

End of Waste Code

**Irrigation of Associated Water (including coal seam gas
water) (ENEW07546918)**

Waste Reduction and Recycling Act 2011



**Queensland
Government**

End of Waste Code

Irrigation of Associated Water (including CSG water) (ENEW07546918)

Version history

Version	Date	Description of changes
1.00	24 April 2019	The End of waste code for irrigation of associated water (including coal seam gas water) was made on 18 April 2019, but takes effect on 24 April 2019.
1.01	10 December 2019	Amendment to incorrect approval date.
1.02	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.
1.03	18 August 2023	Environmental Protection Regulation 2008 updated to Environmental Protection Regulation 2019. PALM fax number removed.
1.04	8 January 2024	Minor updates to the requirements relating to resource monitoring and management plans.
1.05	28 March 2024	Updated department name to reflect machinery of government changes and the definition of serious or material harm.

Prepared by: Regional and Regulation Support, Department of Environment, Science and Innovation

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1 Explanatory statement

This end of waste (EOW) code for irrigation of **associated water** (including coal seam gas (CSG) water) has been made by the **chief executive** of the Department of Environment, Science and Innovation 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 about using the **resource**. If the **resource** is not being used in accordance with the relevant requirements and/or conditions of this EOW code, or another type of approval that allows for its use, it is considered a **waste** under section 8AA of the *Waste Reduction and Recycling Act 2011* (WRR Act) and must be disposed of appropriately at a facility that is lawfully able to receive the **waste**.

2 Guidance

Resource and tenure holders have the right to take **associated water** under the *Petroleum and Gas (Production and Safety) Act 2004* or the *Petroleum Act 1923* as a necessary activity in the process of extracting petroleum or gas. **Associated water** can be reused in a range of different ways. The Coal Seam Gas Water Management Policy 2012 (ESR/2016/2381)¹ sets out the government's framework for the management of **CSG water**. The objective of the policy is:

“to encourage the beneficial use of CSG water in a way that protects the environment and maximises its productive use as a valuable resource”.

In using **associated water**, it is also important that the user is aware of their general environmental duty under Chapter 7 Part 1 of the *Environmental Protection Act 1994* (EP Act).

The requirements and conditions in this EOW code seek to ensure that the use of **associated water** carries no greater risk than what is acceptable for any other **irrigation** project.

Specifically, the requirements seek to ensure that:

1. soil structure, stability and productive capacity is maintained;
2. toxic effects do not occur;
3. there is a genuine benefit to the **resource user** through maintained or improved yields; and
4. there is no risk of serious or material environmental harm.

2.1 Resource use versus Activity

An EOW code states when a **waste** stops being a **waste** and becomes a **resource**, 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 that point. An environmental authority (EA) under the EP Act is required where an activity being undertaken triggers the threshold for any environmentally relevant activity (ERA). This means that treating and 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 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 cannot be deemed a **resource** and remains a **waste** and

¹ This policy is available on the Queensland Government website at www.qld.gov.au, using the publication number ESR/2016/2381 as a search term.

must be managed in accordance with the waste management requirements under the EP Act and the WRR Act, and their subordinate legislation.

A **resource** approved under an EOW code is deemed to be a **waste** again, if 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

It is an offence for a **registered resource producer** to produce the **resource**, or use, sell or give away the **resource** if they do not comply with the requirements under an EOW code. Further, it is an offence for a person to use the **resource** in a way, or for a purpose, that does not comply with an EOW code. These offences carry a maximum penalty of 1,665 penalty units for an individual and 8,325 penalty units for a corporation².

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

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 been 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 **24 April 2019** and remains in force until it is cancelled, amended or suspended by the **chief executive**³.

4 Waste to which this EOW code applies

This EOW code is limited to the direct supply of **associated water** which is part of the extraction process for petroleum and gas.

This EOW code does not apply to the indirect supply of **associated water** via a stream, river, weir or any other natural **watercourse**.

