Environmental Enforcement Order

Section 326H of the *Environmental Protection Act 1994*

Action required following acceptance of environmental report

Queensland Government

Department of the **Environment, Tourism, Science and Innovation**

Order Ref:	**STAT-E-100814011**
Issued To:	CS Energy Limited (ACN: 078 848 745) Level 12, 31 Duncan Street FORTITUDE VALLEY QLD 4006
	For the purpose of this environmental enforcement order (EEO), 'you' means the recipient of this EEO or your authorised representative.
Site Address:	959 Biloela Callide Road MOUNT MURCHISON 4715 (Banana Shire) Lot 1 on RP615528; Lot 4 on SP103557 (the premises)
Issued By:	Jason Plumb, Compliance Delivery Manager, Department of the Environment, Tourism, Science and Innovation (the department), delegate of the administering authority (the delegate)
	Signed by the delegate
Date:	4 March 2025
Relevant Matter/ Enforcement Grounds:	Section (s) 326H and s359(c)
Service Method:	Via email

Why are we writing to you?

You have submitted an environmental report about an environmental investigation to the administering authority (STAT-E-100046349). The delegate reasonably believes it is necessary to take reasonable actions in accordance with *Environmental Protection Act 1994* (the Act) at the premises and has issued this EEO to you under s326H of the Act to specify the required actions and timeframes for completion.

The department has also determined that it is necessary to issue an EEO to secure compliance with the general environmental duty, under s359(c) of the Act. The general environmental duty is detailed in s319 of the Act which states the following: *A person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonably practicable measures to prevent or minimise the harm (the **general environmental duty**)*.

What are you required to do?

Please read this EEO carefully and carry out all the required actions listed below by the required dates.

Terms used in this order have the meaning defined in the *Background* and *Definitions* section of the EEO, or if not defined, in the Act.

If you have any questions about this EEO, please contact Joshua Radloff by email cwes_gladstone@des.qld.gov.au or telephone (07) 4971 6509.

Required actions

In accordance with this EEO, you are required to do the following:

Remediation Action Plan

1. You must submit all reports and documents required by this EEO to the department via email to cwes_gladstone@des.qld.gov.au.
2. By **5:00pm on 2 April 2025**, you must:
    a) Engage an independent **suitably qualified person(s)** (SQP) to carry out the requirements of this EEO, and a **Contaminated Land Auditor** (CLA) to review investigations and remedial activities undertaken under this EEO; and
    b) Confirm the engagement of the **SQP** and **CLA** and submit details of their qualifications and experience to the department.
3. By **5:00pm on 3 December 2025**, you must submit a draft Remediation Action Plan (RAP) to the department which must include:
    a) A comprehensive review of the suitability and effectiveness of all proposed and previously completed remedial actions, as detailed in the **environmental report**, in containing and/or removing **PFAS** at the premises to prevent and minimise environmental harm.
    b) Updated known delineation of **PFAS** source zones, incorporating all available monitoring data and identification of any additional data gaps that require further investigation;
    c) An assessment of any additional reasonably practicable remedial options necessary to contain and/or remove **PFAS** at the premises to prevent and minimise environmental harm, based on the current conceptual site model (CSM) as detailed in the **environmental report** and updated to include all available monitoring data and known delineation of **PFAS** source zones;
    d) Plans for the management, treatment and/or disposal of **PFAS** impacted media (concrete, soil, sediment, water) extracted from the premises;
    e) An action plan which details proposed remedial works and additional investigative work needed to be undertaken, including proposed timeframes for the completion of each action;
    f) Details of validation testing requirements and verification criteria that will be adopted to confirm the long-term effectiveness of each remedial action;
    g) Detailed consideration of the **PFAS NEMP** and the **NEPM**;
    h) A statement of the intended site suitability following the completion of the proposed program of works to remediate the premises with respect to **PFAS** contamination; and
    i) A preliminary screening assessment report of remediation options, or other relevant management options, that could be further developed and implemented to address the **PFAS** contamination in groundwater and surface water of sites downgradient of the premises, including the monitoring locations established in response to Requirement 5 below.
4. By **5:00pm on 3 April 2026**, a final RAP, which must incorporate comments provided by the department, must be implemented and submitted to the department.

