LAND COURT OF QUEENSLAND

CITATION:	*Environmental Advocacy in Central Queensland Inc v Department of Environment, Tourism, Science and Innovation & Ors* [2025] QLC 7
PARTIES:	**Environmental Advocacy in Central Queensland Inc** (appellant) v **Chief Executive, Department of Environment, Tourism, Science and Innovation** (first respondent) **Blue Energy Limited** (second respondent) and **Eureka Petroleum Pty Ltd** (third respondent)
FILE NO:	EPA187-23
PROCEEDING:	Appeal against internal review decision under the *Environmental Protection Act 1994*
DELIVERED ON:	3 April 2025
DELIVERED AT:	Brisbane
HEARD ON:	25 March 2025
HEARD AT:	Brisbane
MEMBER:	JR McNamara
ORDERS:	**1. The appeal is allowed.** **2. The decision of the first respondent dated 3 July 2023 to issue Environmental Authority P-EA-100196730 (EA), subject to conditions, be set aside and substituted with a decision by the Court to approve the version of the EA as set out in Annexure C to the Joint Statement filed on 21 March 2025 and attached as Appendix A to these reasons.**

3. There be no order as to costs.

CATCHWORDS: ENERGY AND RESOURCES – GAS – OTHER MATTERS – where the appellant appeals against an internal review decision under the *Environmental Protection Act 1994* – where the review decision proceeded on the basis of underestimated GHG emissions and an unrealistically low estimate of CSG production – where some tenures originally part of the project were withdrawn prior to the appeal – where the groundwater modelling was unreliable – where flora and fauna assessment lacked targeted surveys

Environmental Protection Act 1994 s 107, s 111, s 117, s 172(2)(a), s 176, s 203, s 207, s 215(1)(b), s 527, s 528, s 530, sch 4
Land Court Act 2000 s 5(1)
Land Court Rules 2022 r 44(1)
Petroleum and Gas (Production and Safety) Act 2004 sch 2

APPEARANCES: JE Forsyth KC, with DC Whitehouse (instructed by Environmental Defenders Office) for the appellant
JM Horton KC, with GB Kiss (instructed by Clayton Utz) for the first respondent
DP O'Brien KC (instructed by HopgoodGanim) for the second and third respondent

[1] This is an appeal under the *Environmental Protection Act 1994* (**EP Act**) against the 3 July 2023 internal review decision of the first respondent to approve the second respondent's (as agent for the third respondent[1]) application for a site-specific Environmental Authority (**EA**) with varied conditions[2] for certain petroleum leases (**PLs**) in the Moranbah region.

[2] The Court has the power to make orders if the parties consent in writing, and the Court considers it appropriate to do so.[3] As a court of statutory jurisdiction, this power is only limited by the Court's powers in the context of the appeal.[4]

[3] The parties to this matter filed a joint statement[5] which proposed orders by consent that the appeal be allowed on the basis that the 3 July 2023 decision to approve the

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1 In resolving the appeal, the parties have agreed to amend the EA to name the third respondent as the tenure holder; Joint Statement of the Parties [35]-[37].
2 Varied from the EA originally first approved on 23 March 2023.
3 *Land Court Rules 2022* r 44(1).
4 *Land Court Act 2000* s 5(1).
5 Filed 21 March 2025.

EA (with varied conditions) be set aside and substituted with a decision by the Court to approve the version of the EA annexed to the Joint Statement.

[4] The Court stands in the shoes of the Department of Environment, Tourism, Science and Innovation (**DETSI**) in deciding the appeal. Any decision substituted by the Court is held to be a decision of DETSI.

[5] A hearing was conducted on 25 March 2025. In addition to the Joint Statement, a written outline was provided by the first respondent, an affidavit filed by the solicitor for the second and third respondents,[6] and a hearing bundle handed up.[7]

[6] Much of the following is drawn from the Joint Statement. Having read the material before the Court and having heard from the parties, for the reasons that follow, I consider I can and I should make the orders sought.

Background

[7] A petroleum lease cannot be granted unless a 'relevant environmental authority' for the petroleum lease has been issued. A 'relevant environmental authority' means an EA under the *Petroleum and Gas (Production and Safety) Act 2004* for all authorised activities for the petroleum authority that are environmentally relevant activities.[8]

[8] On 31 January 2022, the second respondent (on behalf of the third respondent) lodged an application for a site-specific Environmental Authority A-EA-NEW-100176712 (**EA Application**).

[9] The EA Application:

(a) sought to authorise the EA holder to conduct environmentally relevant activities on three petroleum leases in the Moranbah region (**the Proposal**);

(b) covered three petroleum lease tenements, being PL1034 (**Sapphire**), PL1038 (**Central**), and PL1045 (**Lancewood**); and

(c) sought authorisation for a total of 530 well pads (lateral, multi and vertical) over a 20 year development period, distributed over the three PLs as follows:

(i) 117 Well pads on the Sapphire PL (618.34 TJ);

(ii) 264 Well pads on the Central PL (602.09 TJ); and

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6 Affidavit of Aaron Michael Alcock, affirmed on 21 March 2025.

7 Ex 1.

8 *Petroleum and Gas (Production and Safety) Act 2004* sch 2.

(iii) 149 Well pads on the Lancewood PL (490.26 TJ).

[10] On 23 March 2023, the Notice of Decision to approve the EA Application under s 172(2)(a) of the EP Act was issued (**the Original Decision**). The decision was made by the authorised delegate of the first respondent.

[11] On 19 April 2023, the EA was amended such that the EA would take effect on the date that the related tenures are granted.

[12] On 12 May 2023, Lock the Gate Alliance Limited and Isaac Regional Council applied for internal review of the Original Decision.

The internal review decision

[13] Five submissions were received on the internal review applications and considered, including submissions from the appellant and the second respondent. The submission of Lock the Gate Alliance Limited was that there were uncertain and potentially significant impacts of the Proposed Activities on groundwater and surface water, climate change, economics and biodiversity which could not be managed by conditions.

[14] On 3 July 2023, the delegate of the first respondent decided to vary the Original Decision by approving the EA but varying its conditions (**Review Decision**). The Review Decision imposed Conditions WS13 and WS14, requiring the groundwater model to be reviewed and updated 3 years after the commencement of activities.

[15] The Review Decision was explained in a Statement of Reasons dated 3 July 2023 (**SORs**). The SORs proceed on the basis of an estimate of greenhouse gas (**GHG**) emissions of 410,447 t CO2-e over the life of the Proposal undertaken by the first respondent. This estimate was an underestimate due, at least in part, to the error in the coal seam gas (**CSG**) production estimates in the Supporting Information.

The appeal

[16] On 2 August 2023, the appellant filed a Notice of Appeal to the Land Court in relation to the Review Decision.

[17] On 21 August 2023, the second respondent withdrew its applications for the Central and Lancewood PLs. Consequently, the second respondent is not entitled to an EA in

respect of those PLs and is only entitled to an EA for the Sapphire PL.[9] Only the Sapphire PL (**the Project**) remains 'a related tenure'.

[18] On 15 September 2023, the appellant filed an Amended Notice of Appeal (**ANOA**), that contained, among other things, grounds relating to:

(a) the "unrealistically low" estimate of CSG production (paragraph 1 of the ANOA);

(b) issues associated with groundwater and potential groundwater impacts, including allegations that the groundwater modelling was unreliable (paragraph 3 of the ANOA);

(c) the lack of a GHG emissions assessment (paragraph 4 of the ANOA); and

(d) issues associated with the flora and fauna assessment, including a lack of targeted surveys on the Central and Lancewood PLs (paragraph 5 of the ANOA).