5 Persons to whom this EOW code applies

5.1 Registered resource producers of the resource

- a) 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 form⁴ that the person intends to become a **registered resource producer** for this EOW code; and
- b) A **registered resource producer** must comply with the **registered resource producer requirements** in Section 6 of this EOW code.

² The value of a penalty unit is stated in the Penalties and Sentences Regulation 2015 (Qld).

³ 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.

⁴ The approved form, *Registered resource producer for an end of waste code (ESR/2018/4082)*, is available on the Queensland Government website at www.qld.gov.au, using the publication number ESR/2018/4082 as a search term.

5.2 Resource users

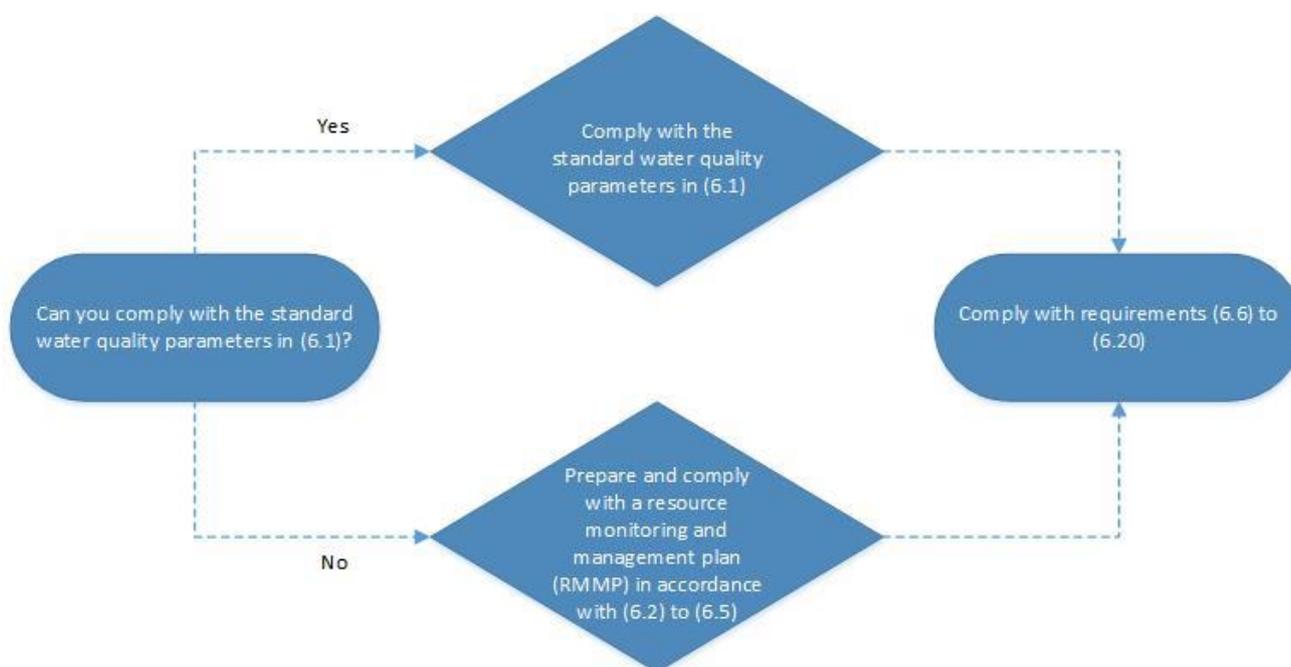
- a) A **resource** user must only use the **resource** in a way, and for a purpose, allowed under this EOW code. This means complying with the **resource user conditions** in Section 7 of this EOW code.

6 Registered resource producer requirements

There are two compliance pathways for **registered resource producers** depending on water quality, **registered resource producers** must comply with either:

- requirement (6.1)—Standard water quality parameters; or
- requirements (6.2) to (6.5)—Resource monitoring and management plan (RMMP); and
- all remaining requirements (6.6) to (6.20) (as outlined in Figure 1 below).

