DARACON Group

Contaminated Soils Management Plan

Project Sub-Plan

1905

INTEGRATED MANAGEMENT SYSTEM

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Principal Contractor Address:	20 Kullara Close, Beresfield NSW 2322
Project Client:	Lake Macquarie City Council

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1 INTRODUCTION

1.1 GENERAL

Lake Macquarie City Council (LMCC) is proposing to expand the capacity of the Awaba Waste Management Facility (AWMF) located off Wilton Road, Awaba within the Lake Macquarie Local Government Area. The proposed additions to the AWMF form part of LMCC's Waste Strategy, which proposes a sustainable way forward for the management of the city's waste.

A Construction Environmental Management Plan (CEMP) has been prepared to address the Conditions of Approval for the AWMF expansion project, namely condition 1 of Schedule 5, which requires the preparation and approval of a CEMP prior to the commencement of construction. This Contaminated Soil Management Plan (CSMP) has been prepared as a sub- plan to the CEMP to outline the management measures to implement for disturbance or exposure of contaminated soils on site during the construction.

1.2 PURPOSE OF THE REPORT

Daracon has prepared this CSMP for the purpose of protecting workers and the environment from contamination during construction of the AWMF expansion.

The risks covered by this plan only include those associated with contaminated soil materials within the Project. This plan will not be taken to imply the need (or absence of need) for management of any other risks not relating to potential soil contamination. This plan is intended to be a live document subject to revision during the construction period.

1.3 DESCRIPTION OF THE PROJECT

Daracon is responsible for completing key components of the project, including but not limited to construction of two piggyback lined landfill cells (Cells 3 and 4) as broken down in the items listed (but not limited to) below, in accordance with the contract documents and approved design. All works must be carried out while ensuring uninterrupted operation of the existing landfill and associated services.

The key components of the AWMF expansion project comprise:

- Site establishment and management
- Earthworks and subgrade preparation
- Landfill cell construction (Cells 3 and 4)
- Geosynthetics supply and installation
- Drainage and leachate management systems
- Surveying and quality assurance
- Appurtenances and ancillary works

1.4 CONDITIONS OF CONSENT

The CSMP has been developed to satisfy the requirements of the Project Approval 10_0139. Project approval for the AWMF Expansion Project was granted on 8 May 2013. The relevant requirements of the CSMP summarised in **Table 1-1** below.

TABLE 1-1 - APPROVAL CONDITIONS RELATING TO CONTAMINATED SOILS MANAGEMENT

Condition	Details
Schedule 4, Condition 20	The Proponent shall prepare and implement a Contamination Management Plan for the Project to the satisfaction of the Director-General. The Plan shall: a) be approved by the Director-General prior to the commencement of construction; b) identify the statutory consents and approvals that apply to the Development; c) consolidate all relevant management plans and monitoring programs required in the conditions of this approval; d) outline all environmental management practices and procedures to be followed during construction and demolition works associated with the Project; e) describe all activities to be undertaken on the Site during construction of the Project, including a clear indication of construction stages; f) detail how the environmental performance of the construction works will be monitored, and what actions will be taken to address identified adverse environmental impacts; g) describe the roles and responsibilities for all relevant employees involved in construction and demolition works associated with the Project; and h) include arrangements for community consultation and complaints handling procedures during construction and demolition. Note. Construction of the Project shall not commence until written approval of the Plan has been received from the Director-General.

Condition	Details
Appendix 1 – Contamination (CEMP Appendix A)	• Urban Stormwater: Soils and Construction Volume 2 series (DECC, 2008a, 2008b and 2008c) prior to works commencing. The ESCP should include a range of measures in accordance with best practice, including but not limited to progressive/staged vegetation clearing, implementation of sediment fences and flow diversion structures, covering or wetting of stockpiles, usage of excavation materials as future daily cover, ceasing of works and checking the integrity of erosion and sediment controls during heavy rainfall, stabilisation of access points and the installation of rumble grids at access points, and rapid backfilling of excavated pipeline trenches. • LMCC will ensure that an Acid Sulfate Soils Management Plan must be prepared for the proposed works in accordance with the Acid Sulfate Soils Manual (Stone et al., 1998) that will focus on the trenching works for the installation of the sewer pipeline. • LMCC will ensure that a Salinity Management Plan will be prepared for the proposed works that will focus on the trenching works for the installation of the sewer pipeline. • LMCC will ensure that a Contamination Management Plan is prepared and implemented in the event that contaminated land is encountered during excavation. In such an event, works would cease immediately and OEH would be notified. Emergency measures (such as diversion of surface runoff away from contaminated areas) would also be implemented in a timely fashion. • Prior to construction, LMCC will consider the existing Geotechnique Report (Appendix F) and the results of the subsidence risk assessment currently being undertaken by Centennial Coal to support an application being prepared to support future mine-workings. (This report is currently being prepared in partnership with LMCC, the Mine Subsidence Board, Centennial Coal, GSS Environmental, GHD and MSEC). LMCC will undertake a design review to ensure that the final design considers the worst case mine subsidence parameters, and will accommodate the worst-case ground movement identified in either document without suffering structural failure or compromising environmental protection. • LMCC will facilitate the management of erosion and sediment in the operational phase through stability control measures, utilisation of the proposed wheel wash facility, progressive revegetation of capped landfill area and utilisation of the proposed road to minimise surface and vegetation disturbance.

LMCC will ensure that a CSMP is prepared and implemented in the event that contaminated land is encountered during excavation. In such an event, works will cease immediately and OEH will be notified. Emergency measures (such as diversion of surface runoff away from contaminated areas) will also be implemented in a timely fashion.

1.5 OBJECTIVES OF THE CSMP

The key objectives of this plan are as follows:

- Identify contamination that requires management during construction
- Describe management procedures to mitigate risks of harm posed by contamination to site workers, contractors and the environment
- Provide a framework for managing contaminated media in accordance with legislative requirements
- Outline roles and responsibilities for implementation and control of the plan.

