End of Waste Code

Coal Combustion Products (ENEW07359717)

Waste Reduction and Recycling Act 2011
Version history

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description of changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01 January 2019</td>
<td>Commencement of EOW code</td>
</tr>
</tbody>
</table>

Prepared by: Waste and Contaminated Land Assessment, Department of Environment and Science

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December 2018
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1. Explanatory Statement

This End of Waste (EOW) code for coal combustion products has been issued by the Queensland Government in accordance with section 159 of the Waste Reduction and Recycling Act 2011 (WRR Act).

This EOW code states when a waste becomes a resource and any relevant requirements and/or conditions for its use. It supports the vision of Queensland’s Waste Strategy for Queensland to become a national leader in avoiding unnecessary consumption and waste generation by adopting innovative resource recovery approaches and managing all products and materials as valuable and finite resources.

If the waste is not being used in accordance with the relevant requirements and/or conditions of this EOW code, or another type of permit that allows for its use, it is considered a waste and must be disposed of appropriately at a facility that is lawfully able to receive the waste.

2. Guidance

2.1 Resource use versus Activity

An EOW code states when a waste stops being a waste following any necessary processing or treatment. A waste becomes a resource when it has been determined to meet the requirements of an EOW code. It may be necessary to treat or process the waste prior to (i.e., in order to) meet those requirements. An Environmental Authority (EA) under the Environmental Protection Act 1994 (EP Act) is required where an activity being undertaken triggers the threshold for any environmentally relevant activity (ERA). This means that treating or processing the waste to meet the resource quality criteria under the EOW code may require an EA under the EP Act if the activity meets the threshold for an ERA.

2.2 Resource versus Waste

A waste that is considered a resource under an EOW code is considered a resource only for the purpose of the use(s) approved in an EOW code. In the event, a resource does not meet the requirements of the EOW code and/or is not used in accordance with the EOW code, it is deemed to be a waste and must be managed in accordance with waste management requirements under the EP Act and the WRR Act, and their subordinate legislation.

A resource which is approved under an EOW code, is also deemed to be a waste when it is disposed of at a waste disposal facility, or if it is deposited at a place in a way that would, apart from its use approved under an EOW code, constitute a contravention of the general littering provision or the illegal dumping of waste provision under the WRR Act.

2.3 Failure to comply

Any person operating under this EOW code must comply with the relevant requirements and conditions of use of the EOW code. It is an offence to not comply with the relevant requirements and conditions, carrying a maximum penalty of 1665 penalty units for an individual and 8325 penalty units for a corporation.

Please refer to Appendix A of this EOW code for general obligations for all persons operating under this EOW code, which includes the resource users.

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1 The value of a penalty unit is stated in the Penalties and Sentences Regulation 2015 (Qld).
2.4 Lawfulness of the activity
The issuing of this EOW code for the use of the resource does not warrant or imply the lawfulness of the activity under all legislation, or that approvals necessary under other legislation have or will be approved. It is the responsibility of the registered resource producer and resource user to identify and obtain all other approvals necessary for the relevant activities.

3. Period of this EOW code
This EOW code takes effect from 01 January 2019 and remains in force until it is amended, cancelled or suspended by the chief executive.

4. Waste to which this EOW code applies
This EOW code is limited to coal combustion products sourced from coal fired power stations and coal fired boilers where no other source of fuels is mixed other than petroleum based gas or liquid fuel for ignition support. This waste becomes a resource when the requirements and conditions under this EOW code are met.

5. Person to whom this EOW code applies

5.1 Registered resource producers of the resource
5.1.1 Prior to operating under this EOW code, the producer of the resource must register with the chief executive by giving a notice in the approved form that the person intends to become a registered resource producer for this EOW code.
5.1.2 A registered resource producer for this EOW code must comply with the stated registered resource producer requirements.

5.2 Resource users
5.2.1 The resource user must only use the resource for a purpose allowed under this EOW code.
5.2.2 The resource user must comply with the stated conditions of use.