Figure 1: Registered resource producer requirements depending on water quality



Standard water quality parameters	
(6.1)	<p>The registered resource producer must not use, sell or give away the resource, unless it meets the following standard water quality parameters at the point of supply:</p> <ul style="list-style-type: none"> (a) electrical conductivity (EC) of <math><950\mu\text{s}/\text{cm}</math> as a rolling 95th percentile over a 12 month period; (b) sodium adsorption ratio (SAR) of: <ul style="list-style-type: none"> (i) 6 or less for heavy soils as a rolling 95th percentile over a 12 month period; or (ii) 12 or less for light soils as a rolling 95th percentile over a 12 month period; (c) pH within the range 6.0-8.5 as a rolling 95th percentile over a 12 month period; and (d) heavy metals and metalloids that do not exceed the short term trigger values prescribed in Appendix A—Quality parameters for heavy metals and metalloids.

Resource monitoring and management plan	
(6.2)	<p>Despite requirement (6.1), where the standard water quality parameters cannot be met, the registered resource producer must not use, sell or give away the resource at the point of supply until:</p> <ul style="list-style-type: none"> (a) an appropriately qualified person has prepared the RMMP; (b) the registered resource producer has engaged an independent and suitably qualified person to certify the RMMP; and (c) the registered resource producer has implemented and complied with its RMMP.
(6.3)	<p>The RMMP must at a minimum, include:</p> <ul style="list-style-type: none"> (a) the physical and chemical characteristics of the associated water to identify any contaminants of concern; (b) a description of the required treatment and/or management activities for the associated water to ensure that the following required outcomes are met: <ul style="list-style-type: none"> (i) soil structure, stability and productive capacity⁵ can be maintained or improved; and (ii) toxic effects to crops do not result; and (iii) yields and produce quality are maintained or improved; and (iv) there is no risk of serious or material environmental harm. (c) identify who, the registered resource producer or the resource user, who is responsible for the activities outlined in (b); (d) a description of management controls for the activities and risks outlined in (b); (e) a clear definition of the point when a waste relevant to this EOW code stops being a waste and becomes a resource for the purpose of irrigation, including the criteria and characteristics that the resource must meet over the duration of the resource supply; (f) the results of the assessment against the rationale specified in requirement (6.5); (g) ongoing monitoring and management requirements, which must identify: <ul style="list-style-type: none"> (i) the parameters to be monitored; (ii) the frequency of monitoring; and (iii) who, the registered resource producer or the resource user, is responsible for the monitoring; (h) setting a mandatory review period for the RMMP at a frequency commensurate with the risks associated with the approved use of the resource; and (i) a statement by the independent and suitably qualified person that certifies over the duration of the resource supply: <ul style="list-style-type: none"> (i) the proposed use of the resource in accordance with this EOW code; and (ii) the RMMP has been determined in accordance with the assessment procedure in Appendix C—Assessment procedures for water quality parameters and will ensure that the following required outcomes are met: <ul style="list-style-type: none"> (1) soil structure, stability and productive capacity⁵ can be maintained or improved; and (2) toxic effects to crops do not result; and (3) yields and produce quality are maintained or improved; and

⁵ Productive capacity refers to the range of crops suitable for the local area.