[19] After a number of procedural steps, on 22 December 2023, the second and third respondents filed their statement of facts and issues (**SFI**) which, among other things:

(a) admitted that the EA Application did not contain an assessment of GHG emissions;

(b) admitted that CSG production of 618.34 TJ over the duration of the Project is unrealistically low and said that that figure came about through a calculation error;

(c) stated that they intend to utilise gas from the Project to supply:

(i) up to 112 PJ of gas to the Townsville Energy Chemicals Hub (**TECH**) Project under the Memorandum of Understanding with QPM (**QPM MOU**);

(ii) gas on an "as available" basis to the Moranbah Gas Project plant under the Memorandum of Understanding with QPME (**QPME MOU**); and

(d) provided an estimate of GHG emissions for the Project based on the two different development scenarios.

[20] The TECH Project is a battery materials refinery, processing laterite ore to produce nickel sulphate and cobalt sulphate, as well as other co-products. The second and third respondents' SFI identifies that "Nickel and cobalt sulphides are effective electrode

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9 *Environmental Protection Act 1994* s 117.

materials for high-performance electrochemical energy storage devices (EESDs) such as battery-type supercapacitors, lithium/sodium-ion batteries, zinc-air batteries and lithium-sulphur batteries. As such, their production is critical to the transition to renewable energy sources both in Australia and the rest of the world."

[21] After a number of further procedural steps, on 1 May 2024, the second and third respondents filed an amended statement of facts and issues (**ASFI**) which contained CSG estimates and GHG estimates based on a 117 well development scenario. GHG emissions based upon the revised estimate of 178,200 TJ (178.2 PJ) for the Project over its 20 year duration were estimated at:

(a) 435,586 t CO2-e (for Scope 1 emissions alone);[10] and

(b) 11,163,756 t CO2-e (for Scope 1, 2 and 3 emissions)

being up to approximately 0.007% of the Paris Agreement Inventory 2021 (for Scope 1 emissions alone) or 0.14% of the Paris Agreement Inventory 2021 (for Scope 1, 2 and 3 emissions).

[22] On 31 May 2024, the first respondent filed its amended statement of facts and issues (**first respondent's ASFI**). That document stated that gas production totalling 178,200 TJ (178.2 PJ) is an approximate 28,000% increase from 618.34 TJ (0.61834 PJ) proposed for that tenement in the EA Application, and an approximate 10,000% increase from 1710 TJ (1.71 PJ) proposed for the Project.

[23] The first respondent's ASFI further alleged that:

> "20. GHG, including scope 3, emissions attributable to the Project are relevant to the assessment of the EA, as the granting by the First Respondent of a permission to extract petroleum and gas cannot logically be separated from the burning of that petroleum and gas, being the whole point of the exercise.
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> …
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> 24. GHG emissions are required to be considered by the decision-maker in assessing an EA for resource activities under the EP Act because the impact of emissions is a relevant factor when considering the standard criteria."

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[10] The Joint Statement at [17] states the estimated Scope 1 emissions to be 219 t CO2-e. That is incorrect. That total represents the estimated Scope 2 emissions, not Scope 1 emissions. The correct assessment of Scope 1 emissions is 435,586 t CO2-e found in the table at Annexure B to the second and third respondents' ASFI. This was confirmed in correspondence with the parties following the hearing. The parties did not propose any consequential changes to the Joint Statement as a result of this correction.

[24] On 20 November 2024, the second and third respondents filed:

(a) an expert report of Netherland, Sewell & Associates Inc (**NSAI**), dated 19 November 2024, which provided an updated gas production estimate for the Sapphire PL of 116.3 PJ based on 117 wells (**NSAI Production Estimate**); and

(b) the affidavit of John Phillips, the CEO of the second respondent, affirmed on 20 November 2024, which include statements as to:

(i) reserve estimates;

(ii) the error in the Supporting Information filed with the EA Application; and

(iii) intended end use of the gas from the Project.

[25] Mr Phillips' affidavit contained the following statements:

> "46. The QPM MOU was extended in a letter agreement dated 23 February 2023 (**Extension Letter**). … Under the Extension Letter, the QPM MOU was amended so that it expires on the earlier of when it is replaced by an indicative term sheet or "three (3) years from execution."
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> …
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> 52. Based on the QPM MOU, the QPME MOU and the NSAI Production Estimates, Blue currently intends to use the gas produced from the Project as follows:
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> (a) to provide 112 PJ to the TECH Project and QPM over the 15 year term under the QPM MOU. Based on the NSAI Production Estimate, this will largely deplete all of the gas that can be produced from 117 wells on the Sapphire PL;
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> (b) to the extent Blue is able, to provide early gas from the Pilot Wells (and any other wells on the Sapphire PL negotiated with QPME) to supply gas to QPME on "as available" basis consistent with the QPME MOU."

[26] For the reasons outlined in paragraph [56] of Mr Phillips' affidavit, it is not currently a realistic option for the second and third respondents to supply gas to Curtis Island to then be compressed to liquified natural gas (**LNG**) and exported overseas due to: the absence of a pipeline to Curtis Island; that neither the Arrow Energy nor Bowen Basin pipelines have been constructed and may not be constructed; and the fact that the expected gas production from 117 wells means it is not economically feasible to supply gas internationally as well as supply gas under the QPM MOU and the QPME MOU.

The parties' agreement

[27] The parties agreed to resolve the appeal subject to certain amendments to the EA, including additional and varied conditions. The Joint Statement states that the parties agreed to the resolution following:

(a) the identification by the second and third respondents that they do not seek the grant of the EA in respect of any Proposed Activities within the Central or Lancewood PLs and that they will seek appropriate amendments to the EA so that it does not authorise any Proposed Activities on the Central or Lancewood PLs;

(b) the admission by the second and third respondents of the calculation error in the CSG estimates in the Supporting Information, and the rectification of that error;

(c) the provision of a GHG emissions estimate by the second and third respondents based upon the 117 well scenario; and

(d) the receipt of the affidavit of Mr John Phillips confirming the second and third respondents' intention to supply the gas to the TECH Project under an existing QPM MOU and confirming that the QPM MOU had been extended for 3 years from 23 February 2023.

The statutory framework

[28] This appeal was instituted under Chapter 11, Part 3, Division 3, Subdivision 1 of the EP Act.

[29] By ss 527 and 528 of the EP Act this appeal is by way of rehearing, unaffected by the Review Decision. The Court, in deciding the appeal, has the same powers as did the Chief Executive. If in deciding the appeal the Court substitutes a new decision, it is taken to be that of the Chief Executive.[11]

[30] As the EA Application was for a site-specific EA, the Court has the same powers as the first respondent under section 172 of the EP Act. Relevantly, this section allows the first respondent to decide that the EA Application be approved subject to conditions.

[31] Section 176 of the EP Act sets out the criteria that are to be considered in deciding a site-specific EA application. Relevantly, this section requires consideration of: (i) the

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11 *Environmental Protection Act 1994* s 530.

EA Application; (ii) any standard conditions for the relevant activity or authority; (iii) any response given for an information request; and (iv) the standard criteria (defined in Schedule 4 of the EP Act).

[32] Under section 203 of the EP Act, the first respondent may only impose conditions on an EA if it considers the condition is necessary or desirable. Section 207 of the EP Act sets out a non-exhaustive list of the types of conditions the first respondent may impose on an EA including, relevantly, a condition which restricts the carrying out of the relevant activity.

The amendments to the EA

[33] In addition to the material contained in the hearing bundle, I have considered the following documents which were put before the Court:

(a) the EA Application;

(b) the Response to Information Request dated 14 September 2022;

(c) the revised Supporting Information dated October 2022;

(d) the Streamlined model conditions for petroleum activities (ESR/2016/1989);

(e) the first respondent's Assessment Report in respect of the EA, which formed the basis for the Original Decision;

(f) the first respondent's Technical Support Response by David Love dated 15 February 2023;

(g) the first respondent's Decision and SORs in respect of the Review Decision; and

(h) the EA issued by the first respondent along with the Review Decision.

