Soils waste management for brownfield sites

practical options for both small and large sites

ch2m SM

JACOBS

Key Message

Don’t dig it up in the first place!

If you have to dig it up - plan ahead

Waste management for brownfield sites

- Why consider soils re-use?
- What is a waste soil?
- What is required to investigate and classify
- What are the options?
- What are the costs?

Along the way…….

- Can you re-use hazardous waste?
- Can you re-use soil with asbestos in it?
- Why you may not need WAC analysis
- Japanese Knotweed
- HE Series 600 specification

Why you need to consider options other than disposal?

Sustainable development

Minimising lorry movements

Minimising carbon emissions

Quite often a project/contract requirement

Why you need to consider options other than disposal?

LANDFILL TAX

1996 - standard rate of £7/tonne and lower rate of £2/tonne

Now (April 2018) – standard rate £88.95/tonne and lower rate of £2.80/tonne

Waste Soils - Definitions

- Anything soils, rock, made ground etc that is excess to your requirements
- It can be clean, obviously contaminated or somewhere in between
- “Clean” is a movable target!

Waste Soils – Classifying

YOU ONLY CLASSIFY IF DISPOSING TO A LICENCED LANDFILL

- Inert (essentially clean stuff)
- Non-hazardous (made ground, mild contam)
- Hazardous (the not so nice stuff)

- How to classify:
- Desk study
- Site investigation (logs, standard contam analysis)
- ~~Waste Acceptance Criteria~~

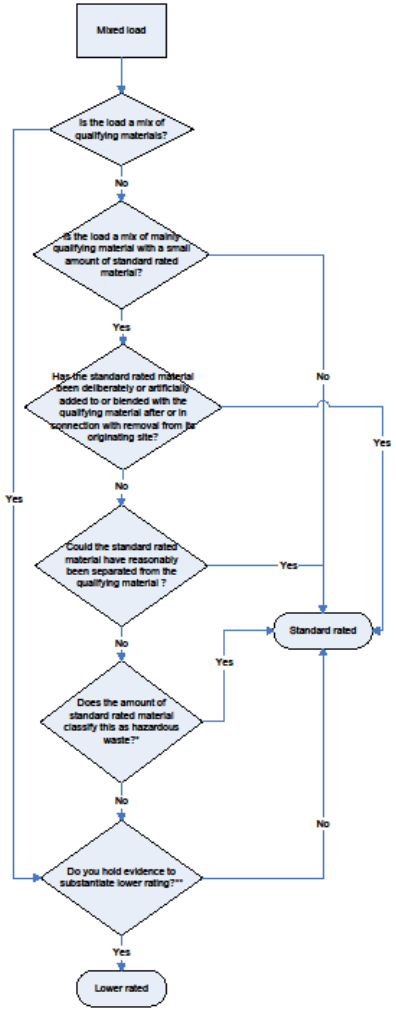
Landfill Tax exemptions

- HMRC LFT1

- Dredgings
- Mining and quarrying waste
- Pet cemeteries
- Filling of quarries (must be lower rated material)
- Waste from visiting NATO forces

- Landfill construction and restoration materials

Landfill Tax – lower rated soils



https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/503405/lft_chart.pdf

Why you need to consider options other than disposal?

Assume 1 hectare site with contamination 3 metres deep requiring disposal.

1 hectare site = 10,000 m^2

Assume contamination to 3m depth = total volume = 30,000 m^3

Applying disposal cost of £250/m^3 then cost = £7.5 million.

Extra costs for groundwater clean-up, replacement fill, costs of excavation, supervision, investigation etc etc.

Of course, in reality cost of remediation dependant on actual site conditions so could range from £0 to £7.5 million plus.

Waste soils costs

- Hazardous - from £250/m^3 (Landfill Tax £88.95/tonne) – up to £490/m^3
- Non-Hazardous – from £220/m^3 (Landfill Tax £88.95/tonne)
- Inert – from £25/m^3 (Landfill Tax £2.80/tonne)
- Soil Treatment centre - £50-£155/m^3
- On site treatment and re-use – from £10-75/m^3

Waste Soils - Options

- Not generating waste soils!
- Re-use on site (using CL:AIRE Code of Practice, exemption)
- Re-use off site (using CL:AIRE Code of Practice, exemption)
- Re-use under a restoration order (usually inert)
- Re-use as cover on landfills (usually inert)
- Soil Treatment Centre (re-use once treated)
- Disposal to landfill (soil will require waste classification) – usually last resort.