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	(4) there is no risk of serious or material environmental harm.
(6.4)	The registered resource producer must commission an independent and suitability qualified person to: <ul style="list-style-type: none"> (a) provide a statement that certifies the RMMP in accordance with (6.3); and (b) stipulate the criteria and characteristics that the resource must meet over the duration of the resource supply.
(6.5)	The resource must be assessed against the following rationale to support the use of a waste as a resource including but not limited to: <ul style="list-style-type: none"> (a) The site setting and background; (b) The proposed use of the resource including method, volume and frequency of irrigation; (c) The history of agriculture and irrigation on the land in relation to required outcomes in (6.3)(b)(i) to (iv); (d) Soil, type, condition and structure in relation to regional conditions; and (e) The resource quality in relation to the following parameters: <ul style="list-style-type: none"> (i) EC; and (ii) SAR; and (iii) pH; and (iv) heavy metals and metalloids; and (v) any other contaminants of concern identified as per requirement (6.3)(a).
Resource monitoring and operational conditions for all water quality parameters	
(6.6)	All monitoring and sampling must be undertaken by an appropriately qualified person .
(6.7)	The resource must be sampled and monitored at the following minimum frequency: <ul style="list-style-type: none"> (a) monthly monitoring of metals and metalloids of the same water source, then six-monthly monitoring after three consecutive laboratory results which are less than 50 per cent of the water quality parameters in Appendix A—Quality parameters for heavy metals and metalloids; and (b) fortnightly monitoring for SAR, pH and EC; or (c) as specified in the RMMP, as per requirement (6.3)(g).
(6.8)	All monitoring and sampling must be carried out in accordance with the following documents (or the latest version): <ul style="list-style-type: none"> (a) for waters and aquatic environments, the Queensland Government's Monitoring and Sampling Manual 2018 – Environmental Protection (Water) Policy 2009; (b) for groundwater sampling, the Australian Government's Groundwater Sampling and Analysis – A Field Guide (2009:27 GeoCat #6890.1); and (c) for soil, the Guidelines for Surveying Soil and Land Resources, 2nd edition (McKenzie et al. 2008), and/or the Australian Soil and Land Survey Handbook, 3rd edition (National Committee on Soil and Terrain, 2009).
(6.9)	All laboratory analyses must be undertaken by a laboratory that has National Association of Testing Authorities (NATA) accreditation for such analyses and tests, except where authorised in writing by the chief executive .

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(6.10)	Notwithstanding (6.9), where there are no laboratories that have NATA accreditation for a specific analyte or substance, then duplicate samples must be sent to at least two separate laboratories for independent testing or evaluation.
(6.11)	All plant and equipment necessary for complying with this EOW code must be installed, maintained and operated in proper and effective condition.
(6.12)	Despite (6.9) and (6.10), in-line monitoring equipment may be used for pH and EC measurements where they are operated in accordance with (6.11).
(6.13)	<p>The registered resource producer must cease using, selling or giving away the resource immediately upon becoming aware that the resource does not meet the water quality parameters for the approved use(s) at or before the point of supply in accordance with:</p> <ul style="list-style-type: none"> (a) the standard water quality parameters in requirement (6.1); or (b) the RMMP (as per requirement (6.3)). <p>The associated water remains a waste until it meets the relevant water quality parameters and all other requirements of this EOW code.</p>
(6.14)	<p>In the event that the registered resource producer has ceased using, selling or giving away the resource in accordance with (6.13), the use, sale or giving away of the resource may recommence where:</p> <ul style="list-style-type: none"> (a) the water quality meets in either: <ul style="list-style-type: none"> (i) requirement (6.1); or (ii) the RMMP (as per requirement (6.3)(e)); (b) the cause for the water quality not meeting water quality parameters has been identified and resolved; and (c) the chief executive has been notified.
Information to be provided	
(6.15)	<p>The registered resource producer must make the following available to any person to whom they provide a resource, when the resource is provided for use, including by a continuous supply via a pipeline:</p> <ul style="list-style-type: none"> (a) confirmation in writing that the resource being supplied is compliant with the requirements of this EOW code; (b) a Safety Data Sheet for the resource if the resource is a hazardous chemical; and (c) if requested, a current and complete laboratory certificate of analysis that outlines the quality of the resource as per: <ul style="list-style-type: none"> (i) the standard water quality parameters (requirement (6.1)); or (ii) the RMMP (requirement (6.3)).
Records	
(6.16)	<p>When the resource is transported the registered resource producer must retain the following records of the resource:</p> <ul style="list-style-type: none"> (a) origin of the resource; (b) date of dispatch of the resource; (c) location of delivery of the resource to the resource user by real property description; (d) date of delivery of the resource to the resource user; (e) contact details for the person responsible for use of the resource at the site of use; and (f) quantity (volume) of the resource supplied per month.