[34] I have taken into account the fact that there are no "standard conditions" for the Proposed Activities as contemplated by section 176(2)(b)(ii) of the EP Act.

[35] The first respondent's Assessment Report contains an analysis of the EA Application, and responses given for an information request and the "standard criteria" as required by section 176 of the EP Act. That assessment was amended and supplemented by the Decision and SORs in respect of the Review Decision, which also included an assessment of human rights impacts.

[36] The parties accept that the Court can proceed on the assessment of the criteria and human rights impacts detailed in the Assessment Report and the Decision and SORs for the Review Decision in so far as they are concerned with the Sapphire PL.

[37] Taking into account that assessment the Court has determined that amendments to the EA are required. The version of the EA that the Court approves is set out in Annexure C to the Joint Statement filed on 21 March 2025. That version of the EA is annexed to these reasons as Appendix A. An explanation of the changes and why they are made follows.

Change of EA Holder

[38] Pursuant to section 117 of the EP Act, a person may apply for an EA for a resource activity (which, relevantly, includes the Proposed Activities – see sections 107 and 111 of the EP Act) only if the person is the applicant for a relevant tenure (in this case being the Sapphire PL – see Schedule 4 of the EP Act) for the resource activity.

[39] The amendments change the EA holder from the second respondent to the third respondent.

[40] This amendment is necessary because the third respondent (not the second respondent) is the applicant for the Sapphire PL.[12] It is also appropriate because the Supporting Information states that the EA Application was being made by the second respondent as agent of the third respondent. The EA Application was in fact made by the third respondent as principal.

Restriction of the Proposed Activities

[41] The amendments will have the effect of restricting the Proposed Activities to the Sapphire PL only.

[42] This amendment is necessary, because the second and third respondents have identified that they do not seek the grant of the EA in respect of any Proposed Activities within the Central or Lancewood PLs.

[43] Under the EP Act conditions can be imposed on the grant of an EA which restrict the extent of the activity applied for. Such a restriction can include the area over which the Proposed Activities can occur and the intensity of the Proposed Activities.

Amendments to the Biodiversity Schedule

[44] The Amendments to the Biodiversity Schedule include conditions requiring that:

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12 Affidavit of John Phillips, affirmed on 20 November 2024 para 2(a).

(a) a spotter catcher will be present to direct any native vegetation clearing works (new Condition B2);

(b) prior to undertaking any Proposed Activities, the second and third respondent are to produce a report which maps the biodiversity values present on the site (new Condition B3). These maps will be based on the state mapped biodiversity values and the findings of on-the-ground surveys;

(c) an annual report will be published by the second and third respondents including records to demonstrate compliance with conditions of the EA relating to clearing activities, a description of the activities and descriptions of the area of native vegetation clearing (new Condition B11).

[45] These amendments respond to, among other things, the concerns raised in the ANOA that the environmental values identified through the targeted surveys that have already been undertaken should be clearly identified and inform the layout of the site infrastructure (subject to further pre-clearance surveys) by requiring the EA holder to:

(a) prepare a Biodiversity Report prior to commencing activities, which will map the biodiversity values of the site;

(b) confirm the mapped biodiversity values with on-the-ground surveys conducted prior to the clearing of native vegetation; and

(c) publish the Biodiversity Report and each annual biodiversity report recording the second and third respondents' compliance with the conditions of the EA. This will also provide a level of transparency and accountability.

[46] The parties agree and I accept that the proposed amendments to the conditions in the Biodiversity Schedule will not materially increase impacts to environmental values as assessed in the Original Decision and the Review Decision. The proposed amendments involve additional steps, measures and reporting which will help to avoid or minimise to an acceptable extent any impacts to the environmental values assessed in the Original Decision and the Review Decision.

Amendments to the Wells and Pipelines Schedule

[47] The proposed amendments to the Wells and Pipelines Conditions include:

(a) a requirement to have the Water Impact Monitoring Program in place at least 6 months prior to activities commencing (new Condition WS8(b));

(b) a requirement to install an additional three shallow monitoring bores at locations that are to be determined (new Condition WS10). These monitoring bores are

in addition to the three nested shallow and three nested deep bores that were required under the EA approved on the Review Decision;

(c) locations for the North, Central and South bores, with the locations of the three Wetland bores to be confirmed six months prior to activities commencing (new Condition WS10). The target formations for each of the shallow bores is also to be confirmed six months prior to activities commencing. I have been advised and accept that the respondents have agreed that the second and third respondents will provide those details to the first respondent for its consideration. It is intended that this will occur as part of (or at the same time as) the preparation of the Water Impact Monitoring Program under Condition WS8. Assuming the first respondent agrees with the locations and target formations provided, the first respondent will amend the EA under section 215(1)(b) of the EP Act (by agreement with the EA holder) to insert those details;

(d) specific requirements for the analysts and physico-chemical parameters to be monitored as part of the Water Impact Monitoring Program, including pH, electrical conductivity, total dissolved solids, temperature, dissolved oxygen and gasses (including methane), alkalinity, anions, cations, dissolved and total metals and metalloids, total petroleum hydrocarbons, BTEX and polycyclic aromatic hydrocarbons (new Condition WS11);

(e) an additional requirement for a Baseline Monitoring Report to be provided to the first respondent at least 6 months prior to commencing activities (new Condition WS13); and

(f) an additional requirement that the updated groundwater model (which is to be prepared within 3 years after commencement of activities under old Condition WS13/new Condition WS16) include a sensitivity analysis (new Condition WS17(d)).

[48] These amendments respond to the concerns raised in the ANOA regarding the alleged unreliability of the groundwater modelling by requiring the EA holder to:

(a) undertake baseline monitoring at least 6 months prior to commencing activities and to prepare a Baseline Monitoring Report. The Baseline Monitoring Report will allow for subsequent comparisons of the conditions prior to activities commencing and ongoing monitoring results after commencement of activities;

(b) install three additional shallow monitoring bores. These bores will assist in monitoring groundwater impacts in environmentally sensitive areas;

(c) incorporate a sensitivity analysis in the revised groundwater model as part of the updated groundwater model. The incorporation of this sensitivity analysis, together with the incorporation of baseline monitoring data will assist in improving the reliability and accuracy of the groundwater model used by the EA holder; and

(d) monitor for specific analysts and physico-chemical parameters including, in particular, a requirement for monitoring for methane in the Baseline Monitoring Report and if methane is detected by a multiparameter gas detector at the wellhead. Methane, in particular, has been identified by the appellant as a lighter, more mobile hydrocarbon. The incorporation of specific conditions requiring monitoring for methane will ensure that methane is detected, and an analysis for dissolved methane is undertaken, as part of the Water Impact Monitoring Program.

[49] The parties agree and I accept that the proposed amendments to the conditions in the Wells and Pipeline Schedule will not materially increase impacts to environmental values as assessed in the Original Decision and the Review Decision. The proposed amendments involve additional steps, measures and reporting which will help to avoid or minimise to an acceptable extent any impacts to the environmental values assessed in the Original Decision and the Review Decision.

[50] The parties agree and I accept that those amendments are desirable and ought to be imposed on the EA.

The Grounds of Appeal

[51] The following Grounds of Appeal were resolved to the satisfaction of the appellant on the basis of the amended EA as agreed between the parties:

(a) Ground 1 relates to an error in the EA in relation to the production of CSG. The second and third respondents admit the error. This ground is addressed by:

(i) limiting the activities authorised by the EA to the Sapphire PL; and

(ii) the second and third respondents providing updated estimates of CSG production.

