Appendix D – Environmental Risk Assessment and Mitigation Measures

The following section provides recommendation for mitigation measures in response to potential impacts identified in **Section 6** of the EIS.

Following the implementation of appropriate mitigation measures as recommended, it is determined that the proposal will not result in any significant adverse impacts on the surrounding environment. The following table illustrates how the matters raised within the SEARs will be addressed.

The table has directly related mitigation measures responding to each impact also based upon the range of technical and specialist consultant reports appended to the EIS.

N.B. 'O' – Operational; 'C' – Construction

SEARS	Potential Impact	Stage of Project	Approach
Construction Waste Management Plan	Waste and pollution of the site and surrounding community as a result of construction.	C	Hazardous Waste Materials The following general mitigation measures will apply: ▪ Contaminated material stockpiled on site will be minimised as far as possible and should be stored on HDPE liner, in a bunded location which is protected from inclement weather; ▪ Sediment fences should be installed around the base of stockpiles and the stockpiles should be covered. Where excavated material requires validations, samples should be taken for NATA laboratory testing as per the requirements of the contamination assessment prior to restoration works, backfilling exercises and disposal; ▪ Any trucks carrying contaminated materials should be securely and completely covered immediately after loading the materials (to prevent windblown emissions and spillage) and must be licensed by the NSW Environmental Protection Authority (EPA); • Decontamination of all equipment prior to demobilisation from the site is important so that contaminated materials are not spread off-site.

			Excavation Waste The following measures and safeguards will apply to the development for excavated material: ▪ Wherever practical, excavation material will be reused as part of the development; ▪ Excavation material that is not natural (virgin) material will be transported to an approved landfill site or off-site recycling depot; ▪ A waste classification assessment of the fill material should be undertaken prior to it being acceptable for waste disposal purposes; ▪ Transportation routes for excavation material removed from site will be identified and used.
Noise and Vibration	Construction and operational noise affecting surrounding residents and community.	O, C	As mechanical plant selection and placement have not been finalised at the SSDA stage, the report provides in-principle mitigation measures to ensure compliance at detailed design. These include: ▪ Procurement of mechanical plant items that have lower noise source levels; ▪ Positioning plant items away from noise sensitive receivers to maximum distance attenuation; ▪ Installing commercially available silencers / attenuators to the air discharge and air intakes of plant items; ▪ Lag ductwork and / or line ductwork with acoustically absorptive material; and ▪ Install screens or enclosures around plant items to acoustically shield noise sensitive receivers from mechanical plant noise. General Noise Management Measures The following general noise management measures are recommended for all receiver locations: ▪ Regularly inspect and maintain equipment to ensure it is in good working order. ▪ Provide special attenuation to any use and maintenance of 'noise control' or 'silencing' kits fitted to machines to ensure they perform as intended. ▪ Avoid any unnecessary noise when carrying out manual operations and when operating plant. ▪ Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be limited/avoided where possible. ▪ The offset distance between noisy plant and adjacent sensitive receivers is to be maximised where practical.

- Where practical, plant and equipment that are used intermittently are to have throttle setting reduced or shut down when not in use. Any plant and equipment that will not be used for extended periods of time are to be switched off.
- Trucks engines should be turned off as opposed to idling, if feasible. Also, non-tonal reversing beacons should be considered for the on-site vehicles.
- In addition to the noise mitigation measures outlined above, a management procedure will need to be put in place deal with noise complaints that may arise from built form work activities. Each complaint will need to be investigated, and appropriate noise amelioration measures put in place to mitigate future occurrences, where the noise in question is in excess of allowable limits.
- Good relations with people living and working in the vicinity of the Corrimal Coke Works site should be established at the beginning of a project and be maintained throughout the project, as this is of paramount importance. Keeping people informed of progress and taking complaints seriously and dealing with them expeditiously is critical. The person selected to liaise with the community must be adequately trained and experienced in such matters.

Specific Noise Management Measures

Other potential mitigation measures include:

- Neighbour Notification
  - Community consultation procedures and site point-of-contact must be established.
  - Notify surrounding residential areas (at a minimum, NCAs 2 to 4 along Duff Parade, East Corrimal which are closest to the built form works) of the estimated dates, locations during each day and typical duration of noisy activities so a given receiver will have an understanding of the duration of works that is in closest proximity to them.
- Respite Periods
  - The construction noise level predictions identify the use of a hydraulic hammer during the excavation works for the basement, service trenches and footings to have the highest potential of exceeding the noise management levels and giving rise to noise impacts.
  - Community consultation should occur to determine whether it is preferable to adopt respite periods (which may have the effect of increasing the overall duration of built form work), or to have the built form work completed as quickly as possible.