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(6.17)	The registered resource producer must retain the following records: <ul style="list-style-type: none"> (a) relating to sampling and monitoring including, laboratory results, field data, and monitoring reports; and (b) any written procedures developed to manage the resource, including the RMMP that the registered resource producer is operating under and evidence that the RMMP has been complied with (if relevant under requirement (6.2)).
(6.18)	The registered resource producer must: <ul style="list-style-type: none"> (a) provide the records as per requirements (6.16) and (6.17) to the chief executive upon request, in the requested format and timeframe; and (b) retain the records for a period of at least five (5) years.
Notification of emergencies, incidents and exceptions	
(6.19)	Any contravention of a requirement of this EOW code must be reported by the registered resource producer to the chief executive as soon as practicable within 48 hours of becoming aware of the contravention.
(6.20)	The registered resource producer must: <ul style="list-style-type: none"> (a) retain all records relating to the contravention for at least 5 years, including details of the contravention, any subsequent actions taken to resolve the contravention, laboratory results, field data and monitoring reports; and (b) provide records to the chief executive upon request, in the requested format and timeframe.

7 Resource user conditions

Approved uses	
(7.1)	The resource must only be used for the purpose of irrigation .
(7.2)	Where the registered resource producer has an RMMP in accordance with requirement (6.2), the resource user must adhere to any conditions of the RMMP for which they are responsible under requirements (6.3)(c) and (g)(iii).
Operating conditions	
(7.3)	All plant and equipment necessary for complying with the resource user conditions must be installed, maintained and operated in proper and effective condition.
Records	
(7.4)	The resource user must ensure the following records are retained for the resource received: <ul style="list-style-type: none"> (a) origin of the resource; and (b) date of receipt of the resource; and (c) name and address of the person who supplied the resource; and (d) quantity (volume) of the resource supplied per month.
(7.5)	The resource user must retain records for any sampling and monitoring undertaken in accordance with (7.2), including laboratory results, field data, and monitoring reports.
(7.6)	The resource user must: <ul style="list-style-type: none"> (a) retain the records as per conditions (7.4) and (7.5) for a period of at least five (5) years; and (b) provide the records to the chief executive upon request, in the requested format and timeframe.

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Notification of emergencies, incidents and exceptions	
(7.7)	Any contravention of a requirement of this EOW code must be reported by the resource user to the chief executive as soon as practicable within 48 hours of becoming aware of the contravention.
(7.8)	The resource user must: <ul style="list-style-type: none"> (a) retain all records relating to the contravention for at least 5 years, including details of the contravention, any subsequent actions taken to resolve the contravention, laboratory results, field data, and monitoring reports; and (b) provide records to the chief executive upon request, in the requested format and timeframe.

8 Transitional arrangements

Activities operating under the former <i>General Beneficial Use Approval—Irrigation of Associated Water (including coal seam gas water)</i>	
Registered resource producers —complying with the standard water quality parameters in requirement (6.1) of this EOW code	
(8.1)	Any person operating under the former <i>General Beneficial Use Approval—Irrigation of Associated Water (including coal seam gas water)</i> prior to the commencement of this EOW code is taken to be a registered resource producer for this EOW code upon commencement of the EOW code provided that: <ul style="list-style-type: none"> (a) the person has provided notification to the chief executive within six (6) months of this EOW codes taking effect, using the approved form <i>Registered resource producer for an end of waste code (ESR/2018/4082)</i>⁶, and complied with the conditions of the <i>General Beneficial Use Approval—Irrigation of Associated Water (including coal seam gas water)</i> without variations to standard water quality (as per conditions 6 and 7); and (b) the person has records to demonstrate to the chief executive that the resource was being used under the <i>General Beneficial Use Approval—Irrigation of Associated Water (including coal seam gas water)</i> prior to the commencement of this EOW code.
Registered resource producers complying with a RMMP in requirements (6.2) to (6.5) of this EOW code	
(8.2)	Any person operating under the former <i>General Beneficial Use Approval—Irrigation of Associated Water (including coal seam gas water)</i> using varied water quality parameters is taken to be a registered resource producer for this code upon commencement of this EOW code provided that the person has provided notification to the chief executive using the approved form <i>Registered resource producer for an end of waste code (ESR/2018/4082)</i> ⁶ .
(8.3)	The person to whom (8.2) applies must, within six (6) months of publication of this EOW code, provide to the chief executive : <ul style="list-style-type: none"> (a) a report seeking to vary from the standard water quality conditions including a water monitoring plan that was implemented whilst operating under the <i>General Beneficial Use Approval—Irrigation of Associated Water (including coal seam gas water)</i>; and (b) a statement by an independent and suitably qualified person that certifies the report provided under (8.3)(a) is in accordance with requirements (6.3) and (6.5); or (c) a new submission of the RMMP as per requirement (6.2).