(b) Ground 2 asserted that the EA was premature. This ground is addressed by:

(i) limiting the activities authorised by the EA to the Sapphire PL; and

(ii) the inclusion of amended Condition B3 which requires, among other things, biodiversity maps to be prepared prior to the commencement of activities that show spatially all constraints on the layout of linear infrastructure, access roads and tracks, the wells and other site infrastructure arising from the biodiversity values of the site. This condition will ensure that the targeted surveys that have been undertaken to date will inform the layout of the site infrastructure (which will then be subject to further pre-clearance surveys).

(c) Ground 3 relates to groundwater. This ground is addressed by:

(i) limiting the activities authorised by the EA to the Sapphire PL;

(ii) an amended set of groundwater conditions requiring an amended Water Impact Monitoring Program to be developed and carried out which includes the following:

A. baseline monitoring to be carried out six months prior to activities commencing with a report to be provided to the administering authority at least six months prior to the activities commencing; and

B. three additional deep monitoring bores and three additional shallow monitoring bores across a representative area of the Sapphire PL; and

(iii) increased monitoring parameters to better detect any impacts to groundwater level and quality including to detect the presence of methane.

(d) Ground 4 relates to GHG emissions. This ground is addressed by:

(i) limiting the activities authorised by the EA to the Sapphire PL;

(ii) the second and third respondents providing updated estimates of CSG production;

(iii) the second and third respondents providing an estimate of GHG emissions for the Sapphire PL; and

(iv) the second and third respondents confirming that they currently intend to use the gas produced from the Project, among other things, to provide 112 PJ to the TECH Project over 15 years and that conversion to LNG and combustion overseas is not currently a realistic option.

(e) Ground 5 relates to impacts on flora and fauna. This ground is addressed by:

(i) limiting the activities authorised by the EA to the Sapphire PL;

(ii) the provision of further information to the appellant regarding the targeted flora and fauna surveys undertaken on the Sapphire PL which underpinned the information set out in the EA Application;

(iii) confirmation that there are no groundwater dependent ecosystems on the Sapphire PL; and

(iv) the agreement to an amended set of flora and fauna conditions including the following:

A. the requirement for all native vegetation clearing to be undertaken in the presence of a qualified spotter catcher (new Condition B2);

B. the requirement for biodiversity maps to be prepared prior to the commencement of activities (new Condition B3); and

C. additional Biodiversity Reporting (new Condition B11).

(f) Ground 6 relates to impacts on surface water. This ground is addressed by limiting the activities authorised by the EA to the Sapphire PL and otherwise is no longer pursued by the appellant.

(g) Ground 7 relates to the public interest. This ground is addressed by:

(i) limiting the activities authorised by the EA to the Sapphire PL;

(ii) the amendments to the conditions in relation to flora and fauna impacts and groundwater impacts;

(iii) the provision of further information by the second and third respondents about economic and social benefits in the affidavit of John Phillips affirmed 20 November 2024; and

(iv) the matters addressed above in relation to ground 4 (GHG emissions).

(h) Ground 8 relates to human rights and the assertion that the Proposed Activities will contribute to climate change, which will disproportionately affect Aboriginal and Torres Strait Islander Peoples. This ground is addressed by the matters above in relation to ground 4 (GHG emissions) and ground 7 (public interest).

(i) Ground 9 asserts the application is piecemeal. This ground is addressed by limiting the activities authorised by the EA to the Sapphire PL. It is otherwise no longer pursued by the appellant.

(j) Ground 10 relates to conditions. This ground is addressed by:

(i) limiting the activities authorised by the EA to the Sapphire PL; and

(ii) the amendments to the conditions in relation to flora and fauna impacts and groundwater impacts.

(k) Ground 11 relates to the form of orders arising from earlier grounds and is superseded by the grounds sought in the Joint Statement.

Conclusion

[52] The first respondent submitted that this case warranted the agreement of the Chief Executive to amend conditions to resolve the appeal. Taking into account the second and third respondents' re-estimation of the Project's CSG and GHG emissions, the agreement of the parties as detailed in the Joint Statement, together with the further material provided in this matter, and in conjunction with the standard criteria, the amendments are justified and are within the discretion conferred by s 176 and s 203(1) of the EP Act.

Orders

1. **The appeal is allowed.**

2. **The decision of the first respondent dated 3 July 2023 to issue Environmental Authority P-EA-100196730 (EA), subject to conditions, be set aside and substituted with a decision by the Court to approve the version of the EA as set out in Annexure C to the Joint Statement filed on 21 March 2025 and attached as Appendix A to these reasons.**

3. **There be no order as to costs.**

APPENDIX A

Permit

Environmental Protection Act 1994

Environmental authority P-EA-100196730

This environmental authority is issued by the administering authority under Chapter 5 of the Environmental Protection Act 1994.

Environmental authority number: P-EA-100196730

Environmental authority takes effect on the date that your related tenure is granted. This is the take effect date.

The first annual fee is payable within 20 business days of the take effect date.

The anniversary date of this environmental authority is the same day each year as the take effect date. The payment of the annual fee will be due each year on this day.

Environmental authority holder(s)

Name(s)	Registered address
EUREKA PETROLEUM PTY LTD	Suite 1, 26 Wharf St BRISBANE CITY QLD 4000

Environmentally relevant activity and location details

Environmentally relevant activity/activities	Location(s)
ERA 63 - Sewage Treatment - 1(a-i) - Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of 21 to 100EP - if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme	PL1034
Schedule 3 - 08 - A petroleum or GHG storage activity, other than items 1 to 7, that includes an activity from Schedule 2 with an AES	PL1034

Additional information for applicants

Environmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority (EA) is issued is a restatement of the ERA as defined by legislation at the time the EA is issued. Where there is any inconsistency between that description of an ERA and the conditions stated by an EA as to the scale, intensity or manner of carrying out an ERA, the conditions prevail to the extent of the inconsistency.

An EA authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the EA specifically authorises environmental harm.

A person carrying out an ERA must also be a registered suitable operator under the *Environmental Protection Act 1994* (EP Act).

Contaminated land

It is a requirement of the EP Act that an owner or occupier of contaminated land give written notice to the administering authority if they become aware of the following:

- the happening of an event involving a hazardous contaminant on the contaminated land (notice must be given within 24 hours); or
- a change in the condition of the contaminated land (notice must be given within 24 hours); or
- a notifiable activity (as defined in Schedule 3) having been carried out, or is being carried out, on the contaminated land (notice must be given within 20 business days)

that is causing, or is reasonably likely to cause, serious or material environmental harm.

For further information, including the form for giving written notice, refer to the Queensland Government website www.qld.gov.au, using the search term 'duty to notify'.

Take effect

Please note that, in accordance with section 200 of the EP Act, an EA has effect:

a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority - on the nominated day; or

b) if the authority states a day or an event for it to take effect-on the stated day or when the stated event happens; or

c) otherwise on the day the authority is issued.

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Planning Act 2016* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect until the additional authorisation has taken effect.

If this EA takes effect when the additional authorisation takes effect, you must provide the administering authority written notice within 5 business days of receiving notification of the related additional authorisation taking effect.

The anniversary day of this environmental authority is the same day each year as the original take effect date unless you apply to change the anniversary day. The payment of the annual fee will be due each year on this day. An annual return will be due each year on 01 April.

If you have incorrectly claimed that an additional authorisation is not required, carrying out the ERA without the additional authorisation is not legal and could result in your prosecution for providing false or misleading information or operating without a valid environmental authority.