If unanticipated changes in site or working conditions occur which are not addressed by the CSMP, the Project Manager or any other authority in charge of the development is responsible for ensuring their appropriate management and having the CSMP updated accordingly. Future operations or more extensive disturbance of the site may involve activities that have not been anticipated by this plan and hence additional site management measures may need to be prepared addressing the specific activities to be undertaken outside the provisions of this Plan.

As this CSMP is specifically to provide guidance with respect to site contamination, it is intended that the Project Manager(s) incorporate this plan into their site management procedures for the broader Work Health and Safety (WHS) and environmental issues associated with construction works at the site.

The provisions set forth in this CSMP apply to all persons involved with construction activities at the site. These provisions are the minimum standard that is required.

Subcontractors may request modifications to this CSMP, based on their own hazard assessments, to incorporate any further provisions for the protection of site personnel and the environment. Any such modifications must be made only to improve health and safety and/or environmental protection measures, and must be made by the Project Manager, with input from an appropriately qualified Environmental Professional as appropriate.

Variations and amendments to this CSMP or its supplementary documents are to be recorded on the document status page.

1.6 KEY REFERENCE DOCUMENTATION

The following documents form key references to this CSMP:

- Project Approval (Application No: 10_0139) Schedules 1-5.
- Landcom (2004) “Managing Urban Stormwater: Soils and Construction — Volume 1” (4t° Ed., 2004), the “Blue Book".
- Protection of the Environment Operations Act 1997 (POEO Act)
- Protection of the Environment Operations (Waste) Regulation 2005
- Contaminated Land Management Act 1997 (CLM Act)

- Contaminated Sites: Sampling Design Guidelines (EPA, 1995)
- Guidelines for Consultants Reporting on Contaminated Sites (OEH, 2011)
- Guidelines for the NSW Site Auditor Scheme (2nd Edition) (DEC, 2006)
- Waste Classification Guidelines, Part 1: Classifying Waste. (NSW EPA 2014)
- Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997. (NSW EPA, 2015)
- National Environmental Protection (Assessment of site Contamination) (NEPM) Amendment Measure 2013.

All reference documentation used in the development of this plan are provided in Section 6.

2 BACKGROUND

2.1 PROJECT SITE

The AWMF is located off Wilton Road, Awaba, approximately 4 km west of the suburb of Toronto and approximately 1.2 km south-east of the township of Awaba within the Lake Macquarie Local Government Area. The AWMF is situated on previously crown land, which was acquired by LMCC (NSW Government Gazette No. 18 of 11 March 2016). The majority of the proposed works are situated within Lot 372 DP 723259, which has an area of 32.5ha including the existing landfill operations. Approximately 23.5ha comprises the existing AWMF facility and the majority of the remaining 9 ha comprises natural bushland. The only component of the proposed works located outside of Lot 372 DP 723259 is a proposed sewer pipeline route that has been assessed under a separate CEMP.

This chapter identifies potential contamination issues within the Project and identifies the potential risks to human health and the surrounding environment.

The following reports were reviewed as part of this assessment:

- Cardno 2012. Additions to Awaba Waste Management Facility - Environmental Assessment — Volume 1 (Main Report), Reference 600308/Rep2744v4. 29 August 2012.

2.2 ENVIRONMENTAL ASSESSMENT FINDINGS

The Environmental Assessment (EA) Report was prepared to provide an assessment and analysis of key issues in relation to the Project as specified in the Director General Requirements (DGRs). The Assessment Report details the existing environment, potential impacts of the proposed works (both in the construction and operational phases) and proposes mitigation and management measures as required to minimise the environmental impacts of the proposed works. The information from the EA relevant to soils at the site and the presence of contamination is summarised as follows:

- Soil landscapes - Soil landscapes across the AWMF site belong to the Awaba Group, characterised by coarse grained sediments of the Narrabeen group and Newcastle coal measures in the Awaba hills. Soil landscapes in the surrounding area and along the sewer pipeline route belong to the Awaba, Doyalson and Wyong Groups. Common and key limitations with these groups include high erosion hazard and strongly acidic soils with low fertility.
- Geology - Bedrock at the AWMF site is anticipated to be Newcastle Coal Measures comprising shale, sandstone, conglomerate, tuff, chert and coal seams. Similarly, bedrock along the pipeline route is anticipated to be Newcastle Coal Measures and Clifton Sub-group of the Narrabeen Group, comprising claystone, sandstone and shale.
- Borehole and test pit logs at the AWMF site show that the combined thickness of topsoil/fill and residual soils across proposed new cell areas A and B varies from approximately 0.2 m to 1.5 m so it is likely that bedrock will be encountered during excavation of the new cells.
- Potential impacts from the construction phase of the AWMF site include:

- Waste soils - In order to construct the proposed cell Areas A and B approximately 92,000 m3 of soil material will need to be excavated from each area (184,000 m3 in total) over the lifetime of the expansion program. The material will be excavated in stages and will not be disposed of but rather will be stockpiled on site and reused as daily cover material for the AWMF landfill as required. Hence none of this material will require disposal or transport off site.
- Potentially contaminated soil material may be exposed during excavations, which would require waste classification and appropriate disposal (potentially off site), if encountered.
- Cleared vegetation from the works footprint of approximately 8.55ha which will be processed at the AWMF as green waste in the proposed green waste processing area, stockpiled on site and reused as mulch during the progressive revegetation of each cell area.
- Minor volumes of excavated soil material for earthworks, building foundations, boxing out of roads, etc.;
- Demolition wastes (the existing weighbridges may be reused if feasible);
- Any excess steel, concrete and/or other construction materials; and
- General litter by construction personnel.