Note: It is expected that the **registered resource producer** and **resource user** will adhere to other guidelines and/or assessment criteria that is relevant including the Water Quality Management Framework under the **ANZECC Guidelines**.

⁶ The approved form is available on the Queensland Government website at www.qld.gov.au, using the publication number ESR/2018/4082 as a search term.

9 Definitions

Words and phrases used throughout this EOW code 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.

‘ANZECC Guidelines’ refers to the, Australian and New Zealand Guidelines for Fresh and Marine Water Quality (Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), 2000), or the latest version of these guidelines.

‘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.

‘associated water’ means underground water (including coal seam gas water) taken or interfered with, if the taking or inference happens during the course of, or results from, the carrying out of another authorised activity under a petroleum authority, such as a petroleum well, and includes water also known as produced formation water. The term includes all contaminants suspended or dissolved within the water.

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

‘contaminant’ (as defined in Section 11 of the *Environmental Protection Act 1994*), unless authorised under this approval 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.

‘coal seam gas water’ or **‘CSG water’** means underground water that is necessarily or unavoidably brought to the surface of the Earth, or moved underground in connection with exploring for, or producing coal seam gas (CSG). CSG water is a waste as defined under section 8AA of the *Waste Reduction and Recycling Act 2011*.

‘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*.

‘EOW code’ means an end of waste code for the purpose of this document, ENEW07546918—Irrigation of Associated Water (including coal seam gas water).

‘hazardous chemical’ means the name given to a group of chemicals classified as hazardous for use at workplaces according to the United Nations Globally Harmonised System of Classification and Labelling of Chemicals (GHS).

‘heavy soil’ means any soil which has a clay content greater than 35 per cent.

‘independent’ means a person who does not own and is not employed by the **registered resource producer** or **resource user**, and is not related to the owner or someone directly employed by the **registered resource producer** or **resource user**.

‘irrigation’ means the supply of water for crops or pastures.

‘light soil’ is any soil which has a clay content equal or less than 35 per cent.

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

‘pipeline’ means a pipe, or system of pipes for the transporting **associated water**.

‘registered resource producer(s)’ 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.

‘registered resource producer requirements’ means the requirements in section 6 of this EOW code that the **registered resource producer** must comply with under section 158(1) of the WRR Act.

‘regional’ means of or relating to a particular region, district, area, or part; sectional; local.

‘resource’ means **associated water** (including **coal seam gas water**) for the use of irrigation, which meets the quality criteria specified in this EOW code.

‘resource user(s)’ means a **person** who uses the **resource** in a way, and for a purpose, stated under this EOW code, and includes the **registered resource producer** who uses the **resource**.

‘resource user conditions’ means the conditions in section 7 of this EOW code that the **resource user** must comply with under section 158(2) of the WRR Act. These conditions specify how the resource must be used, and for what purposes.

‘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.

‘suitably qualified person’ under this EOW code means a person who meets the criteria specified in Appendix B—Suitably qualified person criteria.

‘waste’ means **waste** as defined in Section 8AA of the *Waste Reduction and Recycling Act 2011*.