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2 If an EOW code is to be amended, cancelled or suspended, the chief executive will provide an opportunity to make written submissions by providing a proposed action notice to the registered resource producers; and publishing the proposed action notice on department’s website for anyone interested.
3 The approved form, Registered Resource Producer for an EOW code, is available on the Queensland Government website at www.des.qld.gov.au, and can be searched using the term ESR/2018/4082
6. Registered resource producer requirements

(6.1) The registered resource producer must not use, sell or give away the resource unless it meets the criteria in Table 1 – Resource quality criteria for the approved use in accordance with this EOW code.

<table>
<thead>
<tr>
<th>Quality criteria</th>
<th>Limits for specific uses *</th>
<th>Total Maximum Concentration (mg per kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bound applications</td>
<td>Unbound applications</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsenic (total)</td>
<td>NS</td>
<td>20</td>
</tr>
<tr>
<td>Beryllium</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Boron</td>
<td>NS</td>
<td>100</td>
</tr>
<tr>
<td>Cadmium</td>
<td>NS</td>
<td>1</td>
</tr>
<tr>
<td>Chromium (total)</td>
<td>NS</td>
<td>100</td>
</tr>
<tr>
<td>Chromium (III)</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Chromium (VI)</td>
<td>NS</td>
<td>1.5</td>
</tr>
<tr>
<td>Cobalt</td>
<td>NS</td>
<td>100</td>
</tr>
<tr>
<td>Copper</td>
<td>NS</td>
<td>100</td>
</tr>
<tr>
<td>Lead</td>
<td>NS</td>
<td>50</td>
</tr>
<tr>
<td>Mercury</td>
<td>NS</td>
<td>1</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Nickel</td>
<td>NS</td>
<td>60</td>
</tr>
<tr>
<td>Selenium</td>
<td>NS</td>
<td>10</td>
</tr>
<tr>
<td>Zinc</td>
<td>NS</td>
<td>200</td>
</tr>
<tr>
<td>Electrical conductivity</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>pH</td>
<td>NS</td>
<td>5 – 12.5 (pH units)</td>
</tr>
</tbody>
</table>

NS = Not specified (monitoring of each element is still required).
* measured using reference test methods
** measured using hot CaCl₂ method

(6.2) In addition to meeting the criteria in Table 1 – Resource quality criteria, the resource must not have any properties nor contain any other contaminants at concentrations which may cause environmental harm when used in accordance with this EOW code.

Resource monitoring

(6.3) The registered resource producer must conduct monitoring of the resource quality to determine compliance with Table 1 - Resource quality criteria and at a minimum of the following frequency:
a) annually, where statistical analysis has been undertaken that demonstrates no significant (at minimum 95% Confidence Interval) difference in the mean and standard variation of contaminant concentrations; otherwise,

b) every six months.

(6.4) Where the composition of the resource has changed or is likely to change, additional monitoring must be conducted which is sufficient to detect and characterise the extent of any change, until such time that the composition is no longer likely to change and that results demonstrate that the material is compliant with *Table 1 – Resource quality criteria* before it is used as a resource under this EOW code.

(6.5) Any determination of the suitability or characterisation of the resource (including ongoing sampling) must be made by an appropriately qualified person.

(6.6) All analysis required under this EOW code must be carried out by a laboratory that has NATA certification, or an equivalent certification, for such analyses.

### Information to be provided

(6.7) The registered resource producer must make the following available to any person to whom they provide the resource each time the resource is provided for use:

a) confirmation in writing that the resource being supplied is compliant with the requirements of this EOW code;

b) a most recent certificate of analysis for the quality of the resource being supplied for at least the quality criteria in *Table 1 – Resource quality criteria*; and

c) Safety Data Sheet for the resource.

### Records

(6.8) The registered resource producer must keep the following records each time the resource is provided for use:

a) origin of the resource;

b) date of dispatch of the resource;

C) contact details for the person receiving the resource; and

D) quantity of the resource supplied measured in tonnes.

(6.9) The registered resource producer must keep records of all requirements, including monitoring requirements, under this EOW code for a period of at least five (5) years and provide the records to the chief executive upon request and in the format requested within 10 days.

