrowth NSW during detailed design to improve integration of the project with the local and regional road network in relation to the *Draft Parramatta Road Urban Transformation Strategy* (Transport for NSW, 2015, or as updated). The outcomes of this consultation will be reported and incorporated in the Road Network Performance Review Plan required under condition E36.

URBAN DESIGN AND VISUAL AMENITY

E38 The ongoing maintenance and operation costs of urban design and landscaping items and works implemented as part of this infrastructure approval must remain the Proponent's responsibility until satisfactory arrangements have been put in place for the transfer of the asset to the relevant authority. Prior to the transfer of assets, the Proponent will maintain items and works to the design standards established in the Urban Design and Landscape Plan required by condition B45.

HAZARDS AND RISK

E39 Prior to operation, the Proponent must prepare an **Emergency Response Plan**, in consultation with FRNSW and NSW Police Force.

The Emergency Response Plan must include, but not be limited to:

(a) protocols and procedures to be followed during emergency situations associated with the operation of the project (including fires, explosions and, for the purposes of this condition, vehicle collisions). The protocols and procedures are to take into account the needs of people with a disability or who may experience access problems in emergency situations;

(b) details of traffic management measures to be implemented during emergencies, where appropriate, to minimise the potential for escalation of the emergency;

(c) design and management measures to address the potential environmental impacts of an emergency situation, including measures for containment of contaminated fire-fighting water, fuel spills and gaseous combustion products;

(d) details of a training and testing program to ensure that
  (i) all operational staff are familiar with the Emergency Response Plan, and
  (ii) coordination with FRNSW and NSW Police is regularly exercised; and

(e) provision for a simulated emergency response exercise, including the Proponent, FRNSW and NSW Police, to be conducted in accordance with the Emergency Response Plan on at least one occasion prior to the opening of the tunnels to traffic. The time for the exercise is to be agreed by the participants, and FRNSW and NSW Police are to be provided with at least one month prior notification of any proposed time.

E40 Fire simulation and hot smoke testing must be undertaken as part of the simulated emergency response exercise to be staged prior to opening of the project to traffic as required in condition E39(e).

The Proponent must respond in writing to any recommendations made by FRNSW as a result of the exercise. Any outstanding concerns are to be resolved between FRNSW and the Proponent.

E41 The Proponent must undertake annual **Hazard Reviews** of the project for the first five years of operation. The Hazard Review must detail all hazardous incidents that have occurred during the preceding period, as per (i) to (iii) below, identify safety measures required to rectify those incidents, and address any ongoing issues.

(i) The first Hazard Review must be undertaken for the first three months of operation after the opening of the project to traffic.
(ii) Subsequent Hazard Reviews must be undertaken for the following nine months and thereafter twelve monthly intervals.
(iii) FRNSW may also direct the Proponent to undertake a Hazard Review following any major incident in the tunnel.

A **Hazard Review Report**, outlining the results of a Hazard Review, and any proposed additional safety measures to be implemented in response to the findings of the Hazard Review, must be submitted to FRNSW no later than one month after the review period.

The Proponent must respond in writing to any recommendation made by FRNSW in relation to the findings of a Hazard Review, within such time as may be agreed by FRNSW. Any outstanding concerns are to be resolved between FRNSW and the Proponent.

E42 The Proponent must develop a **Fire Engineering Brief and Fire Engineering Report** to address fire and life safety in the tunnel, in consultation with FRNSW. the documents must outline fire protection systems and other tunnel equipment, systems, and operational protocols required for fire and smoke management.

In developing the Fire Engineering Brief and Fire Engineering Report, the Proponent must undertake a detailed fire engineering study in accordance with Australian Building Codes Board codes and guides, and Fire Safety Engineering Guidelines. Detailed design of the tunnel must incorporate the design and operational measures developed in the fire engineering study to minimise the potential for, and effect of, fire and hazardous material incidents in the tunnel.

The final design of the tunnel in relation to the fire and life safety features must be verified against the fire engineering study in consultation with FRNSW by an Accredited Fire Engineer.

The Proponent must respond in writing to any recommendation made by FRNSW in relation to the Fire Engineering Brief and Fire Engineering Report, within such time as may be agreed by FRNSW. Any outstanding concerns are to be resolved between FRNSW and the Proponent.

E43 Prior to the opening of the project to traffic, a full audit of the fire and life safety system as defined by the fire engineering study developed in condition E42 above must be undertaken by an Accredited Fire Engineer. The objective of the audit must be to ensure that all design and operational measures outlined in the fire engineering study have been installed, are operational, and achieve the required design criteria.

The results of the audit must be submitted to FRNSW prior to opening of the project to traffic. The Proponent must respond in writing to any recommendations resulting from FRNSW review of the audit. Any outstanding concerns are to be resolved between FRNSW and the Proponent.

E44 A detailed maintenance-testing program outlining the methods of testing the fire and life safety systems and schedule for implementation must be developed in consultation with FRNSW prior to opening of the project to traffic.

The Proponent must respond in writing to any recommendations made by FRNSW. Any outstanding concerns are to be resolved between FRNSW and the Proponent.

E45 Maintenance testing of fire and life safety systems must be undertaken at least annually, or any other interval as required by the design engineer and to the satisfaction of FRNSW.

Results of maintenance testing must be made available to FRNSW for review, and the Proponent must respond in writing to any recommendations from FRNSW to ensure the reliability of the fire and life safety systems. Any outstanding concerns are to be resolved between FRNSW and the Proponent.

INDEPENDENT ENVIRONMENTAL AUDIT

E46 Within 12 months of the commencement of operation, and at any other stage required by the Secretary, the Proponent must commission and pay the full cost of an **Independent Environmental Audit** of the SSI. The Independent Environmental Audit must:

(a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been approved by the Secretary;
(b) include consultation with the relevant agencies and relevant councils;
(c) assess the environmental performance of the SSI and assess whether it is complying with the requirements in this approval, and any other relevant approvals (including any assessment, plan or program required under these approvals);
(d) review the accuracy of predicted environmental outcomes discussed in the documents listed in conditions A2(b) and A2(d) inclusive;
(e) review the adequacy of any approved strategy, plan or program required under the abovementioned approvals in (c); and
(f) recommend measures or actions to improve the environmental performance of the SSI, and/or any strategy, plan or program required under these approvals.

Within 60 days of commissioning the Independent Environmental Audit, or as otherwise agreed by the Secretary, the Proponent must submit a copy of the audit report to the Secretary and relevant public authorities, together with its response to any recommendations contained in the audit report.

Notes:

- *This audit team must be led by a suitably qualified and experienced auditor, and include experts in air quality, biodiversity, noise and vibration, hydrology and any other fields specified by the Secretary.*
- *The audit may be staged to suit the staged operation of the SSI.*

APPENDIX A

WESTERN VENTILATION FACILITY — LOCATION PLAN (CONDITION B1)

SSI 6307 MOD 1 approved 15 December 2016
SSI 6307 MOD 2 approved 10 January 2017
SSI 5307 MOD 3 approved 16 June 2017
SSI 6307 MOD 4 approved 13 June 2018
SSI 6307 MOD 5 approved 04 July 2018

APPENDIX B

EASTERN VENTILATION FACILITY — LOCATION PLAN (CONDITION B1)