251 Adelaide Street Raymond Terrace

Earthwork Management Plan

Contents

1. Document History and Status

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v-01	2022-03-16	Chris Xistouris	Chris Xistoris		A

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1	Development Director	Chris Xistouris
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1. INTRODUCTION

1.1. BACKGROUND

This Earthwork Management Plan (EMP) has been prepared to identify spoil and fill related issues associated with fill earthworks to make suitable for future residential development and outline proposed mitigation measures to mitigate potential impacts. This Fill management plan is an annexure to the EIS. EIS briefly addressed environmental measures in place and relevant guidelines to be followed to minimise impact on soils and geology.

1.2. PURPOSE OF THIS PLAN

This EMP is being developed to address relevant details of fill earthworks. It also addresses the relevant commitments from the EIS and Representations Report.

The objectives of this EMP are to: outline an effective monitoring, auditing and reporting framework to assess the effectiveness of the controls implemented.

- Meet the sustainability objectives, targets and requirements
- Compliant with the Project Deed, authority requirements and relevant codes and standards.
- Brief processes and procedures that will be used for the management of spoil, including those for Virgin Excavated Natural Material (VENM), Excavated Natural Material (ENM) and other EPA approved materials.
- Present processes for spoil and fill material handling, transportation and movement, stockpiling, reuse and disposal to protect the environment and maximise the reuse of earthen materials generated on site;
- Identify spoil and fill issues potentially arising from the development;
- Minimise spoil removal and associated impacts on stakeholders, community and the environment.
- Respectful of traffic demands.
- Be safe, timely and achieve 'value for money'.
- Spoil is managed in an orderly and logical manner

2. LEGISLATIVE AND REGULATORY

2.1. RELEVANT LEGISLATION

Key environmental legislation relating to spoil and fill management includes;

- Protection of the Environment Operations Act 1997
- Waste Avoidance and Recovery Act 2001.
- All machinery entering the site must be appropriately washed down and disinfected prior to work on site to prevent the potential spread of weeds, Cinnamon Fungus (Phytophthora cinnamomi) and Myrtle Rust (Pucciniales fungi) in accordance with the national best practice guidelines for Phytophthora (O'Gara et al., 2005) and the Myrtle Rust factsheet (DPI, 2015) for hygiene control.
- Control weeds using a 'staged approach' as per the bitou bush monitoring
- manual(https://www.environment.nsw.gov.au//topics/animals-andplants/
- pest-animals-and-weeds/weeds/widespread-weeds/staged-approachto-weed-control)

2.2. COMMITMENTS FROM THE EIS

This plan has considered the requirements stated in the EIS as follows.

Issue	Mitigation Measure
Construction Methods	Excavated material would be hauled directly to fill areas • Fill material would be compacted by rollers and vibrating compactors and then graded • A balance in cut and fill earthworks would be sought through detailed design
Spoil , Waste and Hazardous Material Handling	Solid waste would re-used on site as fill. Otherwise, it shall be disposed of at an approved location. Any waste material that are excluded from definition of solid waste and subsection of 40 CFR Section 261.4(a), shall be handled and disposed in accordance to RCRA Subtitle C Regulation.
Flora and Fauna	Ensure soil and fill introduced to the project does not contain noxious weed material.

2.3. ADDITIONAL APPROVALS, LICENCES, PERMITS AND REQUIREMENTS

Prior to the commencement of construction, Raymond Terrace Parklands shall obtain the necessary permits/approval from local council and Licence from other relevant authorities as required. The estimated quantities of material imported into the site throughout the development (approx 60,000m3 as detailed in this plan) have been utilised to determine the appropriate yearly activity scale and licence fee. In addition, site management plan will be prepared to include early work management plan prior to commencement of work.