### 7. Conditions of use

#### Approved uses

(7.1) The approved resource is coal combustion products that comply with the quality criteria listed in *Table 1 – Resource quality criteria* and is used for the purpose stated in *Table 2 – Approved uses of the resource*. 

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<table>
<thead>
<tr>
<th>Purpose</th>
<th>Description of approved use</th>
</tr>
</thead>
</table>
| Bound applications | The resource can be used in manufacturing processes and applications which encapsulate or chemically transform and incorporate the resource into a final product that complies with relevant Australian Standards for that product. Final products for the purpose of this EOW code are limited to:  
  a) cementitious mixes;  
  b) cement products;  
  c) concrete products;  
  d) asphalt;  
  e) binder for road stabilisation pavements;  
  f) rigid and composite pavements structures;  
  g) ceramic products;  
  h) insulators;  
  i) varnishes, plastics, ceramics, ultra-light concrete and metal alloys;  
  j) paints, coatings and adhesives;  
  k) geopolymers; and  
  l) rubbers. |
| Unbound applications | The resource use is limited to the following applications on standard areas:  
  a) pipe bedding materials;  
  b) sub-surface drainage;  
  c) selected backfill for structures;  
  d) road pavement, base, sub-base and subgrade structures;  
  e) structured and engineered fill;  
  f) select layers which act as working platforms at the top of earthworks; and  
  g) fill for reinforced soil structures (including geo-grid applications). |
| Manufacturing of soil ameliorant or soil product | The resource can be used in manufacturing a soil ameliorant or soil product which meets the relevant Australian Standards for that product. |
| Land application | The resource can be used in direct land application on naturally acidic or low pH soils to correct the identified agronomic deficiency in land to which it is applied and where the final soil pH does not exceed 8 pH unit after application of the resource. |

Records  
(7.2) For each load of the resource received, the resource user must keep the following records for a minimum of five (5) years and must provide to the chief executive upon request and in the format requested by the date requested:  
  a) quantity of the resource;  
  b) date of receipt;  
  c) name and address of the person who supplied the resource; and  
  d) name and address of the resource user at the destination of resource.
### Unbound applications

<table>
<thead>
<tr>
<th>(7.3)</th>
<th><strong>Resource users</strong> undertaking an unbound application must not use the resource:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a) below the groundwater table;</td>
</tr>
<tr>
<td></td>
<td>b) within 50m of a water supply bore; and</td>
</tr>
<tr>
<td></td>
<td>c) in areas with pH greater than 8.</td>
</tr>
</tbody>
</table>

### Soil ameliorant or soil product use

<table>
<thead>
<tr>
<th>(7.4)</th>
<th><strong>Resource users</strong> manufacturing the soil ameliorant or soil product may only mix, blend, or otherwise incorporate the resource into a material to be used as a soil ameliorant where the material to be provided complies with the AS4454 AS4419 including monitoring and keeping records of product quality to demonstrate compliance with the relevant Australian Standard.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(7.5)</td>
<td><strong>Resource users</strong> undertaking the manufacturing of the soil ameliorant or soil product or applying resource directly to land under this EOW code must notify the chief executive of their name, address, contact information and details of intended resource usage, in writing using the approved form[^4] no less than 10 business days prior to using the resource.</td>
</tr>
<tr>
<td>(7.6)</td>
<td><strong>Resource users</strong> undertaking direct land application of the resource must only do so in naturally acidic soils:</td>
</tr>
<tr>
<td></td>
<td>a) to correct the identified agronomic deficiency in land to which it is applied; and</td>
</tr>
<tr>
<td></td>
<td>b) where the final soil pH does not exceed 8 pH unit after application of the resource.</td>
</tr>
</tbody>
</table>

### Notification of emergencies, incidents and exceptions

| (7.7) | Any breach of a condition of this EOW code must be reported to the chief executive within 24 hours of becoming aware of the breach. **Records**, including full details of the breach and any subsequent actions taken, must be kept and provided to the chief executive upon request. |

[^4]: The approved form is available on the chief executive’s website at www.des.qld.gov.au
8. Definitions
Words and phrases used throughout this EOW code in bold are defined below. Where a definition for a term used in this EOW code is sought and the term is not defined within this EOW code, the definitions provided in the relevant legislation shall be used.

