

Guideline for the Beneficial Reuse of Solid Waste

EHTM Attachment 9A

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Abbreviations

Term / Acronym	Meaning
CEMP	Contractor Environmental Management Plan
Contract Documentation	Contract Scope and Technical Requirements; Functional and Operational Requirements; Contract or Project Scope
DIT or the Department	Department for Infrastructure and Transport
EHIA	Environment and Heritage Impact Assessment
EHTM	Environment and Heritage Technical Manual
EP Act	Environment Protection Act 1993
EPA	South Australian Environment Protection Authority
RAP	Reclaimed Asphaltic Planings

1 Introduction

The Guideline for the Beneficial Reuse of Solid Waste (the Guideline) forms Attachment 9A of the Department's Environment and Heritage Technical Manual (EHTM) and supersedes the following documents previously administered by the Department:

- Environmental Instruction 21.6 Recycled Fill Materials for Transport Infrastructure
- Guide for the Re-use and Disposal of Surplus Soil
- Guide for the Reuse or Disposal of Asphaltic Concrete Planings

This document provides guidance on the appropriate use of recycled materials during the construction and operation of a Department for Infrastructure and Transport (DIT – the Department) project as well as the beneficial reuse of solid waste material generated during construction works, to ensure that surplus material is managed sustainably and works are carried out in accordance with relevant guidelines, thus mitigating adverse effects on human health and the environment. This document focuses primarily on the materials most commonly generated during the construction and operation of a Department project including soil/sediment, construction and demolition waste, commercially produced recycled material and reclaimed asphaltic planings.

It is expected that, unless otherwise approved by the Department, Contractors undertaking the works described in this Guideline are suitably qualified professionals, listed on, or that can demonstrate their eligibility to be listed on, the Department's Professional and Technical Services Prequalification for Contamination Services.

1.1 Performance Outcomes

In order to meet the performance requirements under this section, unless specified otherwise in the Contract documentation, the following shall be achieved:

- Where possible and suitable, sustainable outcomes are achieved for surplus material generated during the construction and operation of the project; and
- Waste material classification, assessment and management (including transport) is undertaken in accordance with relevant South Australian Environment Protection Authority (EPA) guidance.

1.2 Structure of Guideline

This guideline is structured to provide standalone advice regarding the use and/or reuse of the following materials:

- Material generated during project works within the project area;
- Recycled material to be imported for use as part of project works; and
- Reclaimed Asphaltic Planings

1.3 Legislative Context

All works undertaken during the assessment of potential beneficial reuse of solid waste must be undertaken in accordance with the relevant EPA) Standards and Guidelines as well as the National Environment Protection (Assessment of Site Contamination) Measure (1999, as amended 2013).

1.4 Master Specification

The Department's Master Specification sets out the requirements to achieve the quality and/or performance outcomes expected for planning/design, construction projects, maintenance and professional services. This Guideline should be read in conjunction with the following Master Specification identified in Table 1-1

Table 1-1 Department Master Specification Parts

Master Specification	Specification name
Project Controls:	PC-PL1 - Framework for Planning Studies
	PC-PL2 - Planning Investigations
	PC-PL3 - Concept Design Development
	PC-ENV2 - Environmental Protection Requirements
	PC-ENV3 - Environmental Design
	PC-SC1 - Site Contamination
Road:	RD-BP-S2 – Supply of Asphalt
	RD-PV-S1 – Supply of Pavement Materials

2 Reuse and/ or Recycling of Materials

All assessments of beneficial re-use of material (as well as off-site management/disposal if reuse is not possible within the project area) are required to be undertaken by a suitably qualified contamination specialist as defined in Master Specification PC-SC1 Site Contamination.

2.1 Reuse of Surplus Solid Waste

The Department and its contractors are responsible for ensuring that all surplus material generated during project works is appropriately managed in accordance with the relevant EPA Standards and Guidelines. The EPA have the Standard for the Production and Use of Waste Derived Fill (2013 – the Standard) which details the information and processes required to support the beneficial reuse of a range of potential wastes specifically recovered for use as fill (this includes soil material, sediment, construction and demolition waste etc.). Note that soils containing any sulfidic ores do not classify as virgin material. Refer to Attachment 9B of the EHTM for guidance on management of this material (i.e. acid sulfate soils).

