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Environmental Guideline - Managing Contaminated Material during Ground Penetration and Excavation

1. BACKGROUND

In many cases the entire footprint of Tasmanian Ports Corporation Pty Ltd's ("Tasports") owned, operated or managed land and/or berths ("facilities") will have a moderate to high risk of containing contaminated soil (and groundwater) immediately below surface. This is due to a long history of industrial land-use, reclamation using hazardous fill material and other industrial activities.

Exposing contaminated materials beneath sealed surfaces has potential to:

- represent a risk to human health and/or the environment if not managed appropriately;
- represent a regulatory breach if excavated soil is not treated/disposed of appropriately ; and
- have significant financial impact to Tasports to manage excavated material due to the ongoing escalating costs to treat or dispose of.

Before planning any works that involve ground penetration or excavation, it should be assumed that any soil exposed and/or spoil material generated will be contaminated. This simplifies the decision making process that is required to manage the risks in the planning stages of works and to enables the use of pre-emptive risk management strategies that minimise the inherent risks and consequences associated with not being prepared to deal with contamination.

WARNING – All areas of Tasports' land and berths MUST BE ASSUMED to contain contaminated soil/groundwater. Any requirement to conduct ground penetration and excavation on ANY AREA of the site triggers this Guideline.

WARNING – DO NOT REMOVE excavated materials from Tasports' land and/or berths without prior testing and appropriate approvals in place. Failure to comply may result in a regulatory action including prosecution/fines.

2. PURPOSE

The purpose of this Environmental Guideline is to provide guidance to Tasports' staff, contractors and customers when planning and undertaking any works requiring ground penetration and excavation on any of Tasports owned facilities.

3. SCOPE

This Environmental Guideline:

- forms part of the suite of documentation associated with Tasports' Integrated HSSE Management System and is intended to support the implementation of the Tasports' Environmental Policy [Ref.1];
- applies to all Tasports staff, contractors and customers planning to or undertaking ground penetration or excavation.

Activities with the potential to represent a risk of contamination exposure / management include, but are not limited to:

- underground utility maintenance, installation and up-grading (i.e. trenching, horizontal drilling etc.);
- resurfacing (i.e. bitumen and concrete);
- foundation excavation (i.e. light-poles, fence posts, building footing etc.);

- where excavations are sufficiently deep to encounter groundwater (>2 metres) and/or require de-watering, there is a high risk of exposure to contaminated water.

NOTE: access to existing subsurface pits and manholes represents an increased risk of exposure to hazardous vapours (i.e. hydrocarbons). Change of land use such as construction of office space over contaminated land will require prior assessment to ensure contaminant risks are acceptable.

The steps detailed in this guideline are summarised in the Flowchart – Managing Contaminated Material during Ground Penetration and Excavation [Ref.2].

4. LEGAL AND OTHER REQUIREMENTS

Under the *Environmental Management and Pollution Control Act 1994* (Tas) ("EMPCA"), it is an offence to cause environmental harm or an environmental nuisance. A person has a general environmental duty to take such steps as are practicable or reasonable to prevent or minimise environmental harm or environmental nuisance caused, or likely to be caused by an activity (i.e. disturbance to contaminated material) conducted by that person ("General Environmental Duty").

The *National Environment Protection (Assessment of Site Contamination) Measure 1999* (Cth) (the "Site Contamination NEPM") [Ref.3] sets out a framework for assessment of contamination and the risk to human health and the environment, and the methods for managing contamination. The "Site Contamination NEPM" has effect as a State Policy in Tasmania under Section 12A of the *State Policies and Projects Act 1993* (Tas).

The *Environmental Management and Pollution Control (Waste Management) Regulations 2010* (Tas), also known as the "Waste Management Regulations", are used to regulate the management of controlled waste and some aspects of the disposal of general waste within Tasmania.

Potentially contaminated materials are materials that may contain metals, organic substances or other wastes that, if disposed of in an inappropriate manner, will have a harmful effect on the environment. Information Bulletin 105 Classification and Management of Contaminated Soil for Disposal ("Information Bulletin 105") [Ref.4], defines the criteria used by the Environment Protection Authority ("EPA") for the classification of contaminated soil that requires treatment and/or off-site disposal, and outlines the management of each classification in accordance with the *Environmental Management and Pollution Control (Waste Management) Regulations 2010* (Tas). For the purposes of Information Bulletin 105, soil also includes dredge spoil.

