Government of **Western Australia**
Department of **Environment Regulation**

ADDENDUM

Manufactured fill

Addendum to the draft Guideline: Submitting an application for the use of waste-derived materials (case-by-case determination)

Draft released for consultation

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Accessibility This document is available in alternative formats and languages upon request.

About this consultation

Topic of this consultation	*Manufactured fill—Addendum to application for use of waste-derived materials (case-by-case determination)*.
Scope of this consultation	The waste management industry and all those who produce, handle and use waste and waste-derived materials
Geographical scope	Western Australia
Consultation duration	30 June 2015 – 28 July 2015 (4 weeks)
After the consultation	The responses to this consultation will assist in finalising the *Manufactured Fill addendum to the draft Guideline: Submitting an application for the use of waste-derived materials*. When this consultation has ended all responses will be reviewed and made available on DER's website. A document summarising the responses and how they have been considered will also be made available on DER's website at www.der.wa.gov.au.

About public consultation

The Department of Environment Regulation carries out public consultation to canvas the views of all stakeholders and interested parties to inform a transparent and accountable decision-making process. By making a submission, you are consenting to the submission being treated as a public document and being published on the Department's website. Your name will be included but your contact address will be withheld for privacy.

If you do not consent to your submission being treated as a public document, you should mark it as confidential, specifically identify those parts which you consider should be kept confidential, and include an explanation. The Department may request that a non-confidential summary of the material is also given. It is important to note that even if your submission is treated as confidential by the Department, it may still be disclosed in accordance with the requirements of the *Freedom of Information Act 1992*, or any other applicable written law.

The Department reserves the right before publishing a submission to delete any content that could be regarded as racially vilifying, derogatory or defamatory to an individual or an organisation.

Please take careful note of the deadline for comment, **28 July 2015**, as no late submissions will be accepted.

Please direct comments or any questions about this report to:

By email: end_of_waste@der.wa.gov.au (end_of_waste@der.wa.gov.au)
By post: End-of-waste review
Department of Environment Regulation
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Contents

Definitions

acid sulfate soil means naturally occurring soil and sediments containing iron sulfides that, when exposed to air, react with water and oxygen to produce a variety of iron compounds and sulfuric acid.

asbestos has the same meaning as it has in regulation 42 of the *Environmental Protection (Controlled Waste) Regulations 2004*.

manufactured fill means fill material that is manufactured by processing waste from multiple sources such that it does not have any harmful effects on the environment after processing, testing and treatment.

Purpose

This document is an addendum to the (draft) *Guideline: Submitting an application for the use of waste-derived materials (case-by-case determination)* and must be read in conjunction with that guideline. It sets out the additional information requirements for applications for manufactured fill.

Additional requirements for manufactured fill

Characteristics of each waste input (section 4.1.2)

Manufactured fill may be produced from a diverse range of waste materials including those arising from excavation, construction, refurbishment or demolition and some industrial and mining processes. It is the responsibility of the applicant to demonstrate in their application that waste-derived materials (WDMs) from these sources will be suitable for their intended uses, and will not leach potentially hazardous chemicals into the environment.

This is particularly the case with materials derived from the demolition of buildings which may contain a range of potentially harmful materials including:

- lead from paint coatings on masonry;
- mercury from some electrical switches;
- leachable sulfate from plasterboard and plaster coatings on masonry;
- fire retardant chemicals; and
- polychlorinated biphenyls from fluorescent light ballasts.

Soil and building pads underlying demolished structures may have been treated with pesticides, including persistent organochlorine pesticides which are difficult to treat.

Applications should therefore include the results of testing of the nature and extent of any contamination.

Asbestos products might be found in any building constructed before the late 1980s, making specific consideration and testing for asbestos is necessary. Asbestos was commonly used in fencing and cladding sheet products, and may occur in insulation products or in items such as electrical switch boards and in vinyl floor and wall tiles. Asbestos sheeting was also often used in concrete formwork where the formwork was to be left *in situ*.

Potentially hazardous materials are to be identified before building demolition takes place. Demolition must be undertaken in accordance with an appropriate waste management plan to ensure that these materials are segregated from non-hazardous demolition by-products.

In these instances, the applicant should provide details in their application of the quality control and assurance measures that will be used to ensure that materials from building demolition works will be non-hazardous and will be suitable for use as manufactured fill.