‘appropriately qualified person’ means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relating to the subject matter using the relevant protocols, standards, methods or literature.

‘AS4419’ means Australian Standard 4419 Soils for landscaping and garden use (2003), or its most recent version.

‘AS4454’ means Australian Standard 4454 Composts, soil conditioners and mulches (2012), or its most recent version.

‘cenosphere(s)’ means inert, hollow, essentially thin-walled glass spheres of approximately 10–350 microns having a typical density of 0.4–0.8 g/cm³, comprised largely of silica and alumina and filled with air and/or gasses which are formed from coal combustion ash when in a molten state.

‘chief executive’ means the Department of Environment and Science or its successor.

‘coal combustion products’ means fly ash, furnace bottom ash or cenosphere(s) resulting from the burning of coal within coal fired power stations and coal fired boilers where no other source of fuel is mixed other than petroleum based gas or liquid fuel for ignition support.

‘contaminants’ (as defined in Section 11 of the Environmental Protection Act 1994), unless authorised under this EOW code means —

   a) a gas, liquid or solid; or
   b) an odour; or
   c) an organism (whether alive or dead), including a virus or parasite; or
   d) energy, including noise, heat, radioactivity and electromagnetic radiation; or
   e) a combination of contaminants.

‘emergency(ies)’ means a situation where either human health or safety is threatened, or serious or material environmental harm has been or is likely to be caused; and urgent action is necessary to protect the health or safety of persons, or prevent or minimise the harm, or rehabilitate or restore the environment because of the harm.

‘environmental harm’ means environmental harm as defined in Chapter 1 of the Environmental Protection Act 1994.

‘fly ash’ means solid material extracted from the flue gasses of a boiler fired with pulverised coal, consisting essentially of the oxides of silicon, aluminium, iron and some calcium of which particle sizes range from less than 1µm (micrometre) to 200µm and are irregular to spherical shape.

‘furnace bottom ash’ means the agglomerated particles formed at the bottom of the furnace. Furnace bottom ash is typically grey to black in colour, is quite angular, and has a porous surface structure.

‘load’ means the volume of resource put in or on something for conveyance or transportation, carried at one time. A truck and trailer carrying the resource is considered as one load as well as multiple bins travelling by rail. Where the resource is transported via conveyor systems, information should be recorded on a daily basis until the transfer ceases.

‘NATA’ is the National Association of Testing Authorities.

‘person(s)’ means an individual or a corporation.

‘records’ include breach notifications, analysis results, monitoring reports and monitoring programs required under a condition or requirement of this EOW code.
‘reference test methods’—The reference test methods for determining the contaminant and as described in the most recent version of the United States Environmental Protection Agency’s Test Methods for Evaluating Solid Waste, Physical/Chemical Methods [available December 2013 at www.epa.gov/epaoswer/hazwaste/test/sw846.htm, also known as SW-846].

‘registered resource producer’ means a person who has registered with the chief executive to use, sell or give away the resource to be used under this EOW code.

‘resource(s)’ means fly ash, furnace bottom ash or cenosphere(s) produced from the combustion of coal, at coal fired power stations and coal fired boilers, that meet the resource quality criteria in Table 1 – Resource quality criteria of this EOW code, and does not contain contaminants other than what is listed in Table 1 – Resource quality criteria.

‘resource user(s)’ means a person who uses the resource for the use approved under this EOW code and in such a manner which does not cause any environmental harm, and includes the producer who uses the resource.

‘Safety Data Sheet’ means a document containing data regarding the properties of the resource which provides information on handling or working with that substance in a safe manner; and includes information such as physical data toxicity, environmental characteristics, health effects, first aid, reactivity; and storage, disposal, protective equipment and spill handling procedures. The Safety Data Sheet must be compliant with Safe Work Australia’s code of practice for production of Safety Data Sheets.

‘soil ameliorant’ means a substance added to soil to improve the growing conditions for plant roots by providing nutritional requirements.