Monitoring

5. From **5:00pm on 2 April 2025**, you must implement the PFAS Technical Monitoring Program, until such time as requirements 6 and 7 have been met.
6. By **5:00pm on 3 February 2026**, you must submit a draft monitoring plan to the department that includes:
    a) Sufficient groundwater and surface water monitoring locations to adequately delineate changes in the extent of **PFAS** contamination in groundwaters and surface waters on the premises and downgradient of the premises, and to assess the effectiveness of any completed remediation and/or management actions;
    b) Details of which parameters will be monitored at each monitoring location;
    c) The proposed monitoring frequency for each parameter at each monitoring location;

d) Justification for selection of the monitoring parameters and monitoring frequency at each monitoring location, based on available data and risk to relevant environmental values;

e) Trigger values for **PFAS** concentrations that will require an assessment of risks to relevant environmental values and development of additional remedial actions to prevent or minimise environmental harm, including justification for the trigger values adopted;

f) Construction details of each groundwater monitoring bore;

g) A plan indicating the location of each groundwater monitoring bore and surface water monitoring location;

h) Confirmation that all laboratory analysis will be undertaken by a laboratory with National Association of Testing Authorities (NATA) accreditation;

i) Details of the proposed groundwater and surface water monitoring methodology, including quality assurance requirements to demonstrate compliance with the methods prescribed in the latest version of *Queensland Monitoring and Sampling Manual*, June 2018; and

j) Details of frequency of reporting of monitoring results to the department. Reporting must include:

i. An analysis of the results against relevant **PFAS NEMP** trigger values and trigger values identified under requirement 5 (e);

ii. An analysis of trends in available monitoring data; and

iii. Include raw data provided in electronic excel format.

7. By **5:00pm on 5 May 2026**, a final Monitoring Plan, which must incorporate comments provided by the department, must be implemented and submitted to the department.

Background and definitions

1. The department is the administering authority and has responsibility for enforcing the Act.
2. CS Energy holds Environmental Authority EPPR00536313 (the EA) which authorises Environmentally Relevant Activities (ERA) including, amongst others, ERA 14 – *Electricity Generation, 2: Generating electricity by using a fuel, other than gas, at a rated capacity of, (b) more than 150MW electrical*.
3. The department is satisfied that you are the entity operating the facility at the premises and are responsible for the operation and/or maintenance of the facility and associated ERAs authorised under the EA.

Environmental Report

4. On 15 December 2021, pursuant to s326B of the Act, a notice (STAT-E-100046349) to conduct or commission an environmental investigation was issued to you by the department. The purpose of this notice was to require you to characterise the potential source, cause and extent of Per- and Poly-fluoroalkyl Substance (PFAS) contamination, likely to be caused by the release of aqueous film-forming foam (AFFF) at the premises.
5. On 7 September 2022, you submitted a contaminated land investigation document (CLID) titled, *Callide Power Station – Contaminated Land Investigation Document (Site Investigation)*, dated 7 September 2022, to the department.
6. On 8 March 2024, you submitted an addendum CLID titled, *Callide Power Station – Addendum Contaminated Land Investigation Document (Site Investigation),* dated 8 March 2024*,* to the department. The CLID and addendum CLID constitute the environmental report.
7. On 4 July 2024, the department issued a notice of decision to accept the environmental report on the basis that the department was satisfied that the environmental report addressed the relevant matters for the environmental investigation to which the report relates.
8. Notwithstanding the decision on 4 July 2024 to accept the environmental report, the department stated in its notice of decision a number of specific matters in relation to the environmental report, as follows:

a) The contaminated land auditor was unable to determine the site suitability due to insufficient information at the time the environmental report was submitted;

b) A human health and ecological risk assessment (HHERA) had been commissioned and this was due to

be finalised in July 2024 (this was subsequently received on 29 October 2024);

c) Further on-site investigations are required, including the need to assess the source of elevated PFAS concentrations in the area of sample location EDC-SED-6 and bore MW84, and the assessment of a potential fugitive seepage pathway from the bore MW84-MW32-MW43 seepage pathway;

d) Ongoing monitoring of groundwater and surface water locations across the site and within the study area are required;

e) Remedial actions and ongoing management of contaminated areas of the site are required;

f) An upstream and offsite PFAS source is contributing to contamination, identified in the northern extent of the site.