	TBD
Signature	Date

Kate Bennink
Department of Environment, Tourism, Science and Innovation
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Energy and Extractive Resources
GPO Box 2454, BRISBANE QLD 4001
Phone: (07) 3330 5737
Email: EnergyandExtractive@des.qld.gov.au

Privacy statement

Pursuant to section 540 of the EP Act, the Department is required to maintain a register of certain documents and information authorised under the EP 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 alteration is required by the EP Act. There is no general discretion allowing the Department to withhold documents or information required to be kept on the public register. 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.

Obligations under the *Environmental Protection Act 1994*

In addition to the requirements found in the conditions of this environmental authority, the holder must also meet their obligations under the EP Act, and the regulations made under the EP Act. For example, the holder must comply with the following provisions of the Act:

- general environmental duty (section 319)
- duty to notify environmental harm (section 320-320G)
- offence of causing serious or material environmental harm (sections 437-439)
- offence of causing environmental nuisance (section 440)
- offence of depositing prescribed water contaminants in waters and related matters (section 440ZG)
- offence to place contaminant where environmental harm or nuisance may be caused (section 443)

Other permits required

This permit only provides an approval under the *Environmental Protection Act 1994*. In order to lawfully operate you may also require permits / approvals from your local government authority, other business units within the department and other State Government agencies prior to commencing any activity at the site. For example, this may include permits / approvals with your local Council (for planning approval), the Department of Transport and Main Roads (to access state controlled roads), the Department of Resources (to clear vegetation), and the Department of Agriculture and Fisheries (to clear marine plants or to obtain a quarry material allocation).

Obligations under the *Mining and Quarrying Safety and Health Act 1999*

If you are operating a quarry, other than a sand and gravel quarry where there is no crushing capability, you will be required to comply with the *Mining and Quarrying Safety and Health Act 1999*. For more information on your obligations under this legislation contact Mine Safety and Health at https://www.rshq.qld.gov.au/, or phone 13 QGOV (13 74 68) or your local Mines Inspectorate Office

Conditions of environmental authority

<table>
<tr><th>Ref</th><th>Condition</th></tr>
<tr><td colspan="2">Schedule: General</td></tr>
<tr><td>G1</td><td>
This environmental authority authorises the carrying out of the following resource activities:

the petroleum activities listed in Table – Authorised activities to the extent that they are carried out in accordance with the activity's corresponding:
<ol type="i">
maximum disturbance size; and
maximum scale; and
location

the specified relevant activities prescribed by this Environmental Authority at the locations specified on the cover pages of this environmental authority;
petroleum activities, including but not limited to:
<ol type="i">
linear infrastructure;
borrow pits / extracting, other than by dredging;
seismic surveys; and

Incidental activities that are not otherwise specified relevant activities.

Table – Authorised activities
<table>
<tr><th>Activity</th><th>Max. disturbance size</th><th>Max. scale</th><th>Location</th></tr>
<tr><td>CSG Wells</td><td>238 ha</td><td>117 wells</td><td>PL1034</td></tr>
<tr><td>Sewage Treatment Plants with a total daily peak design capacity of 21 – 100EP</td><td>1 ha</td><td>1</td><td>PL1034,</td></tr>
</table>
</td></tr>
<tr><td>G2</td><td>All reasonable and practicable measures must be taken to prevent or minimise environmental harm caused, or likely to be caused, by the activities.</td></tr>
<tr><td>G3</td><td>
Unless specifically authorised by a condition of this environmental authority, this environmental authority does not authorise a relevant act which is:
<ol type="a">
an act that causes serious or material environmental harm or an environmental nuisance; or
an act that contravenes a noise standard; or
a deposit of a contaminant, or release of stormwater run-off, mentioned in section 440ZG of the Environmental Protection Act 1994.

</td></tr>
</table>

G4	**Contravention of conditions** Unless specifically authorised by a condition of this environmental authority, details of any contravention of a condition of this environmental authority must: (a) be reported to the administering authority within 24 hours of becoming aware of the contravention; and (b) include the nature and circumstances of the contravention and any immediate actions taken.
G5	As soon as reasonably practicable and within 20 business days of a report made under condition G4 (or a longer period agreed to in writing by the administering authority), an investigation must be undertaken to determine: (a) the potential circumstances and actions that may have contributed to the contravention; and (b) reasonable and practicable measures that will be implemented to address the cause of the contravention to prevent future contraventions of this nature.
G6	As soon as reasonably practicable and within 20 business days of investigating a contravention under condition G5 (or a longer period agreed to in writing by the administering authority), the reasonable and practicable measures identified in the investigation must be implemented.
G7	The outcome of the investigation carried out under condition G5, and the reasonable and practicable measures implemented under condition G6 must be recorded.
G8	**Complaints** The following details must be recorded for all complaints received and provided to the administering authority upon request: (a) date and time the complaint was received; and (b) if authorised by the person making the complaint, their name and contact details; and (c) nature and details of the complaint.
G9	As soon as reasonably practicable and within 5 business days of receiving a complaint (or a longer period agreed to in writing by the administering authority), an investigation must be undertaken to determine: (a) the potential circumstances and actions on site that may have contributed to the basis of the complaint; and (b) reasonable and practicable measures that will be implemented to address the complaint.
G10	As soon as reasonably practicable and within 5 business days of investigating a complaint under condition G9 (or a longer period agreed to in writing by the administering authority), the reasonable and practicable measures identified in the investigation must be implemented.
G11	If requested by the administering authority in relation to investigating a complaint, monitoring must be commenced within 10 business days.
G12	The outcome of the investigation and monitoring carried out under conditions G9 and G11 , and the reasonable and practicable measures implemented under condition G10 must be recorded.

<table>
<tr><td>G13</td><td>Environmental risk management procedures
Written procedures must be developed and implemented by an appropriately qualified person that ensure:
(a) all potential risks to the environment from the carrying out of the activity are identified and assessed, including:
(i) during routine operations; and
(ii) outside routine operations (e.g., maintenance, start up and shut down); and
(iii) during preparation, rehabilitation, and closure; and
(iv) in an emergency (e.g., fire, flood or other natural disaster); and
(b) for each potential risk identified, any necessary measures to prevent or minimise the potential for environmental harm are implemented; and
(c) staff understand their obligations under this environmental authority and the Environmental Protection Act 1994; and
(d) environmental risk management procedures are continually reviewed and improved, based on a reasonable risk-management approach.</td></tr>
<tr><td>G14</td><td>Plant and equipment
An appropriately qualified person must install, operate, calibrate, and maintain the plant and equipment required to carry out the activity (including monitoring devices) in a proper and effective manner.</td></tr>
<tr><td>G15</td><td>Records of installation, calibration and maintenance carried out under condition G14 must be kept.</td></tr>
<tr><td>G16</td><td>Record keeping
Unless otherwise specified by a condition of this environmental authority, records must be:
a) kept for the period outlined in Table – Record keeping requirements; and
b) provided to the administering authority upon request.
Table – Record keeping requirements
<table><tr><th>Description of records</th><th>Retention requirement</th></tr><tr><td>Monitoring results.</td><td>Retain for 15 years.</td></tr><tr><td>All other records.</td><td>Retain for 5 years.</td></tr></table></td></tr>
<tr><td>G17</td><td>All plans, procedures, programs, reports, and methodologies required under this environmental authority must be written and implemented.</td></tr>
<tr><td>G18</td><td>A certification must be prepared by a suitably qualified person within 30 business days of completing every plan, procedure, program, and report required to be developed under this environmental authority, which demonstrates that:
a) relevant material, including current published guidelines (where available) have been considered in the written document;
b) the content of the written document is accurate and true; and
c) the document meets the requirements of the relevant conditions of the environmental authority.</td></tr>
<tr><td>G19</td><td>Chemical storage
Chemicals and fuels in containers of greater than 15 litres must be stored within a secondary containment system.</td></tr>
</table>