Under Regulation 12 of the Waste Management Regulations, persons may apply to the Director, EPA for an environmental approval for the handling, production, receipt, storage, reuse, recycling, reprocessing, salvage, incineration, treatment, disposal or use for energy recovery of controlled waste and the disposal of general waste.

The *Environmental Management and Pollution Control (Controlled Waste Tracking) Regulations 2010*, (Tas) also known as the "CWT Regulations", are used to regulate the movement of controlled waste within Tasmania. The "CWT Regulations", only apply to intrastate controlled waste movements, and entirely exclude interstate controlled waste movements, i.e. movements to which the Controlled Waste NEPM applies.

Interstate movements of controlled waste (including the Tasmanian leg of such movements) are "controlled" under the *National Environment Protection (Movement of Controlled Waste between States and Territories) Measure 2004 (the "Controlled Waste NEPM")* (Cth) [Ref.5]. A separate system of applications and approvals applies to interstate movements, as opposed to intrastate movements (i.e. movements originating and ending within Tasmania).

5. ENVIRONMENTAL GUIDELINE

5.1. Early Notification

The Tasports HSE – Permit to Work Procedure [Ref.6], defines the requirements associated with permits to perform work for non-routine and high-risk work activities, including excavation and earthworks. The Tasports Excavation and Earthworks Permit [Ref.7], already contains a check to confirm the potential for contamination has been considered for the planned task. However, it is important to understand that to confirm the potential for contamination this usually requires a number of weeks or months of advance notification to allow informed advice to be given (i.e. to design and complete contaminant testing in proposed areas). Considering the potential for contamination only at the time of completing the Excavation and Earthworks Permit [Ref.7], is too late as this normally occurs immediately prior to works commencing.

It is recommended that as soon as ground penetration and excavation works are first planned (Planning Stage), the Tasports Environmental Advisor be contacted to notify them of the basic scope of works and to attend a Planning Meeting (coordinated by the Project Manager) to identify and assess contamination risk. Design detail is not required, only a broad concept of what is planned. This allows the program to take into consideration any potential constraints at the earliest stage, to minimise the impact to the program rather attempt to manage the constraint around a fixed design.

5.2. Planning Meeting

The planning meeting is a relatively high-level review of the sub-surface works planned in order to determine what sort of risks may have to be addressed, whether the risks can be avoided and if not, provide the best controls to minimise impacts to the program. Points to consider at this planning meeting might include:

- What is the nature and extent of the works (indicative area to be expose and volumes to be excavated);
- The proposed location(s), relative to known areas of contamination;
- Methods of cutting sealed surfaces and excavation of soil (hot work in a potentially hazardous area?);
- Is there an option to reuse the excavated material within the program (in most cases EPA Tasmania approval will be required for off-site disposal);
- The likely timing of the program and whether it takes account of lead times required to either allow prior contamination testing of the area, or has provision for temporary on-site stockpiling of excavated soil;
- Where EPA approval is likely to be required, has the program taken account of lead times needed to characterise the material, and EPA approval times (min. 2-4 weeks);
- What is the potential for worker activities to represent an increased risk of exposure to contaminated soil and/or hazardous vapours (in potentially confined spaces such as trenches);
- Has suitable consideration been given to the need for vapour monitoring equipment and additional PPE, and the extent these need to be incorporated into the task health and safety planning;
- If there is a need to temporary stockpile excavated material have sufficient controls be considered to manage dust and vapour emissions, leachate generation and erosion controls; and
- Determine the likely need to conduct advance contaminant testing of proposed areas of excavation.

5.3. Assess Contamination

In most cases, advanced contaminant testing of the proposed areas of excavation will be required, although options to test at the time of excavation could be considered under certain circumstances.

Where testing is required, it should be designed and conducted by a suitable qualified and experienced independent consultant and in reference to Information Bulletin 105 [Ref.4]. The consultant needs to consider a suitable suite of analytes typically expected for that location, the likely frequency of sampling (i.e. samples per volume) taking into account statistical principals, and consider not only total concentrations but also leach test concentrations (TCLP & ASLP), depending on the likely disposal option.

It is important to note that guidelines for off-site disposal are generally more stringent than guidelines for re-use under typical port land (i.e. reuse on-site is typically an easier to achieve from a risk perspective).

Prior to engaging a qualified and experienced independent consultant, confirmation of their suitability must be confirmed with the Tasports Environmental Manager.