9. The environmental report's executive summary outlines the findings of the investigation as follows:

To date, a total of 158 groundwater monitoring bores and 50 surface water monitoring locations have been sampled. Results from monitoring completed to date report concentrations of the Sum of PFOS and PFHxS above the Australian Drinking Water Guideline (0.07 µg/L) in onsite and offsite groundwater monitoring wells (Sum of PFOS and PFHxS up to 33.50 µg/L and 6.59 µg/L respectively) and onsite and offsite surface water (Sum of PFOS and PFHxS up to 0.595 µg/L and 0.0887 µg/L respectively).

10. Table *T2: Groundwater and Surface Waste Analytical Results – PFAS* of the environmental report identifies monitoring results both onsite and offsite above the Human Health Drinking Water (ADWG) and Aquatic Ecosystem Protection (HEPA 2020) reference values. Table 1 below provides a summary of several downgradient groundwater and surface water results against the relevant reference values. Results that exceed the reference value are highlighted in yellow.

Environmental Value	**PFAS**	**Guideline / Reference Value µg/L**	**Downgradient results (µg/L) (up to 25 January 2024), Table T2 of the Environmental Report**							
			MW32	MW43	MW70	MW73	MW80	MW89	SW12	SW28
			Groundwater						Surface Water	
Human Health Drinking Water (ADWG)	Sum PFOS and PFHxS	0.07	6.59	1.25	0.0602	0.1550	0.0696	0.752	0.0775	0.0364
Aquatic ecosystem protection (HEPA 2020)	PFOS 99% species protection level	0.00023	1.59	0.104	0.0493	0.0984	0.0106	0.14	0.0181	0.0226
	PFOS 95% species protection level	0.13	1.59	0.104	0.0493	0.0984	0.0106	0.14	0.0181	0.0226

Table 1: Data summarised from Table T2 of the environmental report

11. The environmental report outlined the following recommendations:

a) Removal of localised impacts within the northern stormwater pond (NSP) at Callide A, to minimise potential migration of PFAS to Dunn Creek.

b) Groundwater recovery bores installed in the eastern seepage recovery area should be incorporated into the current seepage recovery system to improve seepage recovery rates and further reduce fugitive seepage from the site.

c) Further assessment should be undertaken to establish the source of elevated PFAS concentrations reported at MW84 and EDC-SED-6.

d) Further assessment should be undertaken to assess potential fugitive seepage from the MW84-MW32-MW43 seepage pathway, and likely concentrations at the discharge point to Callide Creek.

e) Management of impacted surface water, groundwater and sediments along the northern site boundary will be required; however, it is noted that the source of PFAS impacts is located upstream and offsite and owned by a third party.

f) Ongoing management of the fuel oil tanks (FOT) and fire training ground (FTG) areas will be required, with management to be informed by results of remediation and validation works, along with previous investigation of the surrounding area.

g) A Human Health and Ecological Risk Assessment (HHERA) should be completed to assess potential risks identified for human health and ecological receptors.

h) Monitoring of groundwater and surface water should continue at select groundwater and surface water locations across the site and within the study area to provide ongoing assessment of PFAS.

i) It is recommended that the Callide Power Station groundwater monitoring program be updated to include:

   i. Nominated groundwater and surface water locations as identified to provide ongoing assessment of PFAS as outlined in the recommendation above;

   ii. PFAS monitoring constituents for each location.

12. Based on the above, the department considers it necessary to require you to implement the recommendations of the environmental report, and to complete the requirements of this EEO.

Environmental harm

13. PFAS contamination can be environmentally significant due to its persistence, mobility and, for some PFAS, toxicity and potential bioaccumulation in plants and animals (PFAS National Environmental Management Plan, Version 2.0, Heads of EPA Australia and New Zealand 2020 (HEPA 2020)).

14. PFAS contamination has the potential to negatively impact environmental values by a variety of mechanisms, including via concentration and accumulation in food stuff, drinking water, contact, ingestion and product usage.