‘waters’ includes all or any part of a creek, river, stream, lake, lagoon, swamp, wetland, spring, unconfined surface water, unconfined water in natural or artificial watercourses, bed and bank of any waters, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and underground water.

Approved
17 April 2019

Enquiries:
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Appendix A—Quality parameters for heavy metals and metalloids

Element	Short-term trigger value in irrigation water (short-term use —up to 20 years)
	(mg/L)
Aluminium	20
Arsenic	2.0
Boron	Refer to Table 9.2.18 of the ANZECC Guidelines
Cadmium	0.05
Chromium	1
Cobalt	0.1
Copper	5
Fluoride	2
Iron	10
Lithium	2.5
Lead	5
Manganese	10
Mercury	0.002
Molybdenum	0.05
Nickel	2
Zinc	5

Appendix B—Suitably qualified person criteria

Issue	Relevant qualifications and experience	
Electrical conductivity	<p>A person that is a Certified Professional Soil Scientist with experience in:</p> <ul style="list-style-type: none"> a) assessing or studying the effects of the chemistry of irrigation water on the chemical/physical properties of soil profiles; b) irrigation and water management; and c) the design of monitoring strategies and the conduct of sampling programs. <p>or</p> <p>A person that is an 'AgCredited' member of the Australian Institute of Agricultural Science and Technology with at least five years' experience in:</p> <ul style="list-style-type: none"> a) assessing or studying the effects of the chemistry of irrigation water on the chemical/physical properties of soil profiles; b) irrigation and water management; and c) the design of monitoring strategies and the conduct of sampling programs. <p>or</p> <p>A person that has a tertiary qualification in Environmental Science, Soil Science, Agricultural Science, or Agronomy and has at least five years' experience in:</p> <ul style="list-style-type: none"> a) assessing or studying the effects of the chemistry of irrigation water on the chemical/physical properties of soil profiles; b) irrigation and water management; and c) the design of monitoring strategies and the conduct of sampling programs. 	
Sodium adsorption ratio		
pH		<p>A person that has a tertiary qualification in Chemistry, Environmental Science, Soil Science, or Agronomy and has at least five years' experience in:</p> <ul style="list-style-type: none"> a) undertaking eco-toxicology assessments b) the design of monitoring strategies and the conduct of sampling programs
Heavy metals	<p>A person that has a tertiary qualification in Chemistry, Environmental Science, Soil Science, or Agronomy and has at least five years' experience in:</p> <ul style="list-style-type: none"> a) undertaking eco-toxicology assessments b) the design of monitoring strategies and the conduct of sampling programs 	

Appendix C—Assessment procedures for water quality parameters

Water quality parameter	Assessment procedure
Electrical conductivity	Salinity Management Handbook; and/or ANZECC Guidelines , with reference to Volume 1 Chapter 4 and Volume 3 Chapter 9.
Sodium adsorption ratio	The assessment should consider:
pH	<ul style="list-style-type: none"> a) soil properties within the root zone to be irrigated (e.g. clay content, cation exchange capacity, exchangeable sodium percentage) b) water quality of the proposed resource (e.g. salinity, sodicity) c) climate conditions (e.g. rainfall) d) leaching fractions e) average root zone salinity (calculated) f) crop salt tolerance (e.g. impact threshold and yield decline) g) management practices and objectives (e.g. irrigation application rate, amelioration techniques) h) broader landscape issues (e.g. land use, depth to groundwater) i) any additional modelling and tests undertaken to support the varied water quality parameters.
Heavy metals	<p>ANZECC Guidelines, with reference to Volume 1 Chapters 3 and 4 and Volume 3 Chapter 9.</p> <p>The assessment should aim to derive site specific trigger values (e.g. cumulative contaminant loading limit) based on the methodology provided in the above mentioned procedure.</p>

Appendix D—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* (EP Act) 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.

More information is available on the Department of Environment, Science and Innovation 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 and serious environmental harm are defined in sections 16 and 17 of the EP Act. 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 thresholds amounts in the EP Act also constitutes material or 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 2019.

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.