G20	**Monitoring and sampling** All monitoring and sampling required by the conditions of this environmental authority must be carried out, interpreted, and recorded by an appropriately qualified person.
G21	Unless otherwise authorised in writing by the administering authority, all laboratory analyses required under this environmental authority must be carried out by a laboratory that has National Association of Testing Authorities (NATA) accreditation for such analyses. The only exception to this condition is for in situ monitoring of turbidity required by Conditions WT9 and WT10 of this environmental authority.
G22	**Alternate arrangements** Despite any other condition in this environmental authority, environmental nuisance caused by the activity at a sensitive place is authorised to the extent that an alternative arrangement permits that environmental nuisance to occur at that sensitive place.
G23	**Incident reporting** In addition to the requirements under Chapter 7, Part 1, Division 2 of the *Environmental Protection Act 1994*, the administering authority must be notified through the Pollution Hotline and in writing, as soon as possible, but within 48 hours of becoming aware of any of the following events: (a) any unauthorised significant disturbance to land; (b) actual or suspected loss of well integrity; (c) unauthorised releases of any volume of prescribed contaminants to waters; (d) unauthorised releases of volumes of contaminants, in any mixture, to land greater than: (i) 200 L of hydrocarbons; (ii) 1 000 L of brine; or (iii) 5 000 L of untreated coal seam gas water; or (iv) 5 000 L of raw sewage; or (v) 10 000 L of treated sewage effluent. (e) monitoring results where two out of any five consecutive samples do not comply with the relevant limits in the environmental authority.

G24	The report in conditions G4 and G23 must include: (a) time and date when contravention/event occurred; (b) time and date when contravention/event detected; (c) GPS coordinates (GDA2020 decimal degrees to 4 decimal places) of location of contravention/event; (d) unique reference name or number for any infrastructure relevant to the contravention/event; (e) photos of or relevant to the contravention/event; (f) estimated area of land (in m^2) impacted by contravention/event; (g) the nature of the activity being carried out that gave rise to the contravention/event; (h) the circumstances in which the contravention/event occurred; (i) measures that have been or will be undertaken to control the impact of the contravention/event; (j) contaminants that: (i) have been released; and (ii) may be released; (k) the quantity of contaminants released; (l) any sampling undertaken or proposed; (m) relevant environmental features (e.g. waterways, wetlands, vegetation) that have or may be impacted by the contravention/event; and (n) details of affected landowner consultation that has been or will be undertaken in response to the contravention/event.
G25	**Signage** The following infrastructure must be signed with a unique reference name or number in such a way that it is clearly observable: (a) all wells; and (b) sewage treatment facilities.
G26	**Contingency procedures for emergency environmental incidents** Petroleum activities involving significant disturbance to land cannot commence until the development of written contingency procedures for emergency environmental incidents which include, but are not necessarily limited to: a) a clear definition of what constitutes an environmental emergency incident or near miss for the petroleum activity. b) consideration of the risks caused by the petroleum activity including the impact of flooding and other natural events on the petroleum activity. c) response procedures to be implemented to prevent or minimise the risks of environmental harm occurring. d) the practices and procedures to be employed to restore the environment or mitigate any environmental harm caused. e) procedures to investigate causes and impacts including impact monitoring programs for releases to waters and/or land. f) training of staff to enable them to effectively respond. g) procedures to notify the administering authority, local government and any potentially impacted landholder.

Schedule: Air	
A1	Dust and particulate matter emissions from the activity must not exceed the following concentrations at any sensitive place or commercial place: (a) dust deposition of 120 milligrams per square metre per day, averaged over 30 days, when monitored in accordance with Australian Standard AS 3580.10.1 (or more recent editions); or (b) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (µm) (PM10) suspended in the atmosphere of 50 micrograms per cubic metre over a 24-hour averaging time, when monitored in accordance with the current edition of the relevant Australian Standards.
A2	This environmental authority does not authorise odours or airborne contaminants generated by the activity to cause a relevant act at a sensitive place or commercial place.
A3	Air quality monitoring, including for dust and point source emissions from the activity, must be undertaken in accordance with the most recent version of: (a) the relevant Australian Standards; or (b) if monitoring requirements are not described in the Australian Standards, monitoring protocols must be in accordance with a method approved by any other Australian, European or North American jurisdiction/Environmental Protection Agency.
A4	Unless venting is authorised under the *Petroleum and Gas (Production and Safety) Act 2004* or the *Petroleum Act 1923*, waste gas must be flared in a manner that complies with the following requirements: (a) an automatic ignition system is used; and (b) a flame is visible at all times while the waste gas is being flared; and (c) there are no visible smoke emissions other than for a total period of no more than 5 minutes in any 2 hours; or (d) it uses an enclosed flare.
Schedule: Biodiversity	
B1	Fauna must not be harmed from entrapment during the construction, operation and decommissioning of well infrastructure, pipeline trenches and pipelines.
B2	All native vegetation clearing activities must be under the direction of a suitably qualified fauna spotter catcher to identify, relocate and minimise impacts to native fauna.
B3	Prior to the commencement of activities, a Biodiversity Report must be prepared by an appropriately qualified person and be made available to the Administering Authority on request. The Biodiversity Report must: (a) Contain maps at an appropriate resolution which identify the biodiversity values of the site including the different types of environmentally sensitive areas identified in condition B9 and their protection zones and any identified prescribed environmental matters (**Biodiversity Maps**). (b) The Biodiversity Maps must be prepared at an appropriate scale and be based upon the state mapped biodiversity values and the findings of on-the-ground surveys. (c) Show spatially all constraints on the layout of linear infrastructure, access roads and tracks, the wells and other site infrastructure arising from the biodiversity values of the site. (d) Set out the methodology for pre-clearance inspections as required by condition B4 (e) Be published on the EA holder's website.

B4	Prior to clearing of native vegetation, inspection and documentation of on-the-ground biodiversity values of the native vegetation communities to be cleared must be undertaken by an appropriately qualified person using a methodology which the appropriately qualified person has certified in writing as being appropriate for the confirmation.
B5	For conditions B6 to B9, where mapped biodiversity values differ from those confirmed under condition B4, the activity must proceed in accordance with the conditions of the environmental authority based on the confirmed on-the-ground biodiversity values.
B6	No disturbance to any prescribed environmental matters is authorised by this environmental authority.
B7	**Planning for land disturbance** The location of the activity must be selected in accordance with the following site planning principles: (a) maximise the use of areas of pre-existing disturbance; (b) in order of preference, avoid, minimise or mitigate any impacts, including cumulative impacts, on areas of native vegetation or other areas of ecological value; (c) minimise disturbance to land that may result in land degradation; (d) in order of preference, avoid then minimise isolation, fragmentation, edge effects or dissection of tracts of native vegetation; and (e) in order of preference, avoid then minimise clearing of native mature trees.
B8	**Planning for land disturbance – linear infrastructure** Linear infrastructure construction corridors must: (a) maximise co-location of linear infrastructure; (b) be minimised in width to the greatest practicable extent; and (c) for linear infrastructure that is an essential activity authorised in an environmentally sensitive area or its protection zone, be no greater than 40m in total width.

B9

Authorised disturbance to Environmentally Sensitive Areas

The activity must be located in accordance with condition B6 and *Table – Authorised activities in environmentally sensitive areas and their protection zones*.