- Potential impacts from the construction phase of the sewer pipeline site include:
  - Soil material excavated during trenching works for the pipeline will be temporarily stockpiled on site along the route. Once the pipeline has been installed this overburden material will be used to back-fill the trench, with no excess overburden material anticipated to be generated (unless contaminated material is encountered that requires appropriate disposal off-site).
  - Approximately 1 ha of vegetation
  - Any excess concrete and/or other construction materials
  - General litter by construction personnel.

- Potential for soil contamination encountered during the construction phase includes:
  - The majority of the area encompassing the proposed landfill extension works is currently undisturbed natural bushland, and as such, it was not anticipated that these areas of the site have significant potential to be contaminated. Contaminated material may be encountered during the excavation works, however excavation is not proposed for the existing landfilled areas, so this risk remains low.
  - There is also some potential for accidental spills associated with construction machinery (particularly during refuelling) and migration of contaminants from the existing AWMF site to adjoining areas (e.g. from the existing landfill cells in stormwater runoff).

- The proposed sewer pipeline route is wholly contained within the road reserves of Wilton, Wangi and Dorrington Roads, with excavation to an expected maximum depth of 2.5 m. Hence encountering contaminated soils along the pipeline excavation route during trenching works is possible but unexpected due to the nature of the site.

- As part of the larger EA, Cardno completed a Phase 1 Contamination Assessment for the works site that consisted of historical title deeds (for Lot 372 DP 723259 only), historical aerial photography, a search of contamination regulatory notices and a site inspection at the AWMF. The site inspection did not include inspection along the proposed pipeline route and no intrusive sampling was completed within the AWMF site or along the proposed sewer pipeline route. Relevant findings are summarised as follows:
  - The AWMF site was commissioned as a landfill in 1986, prior to which, the site was undisturbed bushland with no history of contaminating activities occurring.
  - Contamination likely has occurred at the AWMF site in general due to its use as a landfill; however, any such contamination will be contained within the existing landfill cells and is not expected to be encountered in surrounding lands such as the proposed new cell Areas A and B. No instances of groundwater contamination were recorded at the AWMF site, based on the Annual Returns from 2008 to 2010. Hence it is considered unlikely that groundwater at the landfill site is contaminated. Given the results of the historic database searches it is considered that the most likely contaminants that may be found at the landfill expansion site include contaminants in leachate; and physical waste materials, potentially including asbestos, in the areas to be excavated in Areas A and B directly adjacent to the existing landfill area.
  - The road reserves of Wilton, Wangi and Dorrington Roads and the access road to the Rathmines No. 6 WWPS were already established by 1984. Contamination may be present in the road reserves along the sewer pipeline route. However, this is considered unlikely due to a general lack of historical contamination sources in the vicinity of the sewer pipeline route. It was considered unlikely that groundwater along the proposed sewer pipeline route would be contaminated due to a lack of potential contamination sources in the vicinity of the pipeline alignment.
  - Based on the identified subject site history (the AWMF and road reserves) a Phase 2 (intrusive) Contamination Assessment was not considered necessary as part of the proposed works; however, excavation works immediately adjacent to the existing landfill boundary will be carefully monitored such that any buried waste materials in these areas are not disturbed. It is considered that the landfill expansion site at the AWMF is suitable for the proposed use as a landfill and that the road reserves of Wilton, Wangi and Dorrington Roads are suitable for the proposed installation of the sewer pipeline to convey leachate to the Rathmines No. 6 WWPS.

- LMCC will ensure that a Contamination Management Plan is prepared and implemented in the event that contaminated land is encountered during excavation. In such an event, works will cease immediately and OEH will be notified. Emergency measures (such as diversion of surface runoff away from contaminated areas) will also be implemented in a timely fashion.
- Acid Sulfate Soils - According to OEH's ASS risk maps, the proposed expansion works and additions to the AWMF site are not located on land considered to be at risk of ASS. Encountering ASS was not considered likely for works at the AWMF site (within Lot 372 DP 723259). However, the proposed installation works for the sewer pipeline will pass through two very small areas indicted as land considered being at risk of ASS, with a high probably of occurrence. It is anticipated that ASS will be encountered along the sewer pipeline route, particularly in the vicinity of the Rathmines No. 6 WWPS, as it is located close to the Lake Macquarie estuary. An ASS Management Plan will be prepared to manage this issue.
- This EA concluded that overall, the proposed additions to the existing AWMF would not have a significant environmental impact, providing mitigation and management measures specified in the EA report are employed and implemented during construction and operation.

2.3 POTENTIAL CONTAMINATION SOURCES

Based on the document review the following potential areas and contaminants of concern identified for the site are summarised in **Table 2-1** below.

TABLE 2-1 - POTENTIAL CONTAMINATION SOURCES

Description	Rationale	Potential Contaminants of Concern
Existing landfill	Physical waste materials, potentially including asbestos, in the areas to be excavated in Areas A and B directly adjacent to the existing landfill area.	Heavy metals, total recoverable hydrocarbons (TRH), Benzene, toluene, ethyl benzene and total xylenes (BTEX), polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyl's (PCBs), organochlorine pesticides (OCPs), organophosphorous pesticides (OPPs), phenols and asbestos
Contaminants in leachate	Leachate from the existing landfill site entering the groundwater system in the proposed new cell areas	Heavy metals, TRH, BTEX, PAHs, PCBs, OCPs, OPPs, phenols, nutrients
Illegal dumping or site spill over	Potential dumping of building and waste materials	Heavy Metals, TRH, BTEX, PAHs, PCBs OCPs, OPPs and asbestos
Existing road reserve	Use of the road reserve and subsequent run-off transporting fuel and oil residues.	Heavy metals, TRH, BTEX, PAHs, OCPs and OPPs
Existing road reserve	Former weed spraying along the road reserve.	Heavy metals, OCPs and OPPs
Acid Sulfate soils	Disturbance of acid Sulfate SOils	pH, heavy metals

2.4 SAFETY AND ENVIRONMENT RISK

The following safety and environmental risks have been identified:

- Construction activities have the potential to disturb contaminated soils, particularly during the earthworks stage. If inadequately managed, the disturbance of any areas of contamination has the potential to impact on human health and surrounding environment.
- If inadequately managed, hydrocarbon spills and leaks from construction vehicles have the potential to contaminate soils.
- If inadequately managed, run off and erosion from stockpiling of soils and materials can impact on sensitive environmental areas.