Re-use - Exemptions

U1 use of waste in construction - 1000 tonnes. Must be suitable and needed

Use of waste in a deposit for recovery operation (Construction, reclamation, restoration or improvement of land other than by mobile plant) Standard rules SR2015 No.39 – 60,000 m^3. Essentially for inert materials.

Standard rules SR2008No27 - mobile plant for the treatment of soils and contaminated material, substances or products

Standard rules SR2010No11 Mobile plant for the treatment of waste to produce soil, soil substitutes and aggregate

Re-use - CL:AIRE Definition of Waste Code of Practice (DoWCoP)

- Suitable for use
- Needed
- Certainty

- Re-use on site of origin
- Re-use at other sites
- Direct transfer
- Multiple sites/Soil Treatment Centres
- Stockpiling

- MMP, Risk Assessment, Remediation Strategy

- Regulator Involvement?

Re-use - CL:AIRE Definition of Waste Code of Practice (DoWCoP) - Fees

Project size up to	Fee (+VAT)	Admin fee (+VAT)	Total
5,000m^3	£0	£40	£40
6,000m^3	£60	£40	£100
7,000m^3	£70	£40	£110
8,000m^3	£80	£40	£120
9,000m^3	£90	£40	£130
10,000m^3	£100	£40	£140
….for all subsequent 1,000m^3 units e.g. …..			
20,000m^3	£200	£40	£240
50,000m^3	£500	£40	£540
100,000m^3	£1,000	£40	£1,040

Re-use - other options

Clean/Inert

- Quarry Restoration
- Landfill Cover
- Recovery operations (e.g. Wallasea)

Contaminated

- Soil Treatment Centres (do not incur Landfill Tax)
- Landfill (last resort)

Japanese Knotweed

You must bury Japanese knotweed plant material:

- on the site it came from – including ash and soils containing potential Japanese knotweed
- at a depth of at least 5m if you haven't sealed it with a geotextile membrane
- at a depth of at least 2m if you have sealed it with a geotextile membrane

You must make sure that any geotextile membranes used for burial are:

- undamaged
- large enough to minimise the need for seals
- sealed securely
- able to remain intact for at least 50 years
- UV resistant

You must notify the Environment Agency at least 1 week before you bury the Japanese knotweed material.

Asbestos

At present - CL:AIRE DoWCoP

Also needs to comply with CAR 2012 unless <0.001% (Plan of Work, record locations and duty to manage)

Will likely need to be buried/used under structures

Highways England Specification

Series 600 specification requires definition of unacceptable material (called either U1B or U2)

Appendix 6/14 defines unacceptable material wrt controlled waters

Appendix 6/15 defines unacceptable material wrt human health

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Simple cost example

Volume	disposal	Re-use without treatment	Re-use on site (with treatment)
10	£2,500	£1,550	£6,000
100	£25,000	£2,000	£15,000
1000	£250,000	£7,500	£55,000
10000	£2,500,000	£55,000	£360,000
100000	£25,000,000	£505,000	£3,525,000

Useful Links

- CL:AIRE DoWCoP https://www.claire.co.uk/projects-and-initiatives/dow-cop
- WM3 https://www.gov.uk/government/publications/waste-classification-technical-guidance
- Waste Exemptions https://www.gov.uk/government/collections/waste-exemptions-using-waste
- Standard Rules Permits https://www.gov.uk/government/collections/standard-rules-environmental-permitting
- HMRC landfill Tax guidance https://www.gov.uk/government/publications/excise-notice-lft1-a-general-guide-to-landfill-tax
- Japanese Knotweed/Invasive Species RPS https://www.gov.uk/government/publications/treatment-and-disposal-of-invasive-non-native-plants-rps-178/treatment-and-disposal-of-invasive-non-native-plants-rps-178
- General Waste Classification https://www.gov.uk/how-to-classify-different-types-of-waste/construction-and-demolition-waste