

Recovered soil – key conditions

We are seeking feedback on the conditions of a new Recovered Soil Order and Exemption. Have a read and tell us what you think.

Title	The recovered soil order 2021												
Waste to which this order applies	<p>Recovered soil means excavated soil (including but not limited to natural materials such as sandstone, shale, clay and soil) that must:</p> <ul style="list-style-type: none"> • be processed, and • contain at least 98% (by weight) natural material after processing. <p>Recovered soil does not include material that contains:</p> <ul style="list-style-type: none"> • asbestos • acid sulfate soils (ASS) • chlorinated hydrocarbons • organochlorine pesticides (OCPs) • polychlorinated bi-phenyls (PCBs) or • per- and polyfluoroalkyl substances (PFAS). <p>Recovered soil must not be derived from the processing of building and demolition waste (including residues from the processing of skip bin waste).</p> <p>Recovered soil does not meet the definition of virgin excavated natural material in the POEO Act and does not meet the definition of excavated natural material in the excavated natural material order and exemption 2014.</p>												
Desktop assessment	<p>A desktop assessment must be undertaken for asbestos, ASS, chlorinated hydrocarbons, OCPs, PCBs, and PFAS at the site where recovered soil is generated.</p> <p>Recovered soil must not be processed or supplied if the desktop assessment shows the presence of, or if the material contains: asbestos, ASS, chlorinated hydrocarbons, OCPs, PCBs, or PFAS.</p>												
Sampling	<p>Prior to supplying the recovered soil:</p> <ul style="list-style-type: none"> • a written sampling plan must be prepared • recovered soil must be separated into batches of waste • a unique batch identifier must be assigned to each batch of waste • the quantity of the batch of waste must be recorded against the unique batch identifier • samples must be collected in accordance with the sampling plan • the number of samples set out in the table below must be collected and tested at an accredited laboratory. <table border="1" data-bbox="341 1704 1442 1944"> <thead> <tr> <th data-bbox="341 1704 778 1742">Quantity of stockpile (tonnes)</th> <th data-bbox="778 1704 1442 1742">Number of discrete samples</th> </tr> </thead> <tbody> <tr> <td data-bbox="341 1742 778 1780"><250</td> <td data-bbox="778 1742 1442 1780">5</td> </tr> <tr> <td data-bbox="341 1780 778 1818">250 – 500</td> <td data-bbox="778 1780 1442 1818">6</td> </tr> <tr> <td data-bbox="341 1818 778 1856">500 – 1,000</td> <td data-bbox="778 1818 1442 1856">8</td> </tr> <tr> <td data-bbox="341 1856 778 1895">1,000 – 1,500</td> <td data-bbox="778 1856 1442 1895">9</td> </tr> <tr> <td data-bbox="341 1895 778 1933">1,500 – 2,000</td> <td data-bbox="778 1895 1442 1933">10</td> </tr> </tbody> </table>	Quantity of stockpile (tonnes)	Number of discrete samples	<250	5	250 – 500	6	500 – 1,000	8	1,000 – 1,500	9	1,500 – 2,000	10
Quantity of stockpile (tonnes)	Number of discrete samples												
<250	5												
250 – 500	6												
500 – 1,000	8												
1,000 – 1,500	9												
1,500 – 2,000	10												
Blending and mixing	<p>Recovered soil must not be blended or mixed with recovered fines.</p>												