2.4. REFERENCES AND GUIDELINES

The key reference materials relevant to management of spoil and fill during the design and construction of the earth raising include

- General Guidelines and Standards:
- Soils and Construction – Volume 1, 4th Edition (Landcom) March 2004;
- Managing Urban Stormwater: Soils and Construction, Volume 2, Book 4,
- Waste Classification Guidelines (DECCW 2009).
- NSW Waste Avoidance and Resource Recovery Strategy 2014–21

2.5. NSW WASTE AVOIDANCE AND RESOURCE RECOVERY STRATEGY 2014-2021 COMPLIANCE TABLE

Objective	Compliance
Avoid and reduce waste generation	It is unlikely that the proposed development will generate waste to be sent to landfill. All site cleared material will be harvested by local timber yards. Should there be any waste materials found onsite, it will be categorized to 2 groups (recyclable & non-recyclable). The proposed development suggests to reuse ENM, VENM or other EPA approved material (suitable for future residential development usage), sourcing from various locations within Newcastle and Sydney Region. This practice will greatly reduce the number of fills going straight to landfill.
Increase recycling	The proposed development increases recycling/reuse of spoil/fill materials. This has significantly reduced energy usage that would derived from recycling center in sorting process. Reducing energy usage would indirectly reduces carbon footprint and other direct/indirect activities involve in sorting process.
Divert more waste from land fill	The proposed development does not involve any waste infill nor diverting more waste from and to landfill.
Manage problem wastes better	The proposed development does not involve any waste infill to the subject property. Nevertheless, a waste management plan could be prepared in accordance to waste classification guidelines and local council requirement, prior to commencement of site work.
Reduce litter	It is unlikely that the proposed development will have direct/indirect impact towards reduce litter. Nonetheless, site waste management plan will be prepared with the objective to reduce littering during development.
Reduce illegal dumping	The proposed development is seeking guidelines and proper licence to import ENM/VENM and other approved materials from various sites of Newcastle and Sydney Region. Proper records/ documentations will be made available according to licence / approval condition, to meet compliant.

3. BACKFILL INFORMATION

3.1. MATERIAL TYPE

- For the purpose of this EMP, fill can be defined as earthen material excavated within site and relocated elsewhere as compacted fill or imported from off site for utilization in earthworks. The proposed fill is likely to be ENM or VENM.

- Topsoil occurs between approximately 50-200mm of natural ground surface. Remove unusable top soil and stock pile usable topsoil will be maximised on site to minimise the import of external topsoil for revegetation and landscaping purposes. Topsoil needs to be carefully managed to ensure the seed bank viability is maintained and processes to maximise viability.

3.2. EXPECTED VOLUMES AND SOURCES OF FILL

- There are various sites recent approved within Sydney Region and Newcastle. Approximately 60,000 m^3 of material is estimated to be import offsite. The imported soil is expected to be EPA approved material that is suitable for residential development.

- The cut / fill ratios aim to achieve an overall balance. It is expected that all soil generated within the development will be utilised as fill or placed for noise barriers or landscaping works.

- It should be noted that aggregate and sand will be required. The source location for this material is likely be sourced from local quarries if unable to be produced on site.

3.3. SPOIL CLASSIFICATION

- The classification of spoil will be undertaken in accordance with the Waste Classification Guidelines: Part 1 Classifying Waste (EPA 2014), including the implementation of a spoil sampling and analysis program during excavations. This will determine the type of spoil:

- Virgin Excavated Natural Material (VENM): DECCW places no specific restrictions on reuse options of VENM

- Clean fill: If deemed suitable (i.e. waste classification and poses no environmental or OH&S risk) can be used as fill on site. Topsoils are suitable for reuse in rehabilitation works

- Potentially contaminated material: Requires management or disposal in accordance with DECCW Waste classification guidelines 2014 and the Hazard and Risk Management Plan.

3.4. TRANSPORTATION AND STORAGE OF FILL

- The required fill be transported both within and outside the development boundary during the earthworks. Site access points as detailed in Traffic Management Plan, should be implemented, as well as soil and erosion control plan.

- Standard dust and mud tracking controls shall be implemented as per Air Quality Impact Assessment report recommendation and additional requirements to be detailed in development traffic and safety plans at later stage, prior to commencement of work.

- Storage of temporary stockpile areas for the site will be located as detailed in the soil and erosion control plan. This shall be observed onsite to determine and relocate as require.

- Thorough site analysis and work methodology shall be revisited prior to site commencement to maximise direct placement and minimise double handling and stockpiling requirements.