‘standard areas’ mean land use including residential, parks, recreational play fields, open spaces and commercial and industrial sites; excluding waters and the bed and banks of waters.

‘surface water’ means waters excluding groundwater.

‘waters’ includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water, natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater and any part thereof.

- END -
Appendix A — General obligation for all persons

This appendix is not intended to provide a comprehensive assessment of all obligations under Queensland law. It provides some general information and persons are encouraged to familiarise themselves with all requirements related to their specific operation.

Responsibilities under the *Environmental Protection Act 1994*

All persons within the State of Queensland must also meet their obligations under the *Environmental Protection Act 1994*, and the regulations made under that Act.

**General environmental duty**

Section 319 of the *Environmental Protection Act 1994* states that we all have a general environmental duty. This means that we are all responsible for the actions we take that affect the environment. We must not carry out any activity that causes or is likely to cause environmental harm unless we take all reasonable and practicable measures to prevent or minimise the harm. To decide what meets your general environmental duty, you need to consider:

- the nature of the harm or potential harm
- the sensitivity of the receiving environment
- the current state of technical knowledge for the activity
- the likelihood of successful application of the different measures to prevent or minimise environmental harm that might be taken
- the financial implications of the different measures as they would relate to the type of activity.

It is not an offence not to comply with the general environmental duty. However, maintaining your general environmental duty is a defence against the following acts:

- (a) an act that causes serious or material environmental harm or an environmental nuisance
- (b) an act that contravenes a noise standard
- (c) a deposit of a contaminant, or release of stormwater run-off, mentioned in section 440ZG.


**Some relevant offences under the *Environmental Protection Act 1994***

**Causing serious or material environmental harm (sections 437–39)**

Material environmental harm is when the harm is not trivial or negligible in nature. Serious environmental harm is harm that is irreversible, of a high impact or widespread, or that is caused to an area of high conservation value or special significance. Damages, or costs required to rehabilitate the environment, of over $5000 constitutes material environmental harm and damages, or costs required to rehabilitate the environment, of over $50,000 constitutes serious environmental harm.

Serious or material environmental harm excludes environmental nuisance.
Causing environmental nuisance (section 440)

Environmental nuisance is unreasonable interference with an environmental value caused by aerosols, fumes, light, noise, odour, particles or smoke. It may also include an unhealthy, offensive or unsightly condition because of contamination.

Depositing a prescribed water contaminant in waters (section 440ZG)

Prescribed water contaminants include a wide variety of contaminants listed in Schedule 9 of the Environmental Protection Regulation 2008.

It is your responsibility to ensure that prescribed water contaminants are not left in a place where they may or do enter a waterway, the ocean or a stormwater drain. This includes making sure that stormwater falling on or running across your site does not leave the site contaminated. Where stormwater contamination occurs you must ensure that it is treated to remove contaminants. You should also consider where and how you store material used in your processes onsite to reduce the chance of water contamination.

Placing a contaminant where environmental harm or nuisance may be caused (section 443)

A person must not cause or allow a contaminant to be placed in a position where it could reasonably be expected to cause serious or material environmental harm or environmental nuisance.

Some relevant offences under the Waste Reduction and Recycling Act 2011

Littering (section 103)

Litter is any domestic or commercial waste and any material a person might reasonably believe is refuse, debris or rubbish. Litter can be almost any material that is disposed of incorrectly. Litter includes cigarette butts and drink bottles dropped on the ground, fast food wrappers thrown out of the car window, poorly secured material from a trailer or grass clippings swept into the gutter. However, litter does not include any gas, dust, smoke or material emitted or produced during, or because of, the normal operations of a building, manufacturing, mining or primary industry.

Illegal dumping of waste (section 104)

Illegal dumping is the dumping of large volumes of litter (200 litres or more) at a place. Illegal dumping can also include abandoned vehicles.

Failure to comply with EOW code (section 158)

A registered resource producer for an EOW code must not produce, use, sell or give away the resource unless the registered resource producer complies with the requirements of the EOW code relating to the resource.

A person, other than a registered resource producer, must not use a resource in a way, or for a purpose, that does not comply with an EOW code for the resource.