The presence of plastics, glass, metal, vegetation, wood, cardboard, paper, plasterboard or other physical contaminants can restrict the potential uses of manufactured fill. The applicant will need to determine whether the waste contains any of these materials, and if so at what concentrations, and include this information in their application.

Soil from areas of potential acid sulfate soils, or with the potential for acid generation, are generally not suitable for use as manufactured fill without appropriate site investigations, assessment and treatment. Information including maps of potential acid sulfate soils is available on the department's website: www.der.wa.gov.au/your-environment/acid-sulfate-soils.

Certain types of acid generating soils are difficult to reliably treat, and are not permitted as a source of manufactured fill while others, such as sandy soils, may be suitable after treatment and validation—refer to Table 1.

Table 1: Nature of acid sulfate soil and potential suitability for use

Soil type	Acid sulfate soil investigation and management requirements	Examples of acceptable uses after screening and treatment at source site (or licensed processing site) as necessary
Peats		
Sandy peat	Refer to section 2 of DER 2015[a] to determine whether investigation necessary, and if so, refer to DER 2015[a] and DER 2015[b]	Generally suitable for landscaping (including public open space)
Clay peat		Generally suitable for landscaping or landfill daily cover material
Organic peat		Suitable for composting in accordance with Australian Standard
Sands		
Bassendean and Spearwood Sands	Refer to section 2 of DER 2015[a] to determine whether investigation necessary, and if so, refer to DER 2015[a] and DER 2015[b]	Unrestricted use above the highest seasonal water table Risk assessment may be required for use below the highest seasonal water table or within 100 metres of an area of ecological significance[c] *Treated acid sulfate soil materials may not be suitable for structural fill purposes*
Clays		
Mottled clays/Sandy clays	Treatment usually impractical	Re-use on-site below the water table if period of exposure to air is no more than 48 hours Suitable for landfill daily cover material If treated, may be suitable for other applications such as soil amendment
Firm clays	Treatment usually impractical	Brick manufacture If treated, may be suitable for other applications such as soil amendment
Clay slurry	Requires settlement and management of water	Brick manufacture If treated, may be suitable for other applications such as soil amendment

a. Department of Environment Regulation 2015, *Guideline: Identification and investigation of acid sulfate soils and acidic landscapes*.

b. Department of Environment Regulation 2015, *Guideline: Treatment and management of acid sulfate soils*.

c. Areas of ecological significance include areas where the planning provisions or land use designation is for the primary intention of conserving and protecting the natural environment, for example conservation category geomorphic wetlands, Swan-Canning Rivers management area, Bush Forever and nature reserves.

Waste treatment (section 4.1.3)

Construction and demolition waste used to manufacture fill may include inert soils, aggregate and crushed bricks, tiles and concrete. The application must provide details as to how unsuitable materials, such as plastics, glass, metal, vegetation, wood, cardboard, paper and plasterboard have been segregated or removed from the construction and demolition waste prior to receipt or at the beginning of the process.

Proposed product specification (section 4.1.7)

Applicants are to provide the proposed product specification in their application, including:

- the amount of physical contamination (e.g. vegetation, wood, cardboard, paper, plasterboard, plastics and glass) that is proposed in the manufactured fill; and
- a maximum limit for total sulfur to minimise the formation for hydrogen sulfide gas and/or damage to infrastructure due to sulfate attack on concrete and the formation of swelling fills that can damage infrastructure through the process of heaving.

  Soluble sulfate salts may be leached from gypsum based products present, such as plasterboard and plaster coatings on masonry and from acid sulfate soils treated with calcium carbonate or other neutralising agents. In some situations, sulfur concentrations in soils as low as 0.25 per cent can cause sulfate attack and heaving problems on infrastructure.

  Sulfate salts that leach to the water table can react with organic material to form potentially hazardous amounts of hydrogen sulfide gas.

Proposed use (section 4.1.8)

Applicants may manage particular waste materials by constraining the proposed use of manufactured fill as a possible approach to managing risks to public health or the environment. Possible options include avoiding use:

- that may result in people coming into direct contact with manufactured fill; or
- on land used for the cultivation of food crops for human consumption; or
- on land subject to inundation; or
- below the highest seasonal water table; or
- within 100 metres of wetlands; or

- within public water source protection areas that are managed by the Department of Water; or
- within 100 metres of a watercourse (perennial or ephemeral) or a marine environment.