3 RELEVANT GUIDELINES AND POLICIES

This CSMP has been prepared with consideration of the relevant guidelines and policies listed below. All references to Acts, Regulations and Guidelines are current as of the time of preparation of this Plan. These will be checked and updated as required, and the intent of the Plan is to require reference to Acts, Regulations and Guidelines current at the time of use.

3.1 PROTECTION OF THE ENVIRONENT OPERATIONS ACT 1997 (POEO ACT)

The POEO Act aims to protect, restore and enhance the quality of the environment. Under the Act, it is an offence to pollute the environment. The Act has consolidated several pieces of previous environmental legislation. The Act administers a number of related regulations, and also controls the transport and disposal of wastes.

The provisions of the POEO (Waste) Regulation 2005 will apply to the classification and disposal of waste materials from the site.

The Project Manager will be responsible for ensuring the works are carried out in accordance with the regulatory requirements such as those arising under the POEO Act 1997.

3.2 CONTAMINATED LAND MANAGEMENT ACT 1997 (CLM ACT)

The CLM Act controls the assessment of contamination and requirement of remediation of soils and groundwater. The act also contains guidance for the determination of whether a site presents a significant risk of harm and allows for accreditation of Auditors.

3.3 GUIDELINES FOR CONTAMINATION ASSESSMENT AND MANAGEMENT

NSW has a comprehensive suite of guidelines relating to assessment and management of contamination, administered under the Contaminated Land Management Act (CLM Act) 1997 and the Protection of the Environment Operations Act (POEO Act) 1997. These include the following:

- Contaminated Sites: Sampling Design Guidelines (EPA, 1995)
- Guidelines for Consultants Reporting on Contaminated Sites (OEH, 2011)
- Guidelines for the NSW Site Auditor Scheme (2nd Edition) (DEC, 2006)
- Waste Classification Guidelines, Part 1: Classifying Waste. (NSW EPA 2014)
- Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997. NSW EPA, 2015

The National Environment Protection (Assessment of Site Contamination) Measure 1999 (referred to here as the NEPM) was produced by the federal National Environmental Protection Council (NEPC) in 1999 and has been revised and updated in 2013 by way of the National Environmental Protection (Assessment of site Contamination) Amendment Measure 2013. The NEPM provides a national framework for conducting assessments of contaminated sites in Australia.

3.4 STATE ENVIRONMENT PLANNING POLICY 55

SEPPSS introduces state wide planning controls for the remediation of contaminated land. Under the provisions of SEPPSS, “land must not be developed if it is unsuitable for a proposed use owing to contamination and must be remediated prior to development”.

Under the requirements of the SEPPSS, remediation is to be classified as either:

- Category 1— remediation work for which development consent is required.
- Category 2 — remediation work not requiring development consent.

In accordance with SEPP 55, for Category 2 remediation works, LMCC is to be notified 30 days before the remediation works commence.

3.5 WORK HEALTH AND SAFETY ACT 2011

All works will be in accordance with relevant provisions of the Work Health and Safety Act and Regulation 2011. Asbestos works will follow the guidelines of the Safe Work Australia Code of Practice - How to Manage and Control Asbestos in the Workplace (December 2011), and the Code of Practice — How to Safely Remove Asbestos (December 2011).

4 MANAGEMENT REQUIREMENTS

4.1 ROLES AND RESPONSIBILITIES

The following table outlines the main parties who will have involvement in use of this CSMP, and their respective roles and responsibilities. This table is not intended to list all responsibilities under relevant legislation (e.g. including but not limited to the WHS Act and regulations) but is presented as a brief clarification of the parties' respective responsibilities in implementing this Plan.

TABLE 4-1 - PARTIES INVOLVED IN THIS PLAN AND ASSOCIATED RESPONSIBILITIES

Title	Responsibility
Site Owner: Lake Macquarie City Council	Responsible for promoting good environmental and WHS management.
Project Manager	Responsible for: • Ensuring all personnel entering the site are inducted to an appropriate level in environmental and emergency procedures • Implementing, controlling and maintaining the CSMP • Providing subcontractors with the requirements of this CSMP prior to commencement of work • Ensuring that all changes to the CSMP are communicated to all personnel working on site, including subcontractors
Project Supervisor	Responsible for: • Taking all practical measures to ensure the workplace under their supervision is operating according to the agreed principles of the CSMP, and without risks to health or the environment • Ensuring all personnel under their control entering the site are inducted to an appropriate level in environmental and emergency procedures • Responding to any WHS or environmental incident • Ensuring any changes to the CSMP or procedures are communicated to all personnel under their control
Subcontractors	All subcontractors are required to comply with the CSMP and to comply with directions from the Project Manager in this respect.
Employees and Visitors to Site	Responsible for attending appropriate induction and training sessions, following procedures and making the Project Manager aware of any actual or potential breaches of procedures. Where encountered, reporting of previously unidentified areas of contamination to the Project Manager.