The process to be followed for assessing the potential beneficial reuse of solid waste material (generated during project works) must be undertaken in accordance with the Standard. For material won from within the project area (and to be re-used within the same project area), an assessment of the risk of using such material must be undertaken which is to include an investigation of potential site contamination from current and previous land uses and the potential risks to human health and the environment resulting from the use of the material in the proposed location (considering current and future land use). This information is to be included in the Contractor’s Environmental Management Plan (CEMP) and provided to the Department’s Technical Services Environment and Sustainability Unit for review.

Note:

Re-use of material within a Project Area

For the purpose of determining what is the ‘project area’ the following must be considered:

- located on the same road (i.e. same road number);
- geographical distance of separation between work zones; and
- comparison of environmental conditions (i.e. geological profile, meteorologic conditions).

Assuming these parameters are considered appropriate then an assessment in regards to potential risks to human health and the environment in re-use location must be undertaken. This must include reference to the proposed placement of the material (i.e. distance to sensitive receptors, placement at surface or deeper such as within engineering batter/mound, under sealed roadway, etc.). Consultation with the Environment and Sustainability Unit is recommended in order to determine what is considered the project area.

Where the beneficial re-use of the material generated as part of a Department project is not possible, waste material is required to be disposed of to an appropriately licenced facility. Where relevant, the waste classification is to be determined in accordance with the EPA (2010) Current Criteria for the Classification of Waste – including Industrial and Commercial Waste (Listed) and Waste Soil.

Note that the EPA provides guidance for the management and reuse of other possible waste material and these guidelines are to be adopted, as required. EPA Standards and Guideline documents are available for download from www.epa.sa.gov.au. Any clarification relating to the implementation of the EPA guidelines shall be sought from the EPA and, where relevant provided to the Department's Technical Services Environment and Sustainability Unit to support any assessment undertaken.

2.2 Use of Recycled Materials Imported for Use

Commercially produced recycled materials (such as crushed concrete or bricks) purchased from an EPA licensed facility can be utilised within the project area, pending their suitability for intended use (including geotechnical suitability). The Department's Master Specification RD-PV-S1 and RD-BP-S2 provide details regarding specifications for the supply of pavement and bituminous materials, respectively.

The use of fill soil material generated outside of the project area and/or sourced from external parties (for example from other Government Departments, Local Councils or Developers by arrangement) will be subject to more rigorous testing than material provided either by the Department, or commercial providers of soils or recycled products. As such, prior to acceptance, material provided from external sources must be assessed by a suitably qualified environmental consultant in accordance with the Standard and consider the current and future land use of the project area (i.e. receiving site).

3 Reuse of Asphalt Planings

3.1 Background

Reclaimed Asphalt Planings (RAP) is a valuable resource and asphalt should, where possible, be planed in a way that enables its beneficial reuse. Depending on the method used, planings can be pure asphaltic concrete, or they may consist of a mixture of asphaltic concrete as well as underlying pavement materials. Commonly, bituminous materials removed during construction works have been disposed to municipal landfills, however, significant environmental and economic benefits can be achieved by recycling RAP and using it in new road seals, as well as in other beneficial reuse scenarios. The reuse of both the aggregate and bitumen in the RAP is aligned with the Mandatory Sustainability Initiatives provided within the Department's Master Specification PC-ST2 Sustainability in Construction.

For the purpose of this document, RAP is defined as material produced by the Department and its contractors only. Commercially produced recycled bituminous material that is purchased from a supplier is covered in Section 2.2 of this document. The Department's Master Specification RD-BP-S2 allows that asphalt supplied for road works may contain a percentage of RAP.

Previous investigation undertaken by the Department indicated that asphalt planings (surfacing material not including coal tar based pavements) contained heavy metals and hydrocarbons in dry weight concentrations above the laboratory detection limits. Leachate analysis (undertaken for hydrocarbons only) indicated that hydrocarbons were generally immobile. These findings should not be relied upon in the absence of site/project specific data.

Note:

In the present day, asphalt mixes are generally made with bitumen, however, in the past (generally prior to the 1970s), coal tar and other tar distillates were in extensive use (often referred to as Tar Macadam Pavements being a basic macadam road with a tar-bound surface). This has left a legacy of high polycyclic aromatic hydrocarbon content in some asphalt pavements. Information regarding the age of surfacing and pavement material on a given stretch of road can be found on the Department's [Road Asset Information Map](#). The Standard provides guidance regarding the management of coal tar bitumen.

