

End of Waste Code

Foundry Sand (ENEW07359617)

Waste Reduction and Recycling Act 2011



Version history

Version	Date	Description of changes
1.00	01 January 2019	Commencement of EOW code
2.00	12 January 2021	Amendment of EOW Code – approval by gazette on 29 January 2021
2.01	23 June 2023	Minor update to reflect the definition of waste moving into the <i>Waste Reduction and Recycling Act 2011</i> . This does not impact the interests of the producer or user of the resource.

Prepared by: Waste Assessment, Department of Environment and Science

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1. Explanatory Statement

This End of Waste (EOW) code for **foundry sand** has been issued by the **chief executive** in accordance with section 159 of the *Waste Reduction and Recycling Act 2011* (WRR Act).

This EOW code states when the **foundry sand** becomes a **resource** and any relevant requirements and/or conditions for its use. If the **resource** 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 under section 8AA of the WRR Act 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

Under section 155 of the WRR Act, a waste stops being a waste and becomes a **resource** when it meets the requirements and conditions of an EOW code. Under section 159 of the WRR Act, an EOW code specifies the circumstances when a waste becomes a resource; how it must be used to be considered a resource; when it is no longer considered a resource but a waste instead; and conditions that must be complied with by resources users and registered resource producers.

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 a **resource** under an EOW code is considered a resource only for the use(s) approved in an EOW code. To be considered a resource under the EOW code, the material used as the resource must meet the requirements of the EOW code and be used in accordance with the conditions of the EOW code, otherwise it is considered 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** under an EOW code, is deemed to be a waste again, if it is not used in accordance with the EOW code; if it is disposed of at a waste disposal site; 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 (section 103) or the illegal dumping of waste provision (section 104) under the WRR Act.

2.3 Failure to comply

It is an offence under section 158(1) of the WRR Act for a **registered resource producer** to produce the **resource**, or use, sell or give away the **resource** unless they comply with the requirements under an EOW code. Further, it is an offence under section 158(2) of the WRR Act for a **person** to use the **resource** in a way, or for a purpose, that does not comply with an EOW code for the **resource**. These offences carry a maximum penalty of 1,665 penalty units for an individual and 8,325 penalty units for a corporation¹.

¹ The value of a penalty unit is stated in the *Penalties and Sentences Regulation 2015* (Qld).

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**.

2.4 Lawfulness of the activity

The issuing of this EOW code for the use of a **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 the date of gazettal of this EOW code and remains in force until it is amended, cancelled or suspended by the **chief executive**².

4. Waste to which this EOW code applies

This EOW code is limited to **foundry sand** generated during foundry operations. The **foundry sand** 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 A **registered resource producer** for this EOW code must comply with the stated registered resource producer requirements in Section 6 – Registered Resource Producer Requirements.

5.2 Resource users

5.2.1 The **resource user** must only use the **resource** in a way, and for a purpose allowed under this EOW code.

5.2.2 The **resource user** must comply with the stated conditions of use in Section 7 – Conditions of Use.

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 chief executive's [website](#).

6. Registered Resource Producer Requirements

Registration under this EOW code			
(6.1)	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 ³ to become a registered resource producer for this EOW code.		
Approved resource			
(6.2)	The approved resource is foundry sand which complies with <i>Requirement (6.3)</i> of this EOW code.		
(6.3)	<p>The registered resource producer must not use, sell or give away the resource under this EOW code unless it complies with all of the following criteria and quality characteristics:</p> <ul style="list-style-type: none"> a) does not exceed the quality criteria stated in <i>Table 1 – Resource quality criteria</i> for the approved use stated in <i>Condition (7.1)</i>; and b) does not have characteristics contained in List 2: Characteristics of controlled wastes, of Schedule A of the Movement of Controlled Waste NEPM (such as, being flammable or emitting flammable gases, liable to spontaneous combustion, oxidising, containing organic peroxides, poisonous, infectious, corrosive, toxic or giving off toxic gases or being ecotoxic). 		
(6.4)	Table 1 – Resource quality criteria		
Quality characteristics	Total maximum concentration (mg/kg dry weight unless otherwise specified)		
	Bound applications	Unbound applications and Manufacturing of compost, mulch and soil conditioner	Unrestricted use and Manufacturing of general purpose soil
Arsenic (As)	100	40	20
Cadmium (Cd)	4	1	1
Chromium (Cr) III	400	100	100
Chromium (Cr) VI	100	1	1
Copper (Cu)	600	100	100
Lead (Pb)	150	150	30
Mercury (Hg)	4	1	1
Nickel (Ni)	60	60	60
Selenium (Se)	20	20	5
Silver (Ag)	40	40	10

³ The approved form, *Registered Resource Producer for an EOW code*, is available on the chief executive's [website](#).