4.2 SITE CONTROL

4.2.1 MAINTENANCE

This CSMP allows for potentially contaminated soil and waste materials to remain in place, under the condition that exposure to contaminated soil and/or waste materials is prevented or appropriately managed. For that reason, the following general maintenance guidelines must be implemented:

- Ensure the work area (e.g. ground surface) is in good condition, with adequate dust and erosion control
- Inspect the condition of work areas regularly
- Correct as necessary

The Site Manager will also undertake periodic checks to ensure there is no soil erosion occurring around any drainage areas. Will soil erosion around drainage areas be identified, The Site Manager will take appropriate action as necessary.

4.2.2 SITE ACCESS

The Project Supervisor will ensure that the site is securely fenced and designated work areas (excavation and stockpile zones) are adequately controlled to prevent unauthorised persons from accessing the work area, including excavations or stockpiles, and subsequently gaining direct access to the potentially contamination zones, or to areas of operating machinery.

All personnel entering the site must report to the Site Manager before entering the site. All personnel within the site will be required to meet the applicable personal protective equipment (PPE) requirements (refer to Section 4.4), and all workers must have undertaken Occupational Health and Induction Training as defined in Work Health and Safety Act and Regulation 2011.

All visitors and on-site workers will be required to complete a site safety and environmental induction (commensurate in detail with the activities they will be undertaking on site, as determined by the Site Manager), and consequently acknowledge understanding of the site Health, Safety and Environmental Management procedures prior to commencement of any activity on the site.

Vehicle access to the site will be controlled in accordance with a Vehicle Movement Plan and the requirements of Section 4.6.4.

All operations in relation to site vehicle access routes will further be in accordance with the guidelines documented within *Managing Urban Stormwater: Soils and Construction 4th Edition.* Landcom March 2004.

4.2.3 NOTIFICATION

All persons entering the site must be made aware that a CSMP exists in relation to the potential for contaminated soil to be present onsite. This will be included during the general site induction process (see Section 4.2.4 below) and is also recommended to occur through appropriate signage located at the entrance to the site, such as:

"The grounds at this site are subject to a Contaminated Soil Management Plan.

All personnel working on site must report to the Site Manager for a site-specific induction prior to commencing work [Site Manager contact details].

For after-hours or emergency advice contact [name and mobile phone number]."

Anyone ordering or requiring intrusive works or disturbance of the site including vehicular access, must notify the staff member or sub-contractor concerned of the CSMP.

Sub-contractors will be provided with a copy of this CSMP when quotes or tenders are sought from them for works that may cause site disturbance.

4.2.4 INDUCTION

It is the responsibility of the Project Manager or person responsible for the site to ensure that all visitors and on-site workers complete a site specific occupational health and safety training safety induction (commensurate in detail with the activities they will be undertaking on site, as determined by the Site Manager), and consequently acknowledge understanding of the site Health Safety and Environmental Management procedures prior to commencement of any activity on the site. In regard to issues associated with contaminated soil, the induction process will include explanation of the requirements of this CSMP and the training must include at least the following topics:

- Identification of the type and locations (area and depth) of potential contamination.
- Identification of hazards associated with contaminated soil and risk control measures.
- Regulatory requirements or codes of practice relevant to identified hazards.
- Site specific safety rules for contamination.
- Accident, emergency and evacuation procedures for incidents involving contamination, and knowledge of any associated equipment on site.

The Site Manager is responsible for establishing site specific safety rules. The rules must be displayed in an easily observable location (nominally in the site office) so as to ensure that all site workers, including sub-contractors, can readily access.

4.2.5 RECORDS

For each person likely to be exposed to a hazardous substance, the Site Manager must keep a record of the following:

- All risk assessment reports indicating a need for atmospheric monitoring or health surveillance, and records of the results of any atmospheric monitoring or health surveillance—for at least 30 years after the date of the last entry in them.
- A record of all induction or other training.
- A copy of relevant statements of WHS induction training, or a statement indicating that the Principal Contractor is satisfied that the relevant WHS induction training has been undertaken.
- A brief description of the site-specific training undertaken by the person.

In addition, for persons exposed to asbestos, the following records are required to be maintained for a period of 30 years:

- The full name and date of birth of the employee.
- The address of the employee while employed by the employer.

4.2.6 CONTROL OF SUBCONTRACTORS

Subcontractors whose work will be performed on-site, or who otherwise could be exposed to health and safety hazards, will be required to adopt the provisions of this Plan and will be advised of potential safety and environmental issues on site during site-specific induction training. This induction will include the environmental and occupational health and safety responsibilities, requirements and controls for all subcontractors working on site. All subcontractor activities will be monitored by the Site Manager to ensure compliance with the requirements of this CSMP.

Subcontractors will be solely responsible for the health and safety of their employees and will comply with all applicable laws and regulations. All contractors and subcontractors are responsible for:

- Providing their own personal protective equipment.
- Preparing site specific safe work method statements for work they are undertaking.
- Training their employees in accordance with applicable laws.
- Providing health and medical surveillance and obtaining medical approvals for their employees.
- Ensuring their employees are advised of and meet the minimum requirements of the CSMP and any other additional measures required by their site activities.
- Designating their own Site Safety Representative.

4.3 INCIDENT MANAGEMENT AND EMERGENCY RESPONSE

All incidents will be reported immediately to the Site Manager who will log them in an environmental or WHS incident register. A written Incident Report Form must be completed for any incident or near-miss which may have resulted in an injury. Incident Report Forms are to be completed by the Site Safety Representative and submitted to the Site Manager within 24 hours of the Site Safety Representative becoming aware of the incident.

SafeWork NSW notification is required for any lost time injuries exceeding seven days of lost work and all serious injuries.

4.4 RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE)

All personnel will be required to wear appropriate PPE when working on the site. In relation to contamination, the following items of PPE are required.