- Dust, erosion and sediment control measures will be implemented as required to minimize air and water quality impacts, as suggested in Virid IFC Qir Quality Impact Assessment and Erosion Control Plan.

4. ENVIRONMENTAL ASPECTS, IMPACT, AND RISK.

4.1. ENVIRONMENTAL ASPECTS

The key aspects of the development that could result in the generation and management of spoil and fill materials are:

- clearing of vegetation;
- clearing of topsoil;
- excavation of earthen material;
- import and transport of earthen material;
- storage/stockpiling of spoil, topsoil and mulch; and
- reuse of spoil, topsoil and mulch.

4.2. ENVIRONMENTAL IMPACTS

The potential fill impacts that may occur during earthworks include:

- water and air pollution due to dust generated from stockpiles,
- weed infestation from dispersion of seeds, etc. during clearing and access upgrading activities water, soil and air pollution from inappropriate storage, handling and disposal of spoil; and
- water pollution due to sediment runoff from spoil excavation and excess spoil storage;
- flora and fauna damage due to sediment runoff from spoil excavation;
- mud-tracking during haulage operations.

4.3. ENVIRONMENTAL RISK ASSESSMENT

- A risk assessment was undertaken using the risk assessment matrix in Table 4.3-1 to identify the level of risk that each of the above activities may present. The results of the spoil and fill related risk assessment are summarised for each proposed activity in Table 4.3-2. Aspects identified as having higher risk may be downgraded if appropriate controls and measures are put in place and maintained.

TABLE 4.3-1 RISK ASSESSMENT MATRIX

Likelihood	Consequences				
	1 Insignificant	2 Minor	3 Moderate	4 Major	5 Severe
A (Almost Certain)	Medium	Significant	High	High	Extreme
B (Likely)	Medium	Medium	Significant	High	Extreme
C (Moderate)	Low	Medium	Significant	High	High
D (Unlikely)	Low	Low	Medium	Significant	High
E (Rare)	Low	Low	Low	Medium	Significant

TABLE 4.3-2 SOIL AND FILL RISK ASSESSMENT AND CONTROLS

Section A Aspect	Section B Potential Impact	Section C Risk Analysis					Controls In place
		Low	Medium	Significant	High	Extreme	
General Excavations	Generating excess spoil from excavations / cuts			x			Water Spray
	Dust generation			X			Water Spray
	Sediment runoff from spoil and fill activites			x			Cattle Grid Water Spray Wash Bay
	Noise Generation during stockpile placement and removal		x				Use low noise generation equipment. If loud noise equipment to be used, this shall be used within outside peak hour to

							minimise disturbance towards neighbours.
Stockpiling	Dust generation		x				Cover stockpile Water Spray Sediment fence
	Weed establishment in stockpiles			x			Separate topsoil, apply herbicides that do not risk harming other protected flora and fauna on site (if any)
	Sediment runoff			x			Cover stockpile Soil and erosion control in place.
Transport of Spoil and Fill	Mud tracking onto public roads			x			Wash Bay Water Spray.
	Dust emissions from uncovered loads		x				All vehicles will be required to have load covered during the transportation. Uncovered loads will not be permitted to enter site.
	Pavement wear on local roads		x				Temporary restoration during earthwork progress and permanent restoration upon completion.

Reuse of excavated material	Dispersal of weeds			x			Apply herbicides that do not risk harming other protected flora and fauna on site (if any)
	Erosion and sedimentation			x			Implement soil and erosion control plan.
	Dust			x			Water Spray Sediment fence
Onsite / Offsite Disposal	Approvals and licences to be obtained prior to both on / off site disposal (if any)				x		No work shall commence prior to physical copy of consent/licence physical copy being place

5. ENVIRONMENTAL CONTROL MEASURES

Figure 2: Elements that together will achieve WARR Strategy 2014–21 objectives

- Strategy and target
- Implementation plans
- Investment and incentive
- Regulations and policies
- Compliance and enforcement
- Education and behaviour change
- Economic instruments
- Monitoring and evaluation

5.1. STRATEGY AND TARGET

- Establish development objective (i.e. maximise and expedite development delivery in the a safe, economically, environmentally, minimal disturbance and compliant manner, with the following elements in place.