5.4. Assess Disposal Options

When considering options for off-site disposal, the levels of contaminants (total and/or leachable concentrations) must be assessed against state guidelines. The EPA requires that all contaminated waste material be disposed of according to the *Environmental Management and Pollution Control (Waste Management) Regulations, 2010.* The criteria for these regulations are defined in Information Bulletin No. 105 [Ref.4].

Essentially, the criteria is used to determine whether potentially contaminated material is suitable for disposal at landfill, and if not then it assists in assessing alternative options for disposal. For disposal purposes, the EPA uses four (4) categories to classify contaminated soil as follows:

1. **Level 1** - Fill Material;
2. **Level 2** - Low Level Contaminated Soil;
3. **Level 3** - Contaminated Soil; and
4. **Level 4** - Contaminated Soil for Remediation.

Level 3 and **Level 4** contaminated soils are also classified as “controlled waste” under *EMPCA 1994* (Tas).

Level 1 does not require approval to dispose of, whereas all higher levels require an application to EPA Tasmania accompanied by laboratory results from representative samples of the material and a waste management plan.

5.4.1. Waste Management Plan

A waste management plan should include a preferred location to dispose of the material, justification as to why this is the best option for disposal and a method of transport (via and approved waste transporter). Refer to Information Bulletin 105 for more details.

Once EPA approval for disposal has been obtained then the material may be transported to the nominated receiver for disposal. Transport must be done by an approved waste transporter, a list of which can be found in Information Bulletin 105 [Ref.4].

Under controlled waste management guidance information provided by the EPA, handling of controlled waste (such as contaminated soil), including storage or reuse requires EPA approval.

The alternative option for disposal is for a specialist waste management contractor to accept the material for off-site treatment and subsequent disposal. This requires prior EPA approval via a Regulation 12 Application for handling a controlled waste under the “Waste Management Regulations”.

Where possible, all contaminated material should be assessed against guidelines for potential reuse on-site. These guidelines are primarily presented in the “Site Contamination NEPM” [Ref.3]. Exceeding the guidelines detailed in “Site Contamination NEPM” [Ref.3], does not necessarily mean the material is unacceptable for reuse, but rather further assessment is required to determine whether it represents an unacceptable risk to human health or the environment (i.e. via a site specific risk assessment).

5.5. Develop Management Controls

During ground penetration and excavation, a range of controls are available to manage the associated risks. Typical examples include, but are not limited to:

- controlling the work area to exclude potential ignition sources (such as sparks, naked flames etc.) within the immediate area, and provide controls such as fire extinguishers;
- ensuring project staff understand the contaminant type and extent they are likely to encounter (some contaminants cannot be identified easily and do not have strong odours or sheens such as metals);
- identifying task specific JSEAs/SWMs that specify what controls area required, the appropriate PPE, and what monitoring equipment is required (both explosive and human health risk such as carcinogens);
- minimising, where possible, the need to excavate material (does the excavation need to be that deep/wide?), and where suitable review options to re-use on-site;
- Can tasks be conducted that minimise the exposure to contaminants (i.e. handling soil, groundwater, minimising or eliminating periods working in excavations);
- Do aesthetic impacts such as odour need to be controlled to avoid effects on adjacent land users and other stakeholders (i.e. via tarpaulins and covers);
- Is the temporary storage location suitable (i.e. does it account for erosion controls, proximity to site boundaries and sensitive receptors, rainfall recharge and leachate generation). Lined and covered drums, skips and containers often represent suitable temporary storage options for smaller volumes;
- Documenting the excavation program, assessment findings and the associated approvals and providing this information back to the Tasports Environmental Advisor to allow contamination information/knowledge to be shared across the broader Tasports team.

The example controls listed above are not designed to replace task specific health and safety plans and safe work procedures. These are to be subsequently developed by contactors using this document as a high-level guidance and need to be task and condition specific.

5.6. Records Management

Environmental records obtained during the management of contaminated material during ground penetration and excavation, shall be maintained and retained in accordance with the following Office of the State Archivist, Retention and Disposal Schedules:

- DA2157 - Common Administrative Functions
- DA2448 - Tasmanian Ports Corporation

Specifically the following environmental records shall be maintained in TRIM:

- Environmental monitoring results - Destroy 25 years after date action completed;
- Environmental Management Plans - Destroy 25 years after date action completed;
- Environmental audit and compliance records - Destroy 25 years after date action completed;
- Notifications received by regulators;
- Audit reports;
- Waste tracking certificates;
- Calibration records for monitoring equipment.