- Long sleeve drill shirt
- Long drill pants
- Disposable coveralls (when working in direct contact with contaminated soils/groundwater)

- Chemical Resistant Safety Boots
- Disposable Nitrite Gloves (when working in direct contact with contaminated
- soils/groundwater)
- Safety glasses/goggles
- Dust mask (during dust generating activities)
- Respirator using filters suitable for organics vapours (when working with exposed contaminated soils/groundwater where vapours are present)

In relation to Hazardous Building Materials the following additional items of PPE are recommended:

- P2 (minimum) dust mask
- Rigger style gloves

Disposable gloves and coveralls will be disposed of after use or when deemed necessary. Heavily stained work clothes and other items of PPE will also be disposed or laundered by an appropriate industrial laundering facility. Potentially contaminated clothing will not be taken home for laundering.

4.5 ASBESTOS MANAGEMENT

Prior to any work near or involving waste materials (most likely adjacent to the existing AWMF), the results of any previous asbestos investigations (if available) or asbestos placement records will be checked to see where asbestos has been identified.

If any asbestos containing materials are identified during site works, these materials will be removed in accordance with an asbestos management plan or the provision of the relevant Code of Practice prior to further works proceeding, to avoid disturbance or dispersion of the asbestos containing materials into other areas or materials.

4.6 MATERIAL HANDLING

4.6.1 EARTHWORKS EXCAVATION

The following sequence of steps will be followed prior to commencing any excavation operations on the site:

The Site Supervisor will determine the following:

- The boundaries of the area to be excavated
- The expected depth of excavation
- The manner in which materials are to be excavated and stockpiled
- The areas where stockpiling of excavated material and imported fill material can take place

Prior to the commencement of excavations in the given area, surface run-off protection measures will be constructed around the immediate area of the excavation in order to prevent surface waters running into or out of the excavation. Further details on surface water controls around excavations are given in Section 4.7.

- The Project Supervisor will ensure that at all times the sides of the excavation are stable.
- The Site Supervisor will ensure all excavation works are carried out in a manner that will minimise the mixing of different material types, i.e. contaminated fill and relatively “clean" underlying natural soils. Potentially contaminated material will be segregated and stockpiled separately.
- Removal of any in-ground or underground structures will be undertaken in conjunction with, or following excavation of contaminated soil, to avoid potentially mixing contaminated and uncontaminated materials. Removal of these structures may reveal additional areas of contamination requiring remediation.
- All potentially contaminated soil/fill material must be segregated during excavation and handled appropriately (see Section 4.6.2 below).
- All excavated material will be managed in accordance with Sections 4.6.3 and 4.6.5 (as relevant).
- Upon completion of the excavation the Site Supervisor will ensure that plant and equipment is cleaned and decontaminated.

4.6.2 STOCKPILES AND WINDROWS

Areas for stockpiling of material (including windrows) will be identified and the Site Manager’s approval given for the location of stockpiles prior to the commencement of work. The following guidelines will be implemented as a minimum:

- All stockpiles of soil or other materials will be placed away from drainage lines, gutters or stormwater pits or inlets.
- Sediment and erosion control measures will be used to prevent any migration of soil from
- stockpiles.
- All stockpiles of soil or other materials will be covered if required to prevent generation of dust or odours.
- Stockpiles of more heavily contaminated soils will be placed on concrete or plastic, to minimise potential impacts from leaching or from residues of contaminated soil.
- All stockpiles of contaminated soil will be stored in a secure area and be covered if remaining more than 24 hours. (A secure area is addressed by the requirement for Site Security in Section 4.2.2 above).

4.6.3 DISPOSAL OF SOILS AND OTHER WASTE

Where soil and other wastes are to be removed from site, they must be classified for waste disposal purposes, and disposed in accordance with the requirements of the Protection of the Environment Operations Amendment (Scheduled Activities and Waste) Regulation 2008 made under the POEO Act 1997, and the NSW EPA Waste Classification Guidelines, 2014 (NSW EPA 2014).

An experienced Environmental Professional will be engaged to oversee the classification of the waste. The Site Manager will ensure its transport and disposal at an appropriately licensed waste facility.

The Site Manager will ensure that hazardous and/or intractable wastes arising from the site works are removed and disposed of in accordance with the requirements of the NSW EPA and SafeWork NSW, together with the relevant regulations, namely:

- Occupational Health and Safety Act and Regulations
- Contaminated Land Management Act and Regulations
- Environmentally Hazardous Chemicals Act and Regulations

4.6.4 TRANSPORT

Transportation of contaminated material will be undertaken in accordance with the following procedures:

- A Vehicle Management Plan will be prepared for the site, identifying routes for access and egress for the site.
- Wastes will only be removed for off-site treatment or disposal after the material has been classified and written approval has been received for the disposal of the contaminated soil at the nominated treatment or disposal site.
- Waste tracking for off-site disposal will be undertaken in accordance with NSW EPA requirements (under the requirements of the POEO Act 1997). (Further information for tracking of material / stockpiling on-site is provided in Section 4.6.6).
- The Site Supervisor will issue an instruction to the waste transporter to remove the material to the approved destination. The Site Supervisor will record each load of contaminated material leaving the site. As a minimum, the following information must be recorded:
  - The transporter's name and address
  - The transporter's EPA licence number where applicable
  - The registration number of the vehicle
  - The type and quantity of waste
  - The name and address of the person or company the waste was delivered to (the consignee)
  - The date the waste was delivered to the consignee

This information may not meet EPA's Waste Tracking requirements for the waste types noted in the preceding bullet point. EPA guidelines must be referred to for such wastes.

- A copy of the waste depot's weight-bridge docket (and corresponding EPA docket - if relevant) for each load delivered will be retained by the Site Manager. This will ensure material tracking can be maintained.
- Any vehicles used to transport contaminated materials from the site must be operated by a waste transporter who is licensed in accordance with NSW EPA licensing requirements for the class of waste transported.