Zinc (Zn)	200	200	200
Phenols (non-halogenated)	100	100	60
Phenols (halogenated)	4	1	1
Benzene	4	1	1
Fluoride	450	450	200
Formaldehyde	10	10	10
Triethylamine (TEA)*	5	1	1
Electrical conductivity	NS	2 dS/m	1 dS/m
pH range	5 - 10 (pH units)	5 - 10 (pH units)	5 - 10 (pH units)

NS = Not specified

*Triethylamine (TEA) is to be monitored when TEA is used in the foundry process. It is not a requirement to monitor TEA for the resource produced from foundries that do not use TEA in their process.

Resource monitoring

(6.5)	<p>Prior to providing the resource to a resource user, the registered resource producer must develop a resource characterisation report that:</p> <ul style="list-style-type: none"> a) identifies the source of the resource including how it is generated (including sands generated from different processes within the foundry); b) identifies the constituents of, or inputs to the foundry operations (including any binders, catalysts or other additives that may contain contaminants such as Triethylamine (TEA)); c) determines whether the composition of the resource will be consistent or variable with time; and d) characterises the initial batch of resource based on the detailed assessment undertaken and the quality criteria listed in <i>Table 1 - Resource quality criteria</i>.
(6.6)	<p>Where the composition of the resource is inconsistent, has changed or is likely to change, the registered resource producer must conduct sampling and characterisation of the resource against the quality criteria in <i>Table 1 – Resource quality criteria</i> on at least a quarterly basis until consistency can be demonstrated by no less than 12-months test results.</p>
(6.7)	<p>If sampling and characterisation determine the resource to be consistent and inputs do not change, the registered resource producer must continue to conduct sampling and characterisation at least on an annual basis.</p>
(6.8)	<p>All sampling and monitoring required under this EOW code must be carried out by an appropriately qualified person.</p>
(6.9)	<p>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.</p>

Information to be provided	
(6.10)	<p>The registered resource producer must provide the following to the resource user upon establishment of an arrangement to sell or give away the resource, and annually thereafter:</p> <ul style="list-style-type: none"> a) a copy of the EOW code for <i>Foundry Sand (ENEW07359617)</i>⁴; b) the registered resource producer's business name, ABN and address; c) confirmation in writing that the resource being supplied is compliant with the requirements of this EOW code; d) a most recent certificate of analysis for the quality characteristics listed in <i>Table 1 – Resource quality criteria</i>; and e) safety data sheet for the resource.
Records	
(6.11)	<p>The registered resource producer must keep the following records for the resource provided to a resource user:</p> <ul style="list-style-type: none"> a) origin of the resource (e.g. address, lot on plan and/or GPS coordinates); b) quantity (in tonnes) of the resource supplied; c) quality criteria of the resource (including but not limited to the quality characteristics listed in <i>Table 1 – Resource quality criteria</i>); d) date of dispatch of the resource; and e) business or individual's name, ABN and address of the person receiving the resource.
(6.12)	<p>All records required to be kept by the registered resource producer under this EOW code must be:</p> <ul style="list-style-type: none"> a) kept by the registered resource producer for a period of not less than five (5) years; and b) provided to the chief executive upon request, in the format requested and in the time period specified.
Notification of emergencies , incidents and breaches	
(6.13)	<p>Any breach of a requirement of this EOW code must be reported to the chief executive as soon as practicable and within 24 hours of becoming aware of the breach.</p>
(6.14)	<p>Records of any breach of a requirement of this EOW code, including full details of the breach and any subsequent actions taken, must be kept and provided to the chief executive upon request and in the format requested and time period specified.</p>

⁴ This can be a physical copy, an electronic copy or a link to the chief executive's [website](#) where this EOW code is available.

7. Conditions of Use

Approved uses	
(7.1)	<p>The approved resource is foundry sand that complies with <i>Requirement (6.3)</i> of this EOW code and is used for the following purposes:</p> <ul style="list-style-type: none"> a) bound applications where the resource is encapsulated or chemically transformed and incorporated into a final product which complies with relevant Australian Standards⁵ for that product; b) unbound applications where the resource application is limited to the uses stated in <i>Condition (7.2)</i> on standard areas; c) as a feedstock in the manufacture of compost, mulch and soil conditioners that meets the requirements of AS4454; d) as a feedstock in the manufacture of general purpose soil that meets the requirements of AS4419; and/or e) unrestricted applications where the final product complies with the relevant Australian Standards⁵ for that product.
Resource use in unbound applications	
(7.2)	<p>Use of the resource in unbound applications is limited to the below applications on standard areas:</p> <ul style="list-style-type: none"> a) as pipe bedding material; b) as road base material; c) in other engineered construction works⁶; and d) as daily cover at landfills approved under the <i>Environmental Protection Act 1994</i>.
Records	
(7.3)	<p>The resource user must record the following information for the resource received by the resource user under this EOW code:</p> <ul style="list-style-type: none"> a) business name, ABN and address of the registered resource producer who supplied the resource; b) date the resource user received the resource; c) quantity (in tonnes) of the resource received by the resource user; and d) site of use of resource (e.g. street address, lot on plan and/or GPS coordinates).
(7.4)	<p>All records required to be kept by the resource user under the conditions of this EOW code must be:</p>

⁵ In the absence of Australian Standards for the product, it is required that the final product meets any other appropriate industry standards (e.g. Registered Professional Engineer of Queensland certified technical specifications).