  - Respite periods could potentially be adopted by having noisy activities being carried out a continuous block of up to three hours, with a minimum of one hour between each block where no noisy equipment are used.
  - Alternative respite periods could be negotiated if agree upon with potentially impacted receivers. For example, use of hydraulic hammers could be limited to 9:00am – 5:00pm on weekdays when the surrounding residents are likely to not be at home.
- All employees, contractors and subcontractors are to receive site induction, toolbox talks and ongoing training so that the above noise management measures are implemented accordingly. Content within toolbox talks will include location of nearest noise sensitive receivers, relevant project specific and standard noise / vibration mitigation measures, permissible hours of work, truck route and truck loading restrictions and employee parking areas.

Vibration Management Measures

- The proper implementation of a vibration management plan is required to avoid adverse vibration disturbance to affected occupancies. Consultation with occupants and property owners is recommended and should be aimed at providing a communication path directly to the contractor.
- A management procedure is to be implemented to deal with vibration complaints. Each complaint will be investigated and where vibration levels are established as exceeding the set limits, appropriate amelioration measures shall be put in place to mitigate future occurrences.
- Carry out vibration testing of actual equipment on site prior to the built form work to determine acceptable buffer distances to sensitive receivers. Where built form work activities are within the acceptable buffer distances determined from site testing, additional vibration monitoring is to undertaken which signals to the contractor (by way of buzzer, flashing lights, etc.) when vibration level approach / exceed the recommended limits. Further details of the monitoring procedures are set out in Section 7.7.1.
- Where vibration is found to be excessive, management measures must be implemented to ensure vibration compliance is achieved. Management measures may include:
- Using smaller equipment or modifying the built form work method (eg. using bored or vibratory piling preferentially to impact piling) where feasible;
  - Establishment of safe buffer zones; and
  - Time restrictions to the operation of vibration intensive plant to address human comfort.

			▪ Notification by letter drop should be carried out for the nearest surrounding residential properties (at a minimum, NCAs 3 and 4 along Duff Parade, East Corrimal which are closest to the built form works) to address potential community concerns that perceived vibration may cause damage to property. Notification is to be provided to these receiver prior to the commencement of built form work.
Traffic, Transport and Access	Impacts on the existing road and rail network.	O	Cumulative impacts from multiple stages are being constructed simultaneously are therefore not expected to require further mitigation measures.
Operational Waste Management	Waste and pollution of the site and surrounding community as a result of operation.	O	The following sections provide additional recommended mitigation measures for the operational phase: <u>Education</u> Educational material encouraging correct separation of general waste and recycling must be provided to all tenants and contractors. This should include the correct disposal process for bulky waste such as desks, chairs, large, discarded items, and other materials including electronic and chemical wastes. It is recommended that building management ensures that information is provided in multiple languages to support correct behaviours, and to minimise the possibility of contamination in communal bins. Education and communication must be provided consistently on a regular basis to encourage behaviour change and account for transient building personnel such as new tenants, or cleaning staff. Information should include: ▪ Descriptions of items accepted in the general waste and recycling streams (refer to Council guidance); ▪ How to dispose of bulky waste and any other items that are not general waste or recycling; ▪ Staff and tenants obligations to health and safety as well as building management; and ▪ How to prevent cross contamination among waste streams. <u>Signage</u> Signage and education are essential components to support best practice waste management including resource recovery, source separation, and diversion of waste from landfill. Signage should include: ▪ Clear and correctly labelled bins, ▪ Instructions for separating and disposing of waste items. Different languages should be considered, ▪ Locations of, and directions to, the waste storage areas with directional signs, arrows, or lines,

- The identification of all hazards or potential dangers associated with the waste facilities, and
- Emergency contact information should there be issues with the waste systems or services in the building.

Building management is responsible for waste room signage including safety signage. Appropriate signage must be prominently displayed on doors, walls and above all bins, clearly stating what type of waste or recyclables is to be placed in each bin. All signage should conform to the relevant Australian Standards.