Table – Authorised activities in environmentally sensitive areas and their protection zones

Environmentally sensitive area	Within the environmentally sensitive area	Primary protection zone of the environmentally sensitive area	Secondary protection zone of the environmentally sensitive area
Category A environmentally sensitive areas.	No activities permitted.	Only low impact activities permitted.	Only essential activities permitted.
Category B environmentally sensitive areas that are other than 'endangered' regional ecosystems.	Only low impact activities permitted.	Only low impact activities permitted.	Only essential activities permitted.
Category B environmentally sensitive areas that are 'endangered' regional ecosystems.	Only low impact activities permitted.	Only essential activities permitted; and Only provided that the activities do not have a measurable negative impact on the adjacent environmentally sensitive area.	Only essential activities permitted.
Category C environmentally sensitive areas that are 'nature refuges' or 'koala habitat'.	Only low impact activities permitted.	Only low impact activities permitted.	
Category C environmentally sensitive areas that are 'essential habitat', 'essential regrowth habitat', or 'of concern' regional ecosystems.	Only low impact activities permitted.	Only essential activities permitted; and Only provided that the activities do not have a measurable negative impact on the adjacent environmentally sensitive area.	
Category C environmentally sensitive areas that are 'resource reserves'.	Only essential activities permitted.	Only essential activities permitted; and Only providing the activities do not have a measurable negative impact on the adjacent environmentally sensitive area.	
Category C environmentally sensitive areas that are 'state forests' or 'timber reserves'.	Only essential activities permitted.	Activities permitted.	

B10	**Spatial records** Spatial records sufficient to demonstrate compliance with conditions B4 to B9 must be kept for the life of the environmental authority. For clarity, this includes mapped biodiversity values, confirmed on-the-ground biodiversity values, location of the activity, environmentally sensitive areas and their protection zones, prescribed environmental matters and impacts to prescribed environmental matters.
B11	**Biodiversity Reporting** An annual biodiversity report must be prepared for each annual return period and published on the EA Holders website by 1 October each year for all activities that involved clearing of native vegetation in any environmentally sensitive area or protection zone. The annual biodiversity report must include: (a) records able to demonstrate compliance with condition B6, B9 and B10; (b) a description of the activities; and (c) a description of the area of native vegetation clearing including GPS coordinates and the on-the-ground biodiversity values (which may include maps or photographs).
Schedule: Land	
L1	Contaminants must not be directly or indirectly released to land unless otherwise authorised under the conditions of this environmental authority.
L2	Topsoil disturbed by the activity must be managed in a manner that preserves its biological and chemical properties.
L3	Erosion and sediment control measures must be implemented and maintained at all times that: (a) minimise erosion and the release of sediment within areas disturbed by the activity; (b) prevent releases from the activity causing erosion outside of areas disturbed by the activity; and (c) prevent the release of sediment from areas disturbed by the activity to land or waters.
L4	Treatment and management of acid sulfate soils must comply with the latest edition of the Queensland Acid Sulfate Soil Technical Manual (available on the Queensland government website).
Schedule: Noise	
N1	Petroleum activities must not cause environmental nuisance at a sensitive place.

<table>
<tr><td>N2</td><td>Noise from the activity must not exceed the limits identified in Table – Noise limits at any sensitive place.
Table – Noise limits
<table>
<tr><th>Time period</th><th>Metric</th><th>Maximum noise limit at a sensitive place</th></tr>
<tr><td>7:00am—6:00pm</td><td>$L_{Aeq, adj, T}$</td><td>40 dBA</td></tr>
<tr><td>6:00pm—10:00pm</td><td>$L_{Aeq, adj, T}$</td><td>35 dBA</td></tr>
<tr><td rowspan="2">10:00pm—6:00am</td><td>$L_{Aeq, adj, T}$</td><td>28 dBA</td></tr>
<tr><td>Max $L_{pA, T}$</td><td>55 dBA</td></tr>
<tr><td>6:00am—7:00am</td><td>$L_{Aeq, adj, T}$</td><td>35 dBA</td></tr>
</table>
Note: The noise limits in Table —Noise limits have been set based on the following deemed background noise levels (LABG):
7:00am—6:00 pm: 35 dBA
6:00pm—10:00 pm: 30 dBA
10:00pm—6:00 am: 25 dBA
6:00am—7:00 am: 30 dBA</td></tr>
<tr><td>N3</td><td>All monitoring of noise emissions from the activity must be undertaken when the activity is in operation.</td></tr>
<tr><td>N4</td><td>The following must be recorded when undertaking monitoring of noise emissions from the activity:
(a) all equipment in operation at the time of the noise measurement; and
(b) the mode of operation at the time of the noise measurement.</td></tr>
<tr><td>N5</td><td>Noise measurements must be taken using a class 1 sound level meter as classified under AS IEC 61672.</td></tr>
<tr><td>N6</td><td>All monitoring of noise emissions from the activity must be undertaken in accordance with the most recent version of Queensland Government’s ‘Noise Measurement Manual’ (ESR/2016/2195), the relevant Australian Standard and the Environmental Protection Regulation 2019 (Chapter 5, Part 4).</td></tr>
<tr><td>N7</td><td>Emission of substantial low frequency noise must not exceed either N6(a) and N6(b) below, or N6(c) and N6(d) below:
(a) 60 dB(C) measured outside the relevant sensitive place; and
(b) the difference between the external A-weighted and C-weighted noise levels is no greater than 20 dB; or
(c) 50 dB(Z) measured inside the sensitive place; and
(d) the difference between the internal A-weighted and Z-weighted (Max LpA_T) noise levels is no greater than 15 dB.</td></tr>
<tr><td>N8</td><td>Blasting is not authorised under this environmental authority.</td></tr>
</table>

Schedule: Rehabilitation	
R1	Within three months after pipe laying, pipeline trenches must be backfilled with topsoils and reinstated to: (a) establish a stable landform; (b) establish a level consistent with surrounding soils; and (c) re-establish original contours.
R2	**Progressive rehabilitation criteria** Within 12 months of works associated with the activity ceasing over an area of land, disturbance on the land caused by the activity must be rehabilitated to meet the following acceptance criteria and be maintained until the final acceptance criteria in conditions R4 or R5 is met: (a) contaminated land resulting from the activity is remediated and rehabilitated; (b) the areas are: (i) non-polluting; (ii) a stable landform; and (iii) re-profiled to contours consistent with the surrounding landform; and (c) surface drainage lines are re-established; (d) topsoil is reinstated; and (e) either: (i) groundcover, that is not a declared pest species, is growing; or (ii) an alternative soil stabilisation methodology that achieves effective stabilisation is implemented and maintained.
R3	**Final rehabilitation acceptance criteria in areas that do not have biodiversity values** Disturbance caused by the activity to areas that do not have biodiversity values, which are not being or intended to be utilised by the landholder or overlapping tenure holder, must be rehabilitated to meet the following final rehabilitation acceptance criteria measured against either the highest ecological value of the adjacent land use or the pre-disturbed land use: (a) greater than or equal to 70% of native ground cover species richness; (b) greater than or equal to the total per cent of ground cover; (c) less than or equal to the per cent species richness of declared plant pest species; and (d) where the adjacent land use contains, or the pre-disturbed land use contained, one or more regional ecosystem, then the disturbed land must be rehabilitated to have at least one regional ecosystem from the same broad vegetation group and with the equivalent biodiversity status or a biodiversity status with a higher conservation value.