⁶ Use of the resource at a **facility** as fill material must be carried out in accordance with the requirements of an environmental authority that authorises Environmentally Relevant Activity (ERA) 60 as prescribed under Schedule 2 of the Environmental Protection Regulation 2019.

	<p>a) kept by the resource user for a period of not less than five (5) years; and</p> <p>b) provided to the chief executive upon request, in the format requested and in the time period specified.</p>
Notification of emergencies , incidents and breaches	
(7.5)	Any breach of a condition of this EOW code must be reported to the chief executive as soon as practicable and within 24 hours of becoming aware of the breach.
(7.6)	Records of any breach of a condition of this EOW code, including full details of the breach and any subsequent actions taken, must be kept and provided to the chief executive upon request and in the format requested and time period requested.

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.

‘**ABN**’ means Australian Business Number which is a unique 11 digit number issued by the Australian Business Register and identifies a business in Australia.

‘**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.

‘**business**’ means a body of persons, whether incorporated or unincorporated.

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

‘**compost**’ has the meaning in **AS4454** and is the organic product that has undergone controlled aerobic and thermophilic biological transformation through the composting process to achieve pasteurisation and reduce phytotoxic compounds, and achieved a specified level of maturity as specified Appendix N (Determination of Maturity Index) of **AS 4454**.

‘**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
- d) energy, including noise, heat, radioactivity and electromagnetic radiation; or
- e) a combination of contaminants.

‘**daily cover**’ means the soil to cover the waste at a landfill used in accordance with waste coverage requirements under the **environmental authority** for the landfill facility.

'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.

'engineered construction works' means engineer designed civil applications that have been certified by a Registered Professional Engineer of Queensland (RPEQ) as suitable for its intended purpose.

'environmental authority' is an approval granted by the **chief executive** pursuant to the *Environmental Protection Act 1994* which authorises the holder of the environmental authority to carry out an environmentally relevant activity or a mining activity.

'facility' means a naturally occurring or constructed hollow, pit or void (e.g. a gully, mining shaft or quarry).

'foundry sand' means ferrous and non-ferrous foundry sand recovered from the moulds used in the hot casting of ferrous and non-ferrous metals comprising sand and fine sand rejects from sand recovery systems.

'general purpose soil' has the meaning in **AS4419** being a material consisting of natural soil, a blend of sand and organic material or a blend of sand, natural soil materials and organic materials, which is suitable for the culture of plants usually grown in domestic gardens and landscaped areas.

'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.

'Movement of Controlled Waste NEPM' means the National Environment Protection (Movement of Controlled Waste between States and Territories) Measure, as varied in 2012, or the most recent version.

'mulch' has the meaning in **AS4454** and is any organic product (excluding polymers that do not degrade, such as plastics, rubber and coatings) that is suitable for placing on soil surfaces.

'NATA' is the National Association of Testing Authorities.

'person' means an individual or a corporation.

'records' include breach notifications, written procedures, analysis results, monitoring reports and monitoring programs required under a condition or requirement of this EOW code.

'registered resource producer(s)' means a person who produces the **resource** and has registered with the **chief executive** (in accordance with *Requirement (6.1)*) to use, sell or give away the **resource** to be used under this EOW code.

'resource' means ferrous and non-ferrous foundry sand sourced from foundry operations that meets the criteria and quality characteristics in *Requirement (6.3)* of this EOW code.

'resource user(s)' means a **person** who receives the **resource** for a use approved under this EOW code (for example, in the manufacturing of bound concrete products, or the manufacturing of compost) and in such a manner which does not cause any **environmental harm**. This includes any **registered resource producer(s)** who use 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 *Model Code of Practice: Preparation of safety data sheets for hazardous chemicals*.

'site of use' means the relevant location(s) where the **resource user** uses the **resource** in accordance with this EOW code.

'soil conditioner(s)' has the meaning in **AS4454** and is any composted or pasteurised organic product suitable for adding to soils to improve the growing conditions for plant roots by providing nutritional requirements. A soil conditioner must not have more than 20% by mass of particles with a maximum size above 16mm. This also includes products termed 'soil amendment', 'soil additive', 'soil improver' and similar, but excludes polymers that do not biodegrade, such as plastics, rubber and coatings.

'standard areas' means land use including residential, parks, recreational play fields, open spaces and commercial and industrial sites, excluding **waters** and the bed and banks of waters.

'waters' includes river, stream, lake, lagoon, pond, swamp, wetland, surface water, natural or artificial watercourse, bed and bank of any watercourse, 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.

More information is available on the Department of Environment and Science website www.des.qld.gov.au.

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 10 of the Environmental Protection Regulation 2019.

It is your responsibility to ensure that prescribed 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. 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.

Failure to comply with EOW code (section 158)

A registered resource producer for an EOW code must not 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.

Approved:

12 January 2021

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