In addition to TRIM, all locations sampled for contamination risk must be captured in accordance with the Tasports "Asset Management Geotechnical and Ground Condition Data Capture Guideline" [Ref.8].

Summary data shall be added to the Tasports Contaminated Sites Register [Ref.9] to assist the Tasports Environment Team to track and manage known or suspected contaminated sites.

6. DEFINITIONS

Controlled Waste	As defined in the *Environment Management and Pollution Control Act 1994*, **controlled waste** means: (a) a substance that is **controlled waste** within the meaning of – (i) the National Environment Protection Measure entitled the Movement of Controlled Waste Between States and Territories made by the National Environment Protection Council on 26 June 1998, as amended from time to time; or (ii) any National Environment Protection Measure substituted for the Measure referred to in paragraph (a) , as amended from time to time; and (b) a substance that is prescribed by the regulations to be controlled waste;
Controlled Waste NEPM	*National Environment Protection (Movement of Controlled Waste between States and Territories) Measure 2004*
EMPCA	*Environmental Management and Pollution Control Act 1994* (Tas)
Environmental Harm	As defined in the *Environment Management and Pollution Control Act 1994*, **environmental harm** means: (1) any adverse effect on the environment (of whatever degree or duration) and includes an **environmental nuisance.**
Environmental Nuisance	As defined in the *Environment Management and Pollution Control Act 1994*, **environmental nuisance** means: (a) the emission, discharge, depositing or disturbance of a pollutant that unreasonably interferes with, or is likely to unreasonably interfere with, a person's enjoyment of the environment; and (b) any emission, discharge, depositing or disturbance specified in an environment protection policy to be an environmental nuisance;
EPA	Environment Protection Authority
Facilities	Tasports' owned, operated or managed land and/or berths
General Environmental Duty	As defined in the *Environment Management and Pollution Control Act 1994,* a person must take such steps as are practicable or reasonable to prevent or minimise environmental harm or environmental nuisance caused, or likely to be caused, by an activity conducted by that person
Information Bulletin 105	Information Bulletin 105 Classification and Management of Contaminated Soil for Disposal
Site Contamination NEPM	*National Environment Protection (Assessment of Site Contamination) Measure 1999* (Cth)
TasPorts	Tasmanian Ports Corporation Pty Ltd
Waste Management Regulations	*Environmental Management and Pollution Control (Waste Management) Regulations 2010* (Tas)

7. REFERENCES

1. Tasports, 2010, Environmental Policy, Tasmanian Ports Corporation, Tasmania
2. Tasports, 2018, Managing Contaminated Material during Ground Penetration and Excavation (COR-ENV-002-FOR-001) [TRIM No.: DOC/18/19497], Tasmanian Ports Corporation, Tasmania
3. NEPC, 2009. National Environment Protection (Assessment of Site Contamination) Measures 2013. National Environment Protection Council. Amended 11 April 2013. Viewed online on 13 March 2018 at http://www.nepc.gov.au/nepms/assessment-site-contamination
4. EPA, 2012. Information Bulletin No. 105 Classification and Management of Contaminated Soil for Disposal. Environmental Protection Agency, Level 6, 134 Macquarie Street, Hobart TAS GPO Box 1550, Hobart TAS 7001. Viewed online on 13 March 2018 at < http://epa.tas.gov.au/Pages/Document.aspx?docid=55>
5. NEPC, 2004. National Environment Protection (Movement of Controlled Waste between States and Territories) Measure 2004. National Environment Protection Council. Amended 11 April 2013. Viewed online on 13 March 2018 at: <http://www.nepc.gov.au/nepms/movement-controlled-waste
6. Tasports, 2017. HSE Permit to Work Procedure, Tasmanian Ports Corporation, Tasmania
7. Tasports, 2017. Excavation and Earthworks Permit, Tasmanian Ports Corporation, Tasmania
8. Tasports, 2018. Asset Management Geotechnical and Ground Condition Data Capture Guideline [TRIM No.: DOC/18/13045], Tasmanian Ports Corporation, Tasmania
9. Tasports, 2018. Contaminated Sites Register (COR-ENV-002-REG-001) [TRIM No.: DOC/18/19506], Tasmanian Ports Corporation, Tasmania