- The Site Supervisor or Subcontractor will ensure that all trucks carrying contaminated materials off-site will have the exterior of the vehicle, including wheels, thoroughly cleaned down after it has received its load and prior to the vehicle leaving the site. Only vehicles which have clean exterior bodywork and which will not pollute the off-site transportation corridors will be permitted to leave the site.
- All drivers transporting fill materials from the site will be given a safety instruction brief, detailing the procedures to be followed will spillage of loads or other incidents occur.
- The Site Manager or Subcontractor is to consult with Council prior to selecting the most suitable transport route.

Soil, earth, mud or similar materials will be removed from roadways by sweeping, shovelling or a means other than washing, on a daily basis. Soil washings from vehicle wheels or machinery tracks will be collected and disposed of in a manner that does not pollute waters. The Site Supervisor will be responsible for ensuring that all vehicles/plant leaving a designated contaminated work area are free of contaminated materials.

4.6.5 IMPORTED FILL / RE-USE OF FILL ONSITE

The Site Supervisor will ensure that all fill imported on to the site, and fill proposed to be re-used on site in areas where it was not originally excavated from, is validated to ensure it is suitable for the proposed land use from a contamination perspective and will not impact adversely on the physical characteristics of the site. All fill imported onto or re-used on the site will be validated by either one or both of the following methods:

- Imported fill will be accompanied by documentation from the supplier which certifies that the material is not contaminated based upon analyses of the material or the known past history of the site where the material is obtained.
- Sampling and analysis of the fill/spoil material will be conducted in accordance with the EPA Sampling Design Guidelines (1995) to ensure that the material is not contaminated with samples analysed for chemicals of concern based on the previous site usage / site history of the source site.

4.6.6 MATERIAL TRACKING ONSITE

The Site Supervisor will ensure that all movements of soil and waste materials on-site are tracked. Material tracking documentation will cover all material movements, both onsite and off- site (as required), including interim movements to and from stockpiles, with information including (but not limited to) the following to be documented:

- Date of material movement.
- Original location of material (the source).
- Location where material is stored or disposed of (the destination).
- Volume of material.
- Nature/description of material.
- Any associated supplementary information (e.g. consultants reports, laboratory results).

- Will the materials be disposed off-site, waste tracking will be undertaken in accordance with NSW EPA requirements as detailed in Section 4.6.4 above.

4.7 SOIL AND WATER MANAGEMENT

4.7.1 EROSION / SEDIMENT CONTROL AND RUN OFF CONTROL

All site works will be undertaken in accordance with the Stormwater Management Plan. The Site Supervisor will provide the specific details of the erosion and sediment control measures and will be responsible for their implementation and maintenance throughout the construction works.

Runoff control measures will be as per the Stormwater Management Plan, and will include the following:

- Diversion drains, sumps and pumping systems to prevent runoff entering or leaving excavation areas.
- Sediment ponds and silt traps to manage any runoff from disturbed areas.
- Silt fences and diversion drains to prevent runoff/suspended solids entering or leaving stockpile or disturbed areas.

Due care will be taken to protect any existing vegetation unless removal is required to undertake the site construction works.

No surface runoff and/or water from excavations/pits/trenches from within the working area of the site is permitted to be discharged to the surrounding environment, except as may be required for dust suppression with the express approval of the Site Manager. In no cases will this be permitted where such use will impact surface water quality or lead to erosion or sediment migration.

Stormwater can become contaminated during site works where significant areas of soils have become exposed. A common indicator of contamination is excessive turbidity of surface water. The best policy of managing contaminated surface water/stormwater is to prevent contact with contaminant sources and to eliminate the source of sediment and erosion by the measures discussed in other parts of this section. Where this is unavoidable, generated surface water will be required to be contained. Containment structures can include localised coffer dams or diversion to other holding structures. Contained water will be tested for each potential contaminant and disposed of in accordance with regulatory requirements.

When designing coffer dams, culverts or other on-site stormwater detention devices, consideration must be given to stormwater, erosion and dust issues. Management of surface water, erosion and sediment control will also be in accordance with guidelines provided in Landcom publication *Managing Urban Stormwater: Soils and Construction Activities 4th Edition* (2004).

4.7.2 ACID SULFATE SOILS

Due to the presence and likely disturbance of potential acid Sulfate soils (PASS) a monitoring plan is to be developed which would allow for the detection of ASS during disturbance of soil. The Site Manager will be responsible for the management and co-ordination of the monitoring program. This will include the training of responsible staff in the undertaking of soil and water monitoring, calibration of monitoring equipment and recording all results of monitoring. pH_F and pH_{FoX} will be assessed for each soil stockpile. If a pH_{FoX} of less than three is observed, laboratory testing will be required to determine if PASS is present and to calculate the required timing rate. If laboratory testing is required as mentioned above, a minimum of three bulk core soil sub-samples per 1000 m^3 of stockpile will be mixed together to form one bulk composite sample to be analysed. If laboratory testing indicates that timing is required, stockpiles must be re-worked and agricultural lime added until the minimum required standard is met (18 mol H+/tonne). Aglime quantities will be calculated as detailed in the ASSMAC Guidelines (1998). Laboratory analysis typically takes up to 10 working days. During this time excavated soils that have not been validated for disposal will need to remain on treatment pads within the remediation area. The remediation area will be designed in accordance with ASSMAC Guidelines.

Soils that are taken offsite will be classified for waste disposal in accordance with the NSW EPA Waste Classification Guidelines, 2014 (NSW EPA 2014) as per Section 6.5.3.

4.7.3 GROUNDWATER MANAGEMENT

If groundwater management such as for dewatering is required, a dewatering management plan (DMP) (including provisions for ASS) will require preparation and would outline the requirements on storage, treatment and discharge for groundwater that is likely to be pumped out of excavations during the construction.