<p>Key definitions</p>	<p>acid sulfate soil includes potential acid sulfate soil and means naturally occurring sediments and soils which contain sulfides such as iron sulfide and iron disulfide or their precursors, as evidenced by:</p> <ul style="list-style-type: none"> • if sampling and testing is undertaken for ASS using the chromium reducible sulfur test method – a net acidity greater than 18 mol H⁺/tonne, or • if sampling and testing is not undertaken for ASS – a low or high probability of presence of ASS at the source site based on the applicable Acid Sulfate Soil Risk Maps (published by the former Department of Land and Water Conservation and available at http://www.environment.nsw.gov.au/acidsulfatesoil/riskmaps.htm). <p>accredited laboratory means an analytical laboratory that holds a current accreditation issued by National Association of Testing Authorities under <i>ISO/IEC17025 – Testing and calibration laboratories</i> to test samples for the chemicals and attributes using the techniques set out in Table 2.</p> <p>asbestos has the same meaning as in Schedule 1 to the POEO Act.</p> <p>batch of waste means a stockpile of 2,000 tonnes or less of recovered soil.</p> <p>chlorinated hydrocarbons includes the following chemicals: trichloroethylene (TCE), tetrachloroethene (PCE), cis and trans dichloroethane (DCE) and vinyl chloride, where the individual concentrations are more than the laboratory reporting limit of 0.1 mg/kg.</p> <p>desktop assessment means any of the following:</p> <ul style="list-style-type: none"> • A review of preliminary site investigation reports, or detailed site investigation reports of the source site, where an environmental practitioner has: <ul style="list-style-type: none"> ○ sampled and tested for asbestos, chlorinated hydrocarbons, OCPs, PCBs and PFAS, and ○ either has sampled and tested for ASS, or has undertaken a review of the applicable Acid Sulfate Soil Risk Maps (published by the former Department of Land and Water Conservation and available at https://www.environment.nsw.gov.au/topics/land-and-soil/soil-degradation/acid-sulfate-soils). • A review of waste classification reports for recovered soil, where an environmental practitioner has: <ul style="list-style-type: none"> ○ sampled and tested for asbestos, chlorinated hydrocarbons, OCPs, PCBs and PFAS, and ○ either has sampled and tested for ASS, or has undertaken a review of the applicable Acid Sulfate Soil Risk Maps (published by the former Department of Land and Water Conservation and available at https://www.environment.nsw.gov.au/topics/land-and-soil/soil-degradation/acid-sulfate-soils). • An environmental practitioner has: <ul style="list-style-type: none"> ○ sampled and tested recovered soil for asbestos, chlorinated hydrocarbons, OCPs, PCBs and PFAS as part of a preliminary site investigation or detailed site investigation for the source site; and ○ either has sampled and tested for ASS, or has undertaken a review of the applicable Acid Sulfate Soil Risk Maps (published by the former Department of Land and Water Conservation and available at https://www.environment.nsw.gov.au/topics/land-and-soil/soil-degradation/acid-sulfate-soils). <p>detailed site investigation report means a report as described in the <i>Consultants reporting on contaminated land, Contaminated Land Guidelines</i>, NSW EPA, 2020 (EPA 2020), and complies to the extent practicable with the checklist requirements described in section 2 of EPA 2020.</p> <p>environmental practitioner means an independent professional environmental practitioner with appropriate qualifications, training and proven experience in soil sampling and waste classification in NSW. The environmental practitioner must have comprehensive knowledge of sampling principles for soil and waste-derived materials. The environmental practitioner must not be the supplier, or the user, of the waste.</p>
-------------------------------	--

NEPM means National Environment Protection (Assessment of Site Contamination) Measure.

OCPs means organochlorine pesticides and includes the following chemicals: aldrin, chlordane, DDT, DDD, DDE, dieldrin, endosulfan, endrin, endrin aldehyde, heptachlor, heptachlor epoxide, hexachlorobenzene, hexachlorophene, isodrin, methoxychlor, Mirex pentachloronitrobenzene, pentachlorophenol and 2,4,5-T toxaphene, where the individual concentrations are more than the laboratory reporting limit of 0.02 mg/kg.

PCBs means polychlorinated bi-phenyls and includes the following chemicals: Aroclors 1016, 1221, 1232, 1242, 1248, 1254 and 1260, where the individual concentrations are more than the laboratory reporting limit of 0.2 mg/kg.

PFAS means per- and polyfluoroalkyl substances specifically related to perfluorooctaine sulfonate ('PFOS'), perfluorooctanoic acid ('PFOA'), and perfluorohexane sulfonate ('PFHxS') where the sum of the concentrations of PFOS + PFHxS, and POFA are more than the laboratory limit of reporting of 5 µg/kg.

preliminary site investigation report means a report as described in EPA 2020 (see detailed site investigation), and complies to the extent practicable with the checklist requirements described in section 2 of EPA 2020.

premises has the same meaning as in the *Protection of the Environment Operations Act 1997*.

processed means screening, mixing and/or blending.

resource recovery waste has the same meaning as in clause 93(1) of the Protection of the Environment Operations (Waste) Regulation 2014.

sampling plan means a written procedure applicable to a premises that is consistently followed when sampling each batch of waste. The sampling plan must:

- a) identify the position(s) responsible for implementing and overseeing sampling;
- b) require the sampling and testing requirements in this order to be undertaken without contradiction;
- c) list the chemicals and attributes to be tested, the corresponding laboratory testing methods to be employed, the appropriate sample containers and the holding times for those chemicals and attributes;
- d) identify the sampling equipment required, including decontamination equipment and personal protective equipment to ensure a representative sample is collected with negligible cross-contamination that produces reliable results;
- e) describe the sampling methods employed for each chemical or attribute, including the volume and quantity of each sample to be collected and the type of sample to be collected;
- f) outline the sampling pattern and sampling location(s) selected to ensure the samples collected are representative of the batch of waste, using appropriate illustrations;
- g) describe the procedures for photographing and labelling each sample, using a unique sample identifier consisting of, but not limited to: the name of the resource recovery waste; the source of the resource recovery waste; the date the sample was collected; the batch identifier the sample was taken from, references to other samples and the details of the sampler;
- h) describe procedures for handling, containment and transport of samples to ensure samples are delivered to the laboratory in good condition and within the timeframes required to maintain the quality of the sample for each chemical or attribute to ensure the quality of the testing. This includes:
 - chain-of-custody procedures required for each sample, which detail the name of the sampler, collection date, testing to be performed, sample preservation method, departure time and condition of samples at dispatch;

	<ul style="list-style-type: none">• sample preservation and storage; and• decontamination of sampling equipment <p>i) require a yearly audit of the sampling practices undertaken in the previous 12 months; and</p> <p>j) record any deviations from the above requirements, and the reasons for the deviations.</p> <p>source site means the site where the recovered soil is generated.</p>
--	--

Table 1 – Chemicals and other attributes

Column 1	Column 2	Column 3
Chemicals and other attributes	Maximum average concentration for one-off characterisation (mg/kg 'dry weight' unless otherwise specified)	Absolute maximum concentration for one-off characterisation (mg/kg 'dry weight' unless otherwise specified)
1. Mercury	0.5	1
2. Cadmium	0.5	1
3. Lead	75	150
4. Arsenic	20	40
5. Chromium (VI)	10 ⁷	20 ⁷
6. Copper	100	250
7. Nickel	40	80
8. Zinc	150	400
9. Electrical conductivity	1.5 dS/m	3.0 dS/m
10. pH ¹	5.0 – 9.0	4.5 – 10.0
11. Total Polycyclic Aromatic Hydrocarbons (PAHs)	20	50
12. Benzo(a)pyrene TEQ ²	1.0	2.0
13. Naphthalene	1.0	2.0
14. Benzene	Not applicable	0.5
15. Toluene	Not applicable	65
16. Ethyl-benzene	Not applicable	25
17. Xylene	Not applicable	15
18. TRH (C ₆ -C ₁₀) or F1 ^{3, 4}	25	30
19. TRH (C ₁₀ -C ₁₆) or F2 ^{3, 5}	60	80
20. TRH (C ₁₇ -C ₃₄) or F3 ³	100	150
21. TRH (C ₃₅ -C ₄₀) or F4 ³	250	450
22. Asbestos fines/fibrous asbestos	Not applicable	No asbestos present ⁶
23. Rubber	Not applicable	0.01%
24. Plastic	Not applicable	0.01%
25. Paper and cardboard	Not applicable	0.01%
26. Asphalt	Not applicable	0.01%
27. Cloth	Not applicable	0.01%
28. Paint	Not applicable	0.01%
29. Glass	Not applicable	0.01%
30. Metal	Not applicable	0.01%
31. Wood	Not applicable	0.01%

1. The ranges given for pH are for the minimum and maximum acceptable pH values in the material.
2. Benzo(a)pyrene TEQ means Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b+j)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Chrysene, Dibenz(a,h)anthracene, and Indeno(1,2,3-c,d)pyrene multiplied by their toxicity equivalence factor (potency relative to B(a)P) in Schedule B1 of NEPM 1999 (April 2013), and summing these concentrations to give B(a)P TEQ.
3. The TRH test may include silica gel clean-up. The absolute maximum concentration and the maximum average concentration may include silica gel clean-up. TRH silica gel clean-up may be undertaken if the initial TRH test (without silica gel clean-up) exceeds the absolute maximum concentration or the maximum average concentration.
4. To obtain F1, subtract the sum of BTEX concentrations from the F1 fraction.
5. To obtain F2, subtract naphthalene from the F2 fraction.
6. See test method.
7. Limit applies to chromium VI.