15. In Queensland, PFAS compounds perfluorooctane sulfonic acid and its salts, and perfluorooctane sulfonyl fluoride are listed under Schedule 19 (5) of the Environmental Protection Regulation 2019 (EP Reg) as a persistent organic pollutant. PFAS compounds are prescribed water contaminants under Schedule 10 of the EP Reg and identified as a regulated waste under Schedule 9 of the EP Reg.

16. Table *T2: Groundwater and Surface Waste Analytical Results – PFAS* of the environmental report identifies monitoring results both onsite and offsite above the Human Health Drinking Water (ADWG) and Aquatic Ecosystem Protection (HEPA 2020) reference values. Refer to paragraph 10, Table 1: *Data summarised from Table T2 of the environmental report*.

17. On 29 October 2024, the department received the HHERA report titled, *Human Health and Ecological Risk Assessment: Callide Power Station – PFAS*, dated 25 October 2024 (the HHERA report).

18. In October 2024, the National Health & Medical Research Council (NH&MRC) released draft new guidelines for PFAS chemicals with significantly more stringent limits proposed for all the PFAS indicators currently used (e.g. PFOA, PFOS, PFHxS and PFBS) by regulators and testing authorities and intends to publish the final revised guidelines in 2025. The HHERA report will need to be revised to incorporate the new health guidelines for PFAS (following publication of final guideline values) to ensure that the risk assessment remains current.

19. ***Environmental harm*** is defined in s14 of the Act as follows:

   (1) Environmental harm is any adverse effect, or potential adverse effect (whether temporary or permanent and of whatever magnitude, duration or frequency) on an environmental value, and includes environmental nuisance.

   (2) Environmental harm may be caused by an activity—

      (a) whether the harm is a direct or indirect result of the activity; or

      (b) whether the harm results from the activity alone or from the combined effects of the activity and other activities or factors.

20. An ***environmental value*** is defined in s9 of the Act as follows:
    (a) *a quality or physical characteristic of the environment that is conducive to ecological health; or*
    (b) *a quality or physical characteristic of the environment that is conducive to public health, safety or amenity; or*
    (c) *a quality or physical characteristic of the environment that contributes to its biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community; or*
    (d) *another quality of the environment identified and declared to be an environmental value under an environmental protection policy or regulation.*
21. Under the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 (Water EPP), all Queensland waters, including groundwater and surface waters, have prescribed environmental values and water quality objectives. Environmental values and water quality objectives for these waters are listed in Schedule 1 of the Water EPP.
22. The groundwater environmental values which apply in the Callide Creek Catchment include aquatic ecosystems, irrigation, farm supply, stock water, human consumer, primary recreation, secondary recreation, visual recreation, drinking water, industrial use, and cultural and spiritual values.
23. Groundwater downstream of the site is used by landholders for drinking, domestic use, irrigation, farm water supply and stock watering.
24. The environmental report identifies that current and historical releases of PFAS from Callide Power Station contribute to the current distribution of PFAS within the Callide Creek Alluvium.
25. Public amenity and safety are environmental values prescribed by the Act, that may be adversely affected by PFAS contamination of groundwater, particularly through contamination of drinking water above the ADWG.
26. Ecological health is an additional environmental value prescribed by the Act that has the potential to be adversely affected by the release of PFAS into the environment, through bioaccumulation in aquatic and terrestrial organisms.
27. The environmental report demonstrated that environmental harm is being, or is likely to be, caused and the department is satisfied that under the Act you have a duty to prevent and minimise environmental harm.
28. The delegate has considered the circumstances (including the standard criteria and human rights) and determined that the required actions are reasonable to address the recommendations of the environmental report and to fulfill your general environmental duty.
29. This EEO takes effect from the date service and remains in force until stayed, amended, revoked or finalised.

Definitions that apply to this EEO:

Authorised representative means a representative that has been nominated by the person this EEO relates to, for acting on their behalf when dealing with the Queensland Government to manage matters. For more information, read the guideline Authorisation letter to nominate an Authorised Holder Representative (available at www.qld.gov.au using the publication number ESR/2019/5168 as a search term).