4.8 COMMUNITY HEALTH AND SAFETY

To ensure the protection of the local community, the Project Manager will implement the following:

- Site security measures to control direct contact with the contamination
- Dust suppression measures to control inhalation exposure
- Cleaning and tarping trucks to control direct contact from migration of contaminated soils

4.9 CONTINGENCY PLAN (UNEXPECTED HAZARDS)

The presence of previously unidentified types of contaminants may be identified during works by observation of any unusual physical/sensory characteristics of the impacted soil or groundwater. The Site Manager will be notified if such impacts are noted. Will any unexpected situations be encountered, the following procedures will be followed:

- Stop work and make the area secure

- Notify the Site Manager
- Wait for further direction

The following outlines some of the unexpected situations that may arise:

- Unexpected discovery of buried hazardous building materials (HBMs) such as ACM.
- A greater volume of potentially contaminated soil may be encountered than is presently estimated (at this stage there is a low risk of encountering contaminate soils).
- Contaminants in addition to the potential types already identified on-site may be encountered (e.g. drums or material with visual or olfactory evidence of contamination).
- Contaminated material may fail the NSW EPA Waste Classification Guidelines, and not be acceptable for disposal.
- Side effects of site works such as unacceptable levels of odour, noise, dust, and surface runoff may be generated.
- Separate phase hydrocarbons (“free product") may be encountered during excavations or be spilled by equipment.

The services of an appropriately qualified environmental professional may be required to provide further assessment and recommendations.

5 MONITORING AND INSPECTION

5.1 MONITORING

The environmental monitoring schedule provides an outline of the monitoring programme to address practicable measures to prevent and minimise harm to the environment as a result of the proposed works (these are outlined in the CEMP).

All water quality monitoring shall be carried out in accordance with *AS 5667.1 1987* and *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales* (EPA 2022).

5.2 INSPECTION

Environmental inspections are to be completed in accordance with the following schedule:

- Weekly
- Following rain events

Environmental inspection reports will be completed by the Site Supervisor or Environmental Officer using the ***Environmental Inspection Report FRM.01803*** (completed within **'Donesafe'** online Project Management Platform – Refer Appendix B of the CEMP) and forwarded to the Project Manager on a weekly basis. Environmental Inspection Reports will be made available to LMCC on a monthly basis.

5.3 CEMP AND SUB-PLANS REVIEW

The CEMP is a controlled document and shall be managed in accordance with Daracon's ***Records and Document Management*** procedure (PRO.004 – refer Appendix B of the CEMP). Section 4.5 of the CEMP contains specific details relating to the control and review requirements.

5.4 REPORTING

Reporting requirements and responsibilities are documented in the CEMP.

6 REFERENCES

- Ahern, C.R., Stone, Y. and Blunden, B. (1998) Acid Sulfate Soils Assessment Guidelines,
- Acid Sulfate Soil Management Advisory Committee, Wollongbar, NSW, Australia.
- Cardno (2012). Additions to Awaba Waste Management Facility - Environmental Assessment — Volume 1 (Main Report), Reference 600308/Rep2744v4. 29 August 2012.
- Code of Practice — How to Manage and Control Asbestos in the Workplace, Safe Work NSW, 2011
- Code of Practice — How to Safely Remove Asbestos, Safe Work NSW, 2011 Contaminated Land Management Act 1997 (CLM Act)
- Landcom (2004). Managing Urban Stormwater: Soils and Construction — Volume 1 (4th Ed.,
- 2004), the “Blue Book"
- NEPC (2013). National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999. National Environment Protection Council, as amended in May 2013.
- NSW DEC (2006). Contaminated sites: Guidelines for NSW Site Auditor Scheme, (2nd Edition). New South Wales Department of Environment and Conservation, 2006.
- NSW EPA, 1995, Contaminated Sites: Sampling Design Guidelines
- NSW EPA, 2014, Waste Classification Guidelines, Part 1: Classifying Waste
- NSW EPA, 2015, Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997
- NSW OEH (2011). Contaminated sites: Guidelines for Consultants Reporting on Contaminated sites. New South Wales Office of Environment and Heritage, 2011.
- Protection of the Environment Operations (Waste) Regulation 2005 Protection of the Environment Operations Act, 1997
- Work Health and Safety Act, 2011
- Work Health and Safety Regulation, 2011

7 TERMS AND ACRONYMS

ACM	Asbestos Containing Material
AHD	Australia Height Datum
ASS	Acid Sulfate soils
AWMF	Awaba Waste Management Facility
BTEX	Benzene, toluene, ethyl benzene and total xylenes
CEMP	Construction Environmental Management Plan
CSMP	Contaminated Soil Management Plan
CLM Act	Contaminated Land Management Act
DEC	Department of Environment and Conservation
DGRs	Director General Requirements
EA	Environmental Assessment
EPA	NSW Environment Protection Authority
HBM	Hazardous Building Materials
LMCC	Lake Macquarie City Council
ML	Mega Litre
NEPM	National Environmental Protection Measure
NSW	New South Wales
OCP	Organochlorine pesticides
OEH	Office of Environment and Heritage
OPP	Organophosphorous pesticides
PAHs	Polynuclear Aromatic hydrocarbons
PASS	Potential acid Sulfate soils
SEPP	State Environmental Planning Policy
PCBs	Polychlorinated Biphenyl's
POEO Act	*Protection of the Environment Operations Act 1997*
PPE	Personal Protective Equipment
TRH	Total recoverable hydrocarbons
WWPS	Waste Water Pumping Station
WH&S or WHS	Work Health and Safety

APPENDIX 1 Acknowledgement Register

This register is for the purpose of recording that persons managing the site and persons conducting work at the site have read the Contaminated Soil Management Plan and are aware of the nature of contamination hazards and the controls necessary to manage the risks associated with the hazardous materials.

By signing this form, you are acknowledging you have read this document, understand the contents and undertake to abide by the requirements of this Plan.

Date	Read by	Signature	Company	Departmental Contact