Table 2 – Key test methods

Key test methods that differ from general orders	<p>Test method for measuring total PAHs, benzo(a)pyrene TEQ and naphthalene:</p> <p>Analysis using USEPA SW-846 Method 8100 Polynuclear aromatic hydrocarbons (or an equivalent analytical method).</p> <p>Calculate the sum of all 16 PAHs for total PAHs.</p> <p>Report total PAHs as mg/kg dry weight.</p> <p>Report benzo(a)pyrene TEQ as mg/kg, whereby Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b+j)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Chrysene, Dibenz(a,h)anthracene, and Indeno(1,2,3-c,d)pyrene are multiplied by their toxicity equivalence factor (potency relative to B(a)P) in Schedule B1 of NEPM 1999 (April 2013), and summing these concentrations to give benzo(a)pyrene TEQ.</p> <p>The full limit of reporting value must be used for the calculations above.</p> <p>Report naphthalene as mg/kg.</p>
	<p>Test method for measuring TRHs C₆-C₉ (F1):</p> <p>Analysis using Method A1 in Section 13.2 of Schedule B3: Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), or an equivalent analytical method.</p> <p>Report F1 as mg/kg dry weight by subtracting the sum of BTEX concentrations from the F1 fraction.</p>
	<p>Test method for measuring TRHs >C₁₀-C₁₆ (F2), TRHs >C₁₆-C₃₄ (F3), and TRHs >C₃₄-C₄₀ (F4):</p> <p>Analysis using Method A2 in Section 13.3 in Schedule B3: Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), or an equivalent analytical method.</p> <p>Report F2 as mg/kg dry weight by subtracting naphthalene from F2 fraction.</p> <p>Report F3 and F4 as mg/kg dry weight.</p>
	<p>Test method for measuring asbestos fines/fibrous asbestos:</p> <p>Analysis must include qualitative and quantitative analysis of asbestos.</p> <p>The weight of the sample must be recorded prior to analysis.</p> <p>A minimum of 1 kilogram of recovered soil must be analysed.</p> <p>Analysis must comply with the Australian Standard AS4964-2004, <i>Method for the qualitative identification of asbestos in bulk samples</i>, Standards Australia, with the exception of sieve size.</p>

	<p>Analysis must gravimetrically determine the mass of asbestos containing material ('ACM') (bonded asbestos) retained on a 7mm sieve and assumes 15% of ACM as asbestos.</p> <p>Analysis must gravimetrically determine the mass of asbestos fines ('AF') and fibrous asbestos ('FA') retained on and passing a 2mm sieve post 7mm sieving. Assumes AF and FA are 100% asbestos containing. Asbestos retained must be calculated as a percentage of the total sample weight.</p> <p>Qualitative analysis must be undertaken by using phase-contrast microscopy (PCM) or polarised-light microscopy (PLM) as asbestos identification.</p> <p>Where a laboratory has qualitatively observed asbestos present in a sample through PCM or PLR analysis, but has quantitatively measured that asbestos is below the reporting limit, the laboratory must still report that asbestos was observed.</p>
	<p>Test method for measuring 23 – 30:</p> <p>NSW Roads and Traffic Authority Test Method T276 Foreign Materials Content of Recycled Crushed Concrete (or an equivalent method), using a 2 mm sieve.</p> <p>Report rubber, plastic, paper and cardboard, asphalt, cloth, paint, glass, metal, and wood as separate and individual foreign materials.</p> <p>Report each individual foreign material as % weight by weight.</p>

Title	The Recovered Soil Exemption 2021
Activities to which this exemption applies	Recovered soil can only be applied to land for the purposes of engineering fill or earthworks.
Key definitions	<p>earthworks means material applied to land for the purposes of:</p> <ul style="list-style-type: none"> • raising the level of the land; or • raising and shaping the topography of the land. <p>engineering fill means material that is required to support structures or associated pavements, or for which engineering properties are to be controlled.</p>

NSW Environment Protection Authority

Email: info@epa.nsw.gov.au

Website: www.epa.nsw.gov.au

EPA 2021P3256

September 2021

The EPA [disclaimer](#) and [copyright](#) information is available on the EPA website.