R4	**Final rehabilitation acceptance criteria in areas with biodiversity values** Disturbance caused by the activity to areas with biodiversity values must be rehabilitated to meet the following final rehabilitation acceptance criteria as measured against the pre-disturbance biodiversity values assessment for that area required by condition B2: (a) greater than or equal to 70% of native ground cover species richness; (b) greater than or equal to the total per cent ground cover; (c) less than or equal to the per cent species richness of declared plant pest species; (d) greater than or equal to 50% of organic litter cover; (e) greater than or equal to 50% of total density of coarse woody material; and (f) all predominant species in the ecologically dominant layer, that define the pre-disturbance regional ecosystems are present
R5	Conditions R2, R3 and R4 continue to apply after this environmental authority has ended or ceased to have effect.
R6	**Transfer of infrastructure** When no longer required for the carrying out of the activity, all transfer category 2 assets must be decommissioned and be either: (a) rehabilitated in accordance with conditions R2, R3 and R4; or (b) where agreed to in writing by the relevant landholder, left in-situ and transferred to the landholder's ownership.
R7	Transfer category 2 assets subject to condition R6 must not be transferred to a landholder unless: (a) the asset and the land on which is it is located is safe, stable, non-polluting and able to support the post-activity land use at the time of transfer; (b) the landholder has agreed in writing to the transfer in a documented agreement that is legally binding; and (c) an accurate record (including spatial records) has been made in respect of each asset transferred to the landholder.
R8	Records of each asset transferred to a landholder must be current and complete.
Schedule: Waste	
W1	All waste generated in carrying out the activity must be lawfully reused, recycled or removed to a facility that can lawfully accept the waste.
W2	Brine generated in carrying out the activity must be lawfully removed to a facility that can lawfully accept the brine.
W3	Waste fluids, other than flare precipitant stored in flare pits, or residual drilling material or drilling fluids stored in sumps, must be contained in either: (a) an above ground container; or (b) a structure which contains the wetting front.

W4	Pipeline waste water may be released to land provided that it: (a) can be demonstrated it meets the acceptable standards for release to land; and (b) is released in a way that does not result in visible scouring or erosion or pooling or run-off or vegetation die-off.
W5	The holder of this environmental authority may re-use produced water in drilling and well hole activities.
W6	The holder of this environmental authority may re-use produced water for dust suppression provided the following criteria are met: (a) the amount applied does not exceed the amount required to effectively suppress dust; and (b) the application: (i) does not cause on-site ponding or runoff; (ii) is directly applied to the area being dust suppressed; (iii) does not harm vegetation surrounding the area being dust suppressed; and (iv) does not cause visible salting.
W7	The holder of this environmental authority may re-use produced water for construction purposes provided the use: (a) does not result in negative impacts on the composition and structure of soil or subsoils; (b) is not directly or indirectly released to waters; (c) does not result in runoff from the construction site; and (d) does not harm vegetation surrounding the construction site.
W8	Treated sewage effluent or greywater can be released to land provided it: (a) for a treatment system with a daily peak design capacity of between 150 EP and 1500 EP, meets the secondary treated class B standards; or (b) for a treatment system with a daily peak design capacity of less than 150 EP, meets the secondary treated class C standards.
W9	The release of treated sewage effluent or greywater authorised in condition W8 must: (a) be to a fenced and signed contaminant release area; (b) not result in pooling, run-off, aerosols, spray drift or vegetation die-off; and (c) be to a contaminant release area that is kept vegetated with groundcover, that is: (i) not a declared pest species; (ii) kept in a viable state for transpiration and nutrient uptake; and (iii) grazed or harvested and removed from the contaminant release area as needed, but not less than every three months
W10	Notwithstanding condition W8, treated sewage effluent that meets or exceeds secondary treated class A standards may be used for dust suppression or construction activities, provided the use meets the criteria in condition W6 or W7 as relevant to the use.

W11	Sewage pump stations must be fitted with a: (a) stand-by pump; and (b) high level alarm to warn of imminent pump station overflow that operates without mains power or with a back-up power source that starts automatically in the event of a power failure.
W12	If sumps are used to store residual drilling material or drilling fluids, they must only be used for the duration of drilling activities.
W13	Residual drilling material can only be disposed of on-site by mix-bury-cover method if the residual drilling material meets the approved quality criteria.
Schedule: Water	
WT1	Contaminants generated by the activity must not be released to waters.
WT2	Water (including groundwater) monitoring and sampling must be carried out in accordance with the requirements of the most current published edition or version of the Queensland Government's 'Monitoring and Sampling Manual 2018 – Environmental Protection (Water) Policy 2009' unless otherwise approved by the administering authority.
WT3	The extraction of groundwater as part of the activity must not directly or indirectly cause environmental harm to a: (a) wetland; or (b) groundwater dependent ecosystem.
WT4	Unless otherwise authorised under a condition of this environmental authority, the activity must not occur in or within: (a) 200m of a: (i) wetland of high ecological significance; (ii) Great Artesian Basin Spring; (iii) subterranean cave GDE; (b) 100m of a watercourse.
WT5	**Linear infrastructure** Only construction or maintenance of linear infrastructure is permitted within a wetland of general environmental significance or in a watercourse.
WT6	The construction or maintenance of linear infrastructure in a wetland of general environmental significance must not result in the: (a) clearing of riparian vegetation outside of the minimum area practicable to carry out the works; or (b) ingress of saline water into freshwater aquifers; or (c) draining or filling of the wetland beyond the minimum area practicable to carry out the works.

<table>
<tr><td>WT7</td><td>After the construction or maintenance works for linear infrastructure in a wetland of general environmental significance are completed, the linear infrastructure must not:
(a) drain or fill the wetland; or
(b) prohibit the flow of surface water in or out of the wetland; or
(c) change the hydrology of the wetland that existed prior to works; or
(d) lower or raise the water table and hydrostatic pressure outside the bounds of natural variability that existed before the activities commenced; or
(e) result in ongoing negative impacts to water quality; or
(f) result in bank instability; or
(g) result in fauna ceasing to use adjacent areas for habitat, feeding, roosting or nesting.</td></tr>
<tr><td>WT8</td><td>The construction or maintenance of linear infrastructure activities in a watercourse must be conducted in the following preferential order:
(a) firstly, in times where there is no water present; or
(b) secondly, in times of no flow; or
(c) thirdly, in times of flow, providing a bank full situation is not expected and that flow is maintained.</td></tr>
<tr><td>WT9</td><td>Construction or maintenance of linear infrastructure within a wetland of general environmental significance or in a watercourse must comply with the water quality limits in Table – Release limits for construction or maintenance of linear infrastructure.
Table – Release limits for construction or maintenance of linear infrastructure
<table>
<tr><th>Water quality parameters</th><th>Units</th><th>Water quality limits</th></tr>
<tr><td rowspan="2">Turbidity</td><td rowspan="2">Nephelometric Turbidity Units (NTU)</td><td>For a wetland of general environmental significance if background water turbidity is:
• above 45 NTU, a turbidity limit of no greater than 25% above background water turbidity applies, measured within a 50m radius of the construction or maintenance activity;
• equal to, or below 45 NTU, a turbidity limit of no greater than 55 NTU applies, measured within a 50m radius of the construction or maintenance activity.</td></tr>
<tr><td>For a watercourse, if background water turbidity is:
• above 45 NTU, a turbidity limit of no greater than 25% above background water turbidity applies, measured within 50m downstream of the construction or maintenance activity;
• equal to, or below 45 NTU, a turbidity limit of no greater than 55 NTU applies, measured within 50m downstream of the construction or maintenance activity.</td></tr>
</table></td></tr>
</table>

WT10	Monitoring to demonstrate compliance with condition WT9 must be undertaken every 12 hours during watercourse flow events: (a) once construction or maintenance of linear infrastructure has commenced in a wetland of general environmental significance or watercourse; and (b) for 48 hours after construction or maintenance of linear infrastructure in a wetland of other environmental value or watercourse has ceased.
WT11	A Linear Infrastructure Register must be kept of all linear infrastructure construction and maintenance activities in a wetland of general environmental significance and watercourses, which must include: (a) location of the activity (e.g. GPS coordinates (GDA2020) and watercourse name); (b) estimated flow rate of surface water at the time of the activity; (c) duration of works, and (d) results of impact monitoring carried out