3.2 Assessment of Beneficial Reuse Options

A risk based assessment must be completed to determine the beneficial reuse options for RAP. The assessment must demonstrate that the proposed beneficial reuse is suitable in terms of potential risks to current and future human and ecological receptors (i.e. no or low) including potential risks from the leaching of chemical substances.

With respect to works being undertaken within the Department's road and rail corridors, the following potential reuse options may be suitable for asphalt planings:

- reuse within new asphalt mix;
- under sealed pavements;
- within shoulder treatments (i.e. the surface treatments located adjacent to road pavements);
- within batter fill;
- unsealed hard-stand areas associated with road construction;
- access roads; or
- footpaths.

Asphaltic concrete planings shall not be used in locations where more sensitive human or ecological receptors are present (i.e. a more sensitive land use than the generating road/ rail corridor), or where they are not desirable for aesthetic reasons, such as:

- within watercourses, drains, culverts, swales or other areas that are submersed for long periods; or
- landscaped areas.

Asphaltic concrete planings which are mixed in with pavement materials (not sub-base soils) may be used in the same locations as described above (with the exception of reuse in new asphalt mixes).

The Department's Master Specification RD-PV-S1 and RD-BP-S1 provide details regarding specifications for the supply of pavement and bituminous materials, respectively.

Care must be taken to identify the presence of coal tar based pavements which should be assessed and managed separately to other materials.

4 Reporting

Unless otherwise specified in the Contract Documentation, the Department's expectations regarding the timing and nature of reporting and deliverables are detailed in the Master Specification in Part 1 of the EHTM. The following subsections focus primarily on the reporting for the beneficial reuse of solid waste at various project phases (refer to the Introduction of the EHTM for further information regarding the project phases).

All reporting in relation to the beneficial reuse of material shall be provided to the Department's Technical Services Environment and Sustainability Unit for review and acceptance.

4.1 Proving

During the Proving Phase of a project, the opportunity for the beneficial reuse of material should be identified. It is unlikely that any testing of material would be undertaken at this stage.

Identification of potential beneficial reuse options

The identification of potential beneficial reuse options for material, primarily through a cut/ fill balance that may be generated during project works should be incorporated into the EHIA report as well as the planning and/or design report. Where multiple project options are being assessed and compared, the assessment outcomes are to be reported in a suitable location to inform such option comparisons.

4.2 Pre-Delivery/ Delivery

During the Pre-Delivery/ Delivery Phase of the project, a more detailed assessment of the surplus material to be generated during project works will likely be possible, enabling a beneficial reuse assessment to inform project design and the approvals pathway for the project.

Beneficial reuse assessment

The following requirements must be specifically addressed when proposing the beneficial reuse of material within a project area:

- All reporting regarding the beneficial reuse of material must address the requirements of the relevant EPA Standards and Guidelines as well as the National Environment Protection (Assessment of Site Contamination) Measure (1999, as amended 2013), where relevant;
- Reporting demonstrating the suitability of the action is required to be provided to the Department's Technical Services Environment and Sustainability Unit prior to such action. The provision of this information is to be considered as a hold point as detailed in the Contract Documentation;
- Such reporting (which may be in the form of a technical note or memo) is to include an assessment of the risk of the proposed beneficial reuse/recycling of material in the context of potentially contaminating activities undertaken at the generating site and risks to the current and future human and ecological receptors at the proposed reuse location.
- All reports and supporting data must be provide to the Department (as detailed above) and must also be summarised in the *Post Occupation Report* for the project; and
- Any report(s) that may require submission to the EPA or an accredited site contamination auditor are required to have been written/signed/endorsed by a Certified Environmental (site contamination) Practitioner. Where analytical data has been collected or utilised in the preparation of a report, a data quality assessment must be undertaken as part of the reporting.

The outcomes of the assessment and supporting documentation should be incorporated into the EHIA report. The assessment should also be summarised in the planning and/ or design reports.

AND

Handover documentation

Any material re-used in accordance with this Guideline must be tracked from its generating location to its final location. Ongoing environmental management requirements (type of maintenance works, recommended frequency to ensure that the design function is maintained and responsibility) are to be detailed in project handover documentation.

The Department must be provided with the surveyed final location (depth and extent) details of the material. Details of the final location of the re-used material(s) are to also be included in final as-built drawings and within the *Post Occupation Report* for the project.

4.3 Realisation

During the Realisation phase, ongoing maintenance of any beneficial reuse site or management areas may be required in accordance with handover documentation.