Pollution Prevention

Building management shall be responsible for the following to minimise dispersion of site litter and prevent stormwater pollution to avoid impact to the environment and local amenity:

- Promoting adequate waste disposal into the bins • Securing all bin rooms (whilst affording access to staff/contractors)
- Prevent overfilling of bins, keep all bin lids closed and bungs leak-free • Taking action to prevent dumping or unauthorised use of waste areas
- Require collection contractor/s to clean up any spillage when clearing bins

Bin Washing

The bins will be cleaned by the building manager and or cleaners periodically to ensure hygiene and minimise odour. Bin washing can occur within the bin rooms, using the room clean down facilities (i.e., tap connection and drain). Alternatively, a specialist bin washing contractor can be engaged to clean the bins to an agreed schedule. The specialist bin contactor would collect the bins from the bin holding area and clean the bins with their specialised vehicle. It is recommended that a dustpan and a broom is provided in this room for staff and cleaners to clean up unexpected spillages when using bins.

Bin Moving Paths

The building managers are responsible for the transportation of bins from their designated operational locations to the collection area, returning them once emptied to resume operational use. Any movement of bins should minimise manual handling where possible, as bins become heavy when full. The building manager must assess manual handling risks and provide any relevant documentation to key personal.

The routes along the bin moving path should;

- Allow for a continuous route that is wholly within the property boundary. • Be free from obstruction and obstacles such as steps and kerbs.
- Be constructed of solid materials with a non-slip surface

			▪ Be A minimum of 300mm wider than the largest bin used onsite. ▪ If bins are moved manually, the route must not exceed a grade of 1:14. ▪ If a bin moving device is used, the route cannot exceed the maximum operating grade of the device. This is typically a grade of 1:4, however this will vary depending on the model of bin moving device acquired for the site. As the distance of the bin moving paths exceeds 10m, a bin moving device will be required to aid the movement of full bins. The school management is responsible for supplying all equipment required for moving bins this includes any bin lifters, bin moving devices and waste transfer bins. This equipment must be new and appropriate for the site. The school management should contact a bin-tug, trailer or tractor consultant to provide equipment recommendations. Once the site is operational, the building manager will be responsible for maintaining, repairing and replacing waste management equipment. Bins may have to be fitted with hitches to enable the simultaneous transportation of multiple bins to the collection area. Council must be informed of any hitch attachments required to be installed on bins.
Water Management	Protect and maintain quality of water bodies on the site and within he surrounding environment.	O	To ensure these water quality targets are consistently met, a routine monitoring and maintenance program has been proposed. Oceanguard GPTs will be cleaned every three months or following major storm events, with tasks including removal of litter, clearing of inlets and outlets, and inspection of baskets to maintain flow efficiency. StormFilter units will be inspected every four months, with additional checks after heavy rainfall. Indicators such as standing water or reduced flow will guide maintenance actions, including rinsing or replacing filter cartridges. These procedures are designed to maintain optimal performance of the treatment system and prevent pollutant build-up over time.
Ground and Water Conditions	Soil resources and related infrastructure, riparian lands on and near the site and including soil erosion, saline intrusion, Acid Sulfate soils	C	▪ Soil and water management plans incorporated in a Construction Environmental Management Plan (CEMP) to manage risk. ▪ Erosion and sediment control measures in accordance with Blue Book (DECC, 2008). ▪ Incorporate water quality monitoring plan into the CEMP that will constantly monitor water quality of receiving water bodies. ▪ Soil and water management plans incorporated in a CEMP to manage risk. ▪ Erosion and sediment control measures in accordance with Blue Book (DECC, 2008). ▪ Extraction rates, drawdown and water quality monitoring requirements incorporated into a dewatering management plan (DMP)

- All construction groundwater to be discharged during basement construction dewatering is to be appropriately treated and to comply with adopted discharge water quality criteria (DWQC).
- Provide adequate deep soil and permeable landscape areas as vegetation buffer strips. Incorporation, were possible, of permeable pavements and appropriate design of stormwater detention.
- Storage of hazardous liquids and refuelling operations to take place in bunded areas to reduce chance of spillage causing impacts
- Incorporate water quality monitoring plan into CEMP that will constantly monitor water quality of receiving water bodies.
- Extraction rates, drawdown and water quality monitoring requirements incorporated into a dewatering management plan (DMP)
- Reduce dewatering time period during basement excavations.