5.2. IMPLEMENTATIONS PLANS

- Thoroughly vet through site condition and prepare detailed plans and reports (i.e. consultant drawings / reports, site conditions and environmental restriction, company policy and staff handbook etc) to address development cycles.

5.3. INVESTMENT AND INCENTIVE

- Invest and educate personnel via accredited education courses, toolbox meeting, workshop.
- Encourage personnel' to be diligent, responsible and considerate towards self, company and public, during the course of development.
- Encourage personnel to be environmentally conscious.
- Establish rewards system for all personnel if objectives being met.
- (i.e. Sediment runoff is less than 3 times per year)

5.4. REGULATIONS AND POLICIES

- Ensure personnel are qualified person for the allocated task.
- Ensure personnel have access to the relevant up to date regulations and policies.
- Ensure policies are being review on periodic basis and update as required.
- Ensure personnel are briefed on stages basis prior to commencement of works.

5.5. TRAINING AND BEHAVIOUR CHANGE

- All personnel, contractors and utility staff working on site will undergo site induction training relating to environmental issues, including fill management. The induction training will address the following elements related to spoil and fill management:

- the existence and requirements of this sub-plan;
    - spoil handling, stockpiling and disposal management requirements;
    - haulage routes and haul management;
    - managing contaminated soil; and
    - dust and ERSE control mitigation measures.

- Records would be kept of all personnel undertaking the site induction and training, including the contents of the training, date and name of trainer/s.

- Key staff may undertake more comprehensive training relevant to their position and/or responsibility. This training may be provided as "toolbox" training or at a more advanced level by the Environmental Manager or delegated representatives.

- In addition to the above, relevant personnel will also be presented with a site-specific handbook and trained on its purpose and content.

- The handbook shall be used by site personnel as an easy reference guide to assist with planning and implementing environmental mitigation measures on site.

5.6. ECONOMIC INSTRUMENT

- Ensure that site personnel to be diligent on implement their task to ensure no wastage of resources and any savings derive from such practice shall be distributed within group (reward/incentives) and public (minimal disturbance and environmentally friendly.

5.7. MONITORING AND EVALUATION

5.7.1. INSPECTION

Ensure Inspections of spoil and fill activities will occur for the duration of the development. Regular processes including daily visual inspections, documented weekly inspections by environmental staff and management group inspections will be utilised to ensure mitigation measures and environmental controls are working effectively. Where deficiencies in controls or systems are identified, the issue and

required action will be managed and a record maintained to demonstrate timely action and close out.

Auditing Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan and other relevant approvals, licences and guidelines.

5.7.2. REPORTING

Reporting will be undertaken by the Environment Manager on monthly basis. The report will detail relevant training inspections, monitoring and auditing undertaken for the reporting period relating to spoil and fill management on the development.

5.7.3. RECORD KEEPING

Records of the mass haul of material within the site, as well as imported or exported material, will be kept as per the processes described in the Earthworks Management Plan. This will include an overall mass haulage calculation, daily cut to fill records, tips sheets, purchasing or other imported fill records and any documentation required to dispose material off site as detailed in the WRMP. Records will be kept up to date by Engineers and Foremen in accordance with the Earthworks Management Plan.

5.7.4. REVIEW AND IMPROVEMENT OF THE SFMP

5.7.4.1. CONTINUAL IMPROVEMENT

Continual improvement of this plan will be achieved by the continual evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continual improvement process will be designed to:

- identify areas of opportunity for improvement of environmental management which leads to improved environmental performance;
- determine the root cause or causes of non-conformances and deficiencies;
- develop and implement a plan of corrective and preventative action to address non-conformances and deficiencies;
- verify the effectiveness of the corrective and preventative actions; document any changes in procedures resulting from process improvement; and
- make comparisons with objectives and targets.

5.7.4.2. PLAN UPDATE

In between the scheduled audits and reviews, a register of issues will be maintained to ensure that any issues are recorded for future action. Changes to this plan will be approved by the client, Environmental Management Representative and stakeholders (if required) and documented in the document control section for each revision.

The Environmental Management Representative will certify revisions of each plan and determine whether approval from the Department of Planning is required, A copy of the updated plan and changes will be distributed to all relevant stakeholders.

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