Contaminated Land Auditor (CLA) as required by and in accordance with Chapter 12 Part 3 of the Act. For further information about the requirements of a CLA, refer to the Qld Government website at https://www.qld.gov.au/ (using 'contaminated land auditor" as the search term).

environmental report means CLID titled, *Callide Power Station – Contaminated Land Investigation Document (Site Investigation)*, dated 7 September 2022 and addendum CLID titled, *Callide Power Station – Addendum Contaminated Land Investigation Document (Site Investigation)*, dated 8 March 2024.

NEPM means the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)*, made by the National Environment Protection Council under the Commonwealth *National Environment Protection Council Act 1994*.

PFAS means per- and poly-fluoroalkyl substances and includes per-fluoroalkyl acid precursor compounds and their intermediates.

PFAS NEMP means '*PFAS National Environmental Management Plan'*, National Chemicals Working Group of the Heads of EPAs Australia and New Zealand, dated January 2020, or a later version of this document endorsed by the Queensland government.

Suitably qualified person (SQP) means:

(a) For assessment of land that is contaminated or is suspected of being contaminated, the person must be a SQP pursuant to s549 of the Act; and
(b) a person or persons who has demonstrated professional qualifications, training, skills or experience relevant to PFAS and can give authoritative assessment, advice and analysis to performance relative to the subject matter using the relevant protocols, standards, methods or literature.

Warnings and information about this EEO

A person who is bound by this EEO and who fails to comply with this EEO, without a reasonable excuse, commits an offence under the Act.

The maximum penalty for:

- wilfully contravening a requirement of an EEO is 1655 penalty units, totalling $266,951.50 for an individual, or $1,334,757.50 for a corporation.
- for contravening a requirement of an EEO is 600 penalty units, totalling $96,780.00 an individual, or $483,900.00 for a corporation.

Note that under section 493 of the Act that each executive officer of the corporation may be taken to have also committed an offence, of failing to ensure the corporation complies with the Act.

If you propose to dispose of the premises or business to which the EEO relates, you must advise the buyer of the existence of this EEO. Failure to provide written notice to the buyer of the existence of the order is an offence under section 369C of the Act with a maximum penalty of 50 penalty units, totalling $8,065.00 an individual, or $40,325.00 for a corporation.

Note you must also give the administering authority notice within 10 business days of ceasing activities to which this EEO relates. Failure to provide notice of ceasing to carry out activities is an offence under section 369D of the Act with a maximum penalty of 50 penalty units, totalling $8,065.00 an individual, or $40,325.00 for a corporation.

Further information about EEOs can be found on the department's website (ESR/2024/6802).

Review and appeal rights

Under Chapter 11, Part 3 of the Act, a dissatisfied person may apply for a review of this EEO within 10 business days of receiving this EEO; and a dissatisfied person who is dissatisfied with the review decision may appeal against the decision to the Court.

A request for review is to be made using the approved form 'Application for review of original decision' (available on the department's website). Applications for reviews are to be sent to Permit and Licence Management, Department of the Environment, Tourism, Science and Innovation: via email at palm@des.qld.gov.au, or by mail to the following address: GPO Box 2454, BRISBANE QLD 4001.

A person whose interests are or would be adversely affected by a decision of the department may be able to request a statement of reasons for a decision or a statutory order review under the *Judicial Review Act 1991*.

You may have other legal rights or obligations and should seek your own legal advice.

Privacy statement

Section 540 of the Act requires the department to maintain a register of certain documents and information authorised under the Act. A copy of this document will be kept on the public register. The register is available for inspection by members of the public who are able take extracts or copies of the documents from the register. Documents that are

required to be kept on the register are published in their entirety unless redaction in part is required by the Act. For more information on the department's public register, search 'public register' at www.qld.gov.au. For queries about privacy matters, please email privacy@des.qld.gov.au or telephone 13 74 68.

Accessibility

Contact us if you need this information in an accessible format such as large print or audio.

Interpreter assistance



If you need interpreter assistance or want this document translated, please contact us and advise your preferred language. If you are deaf, or have a hearing or speech impairment, contact us through the National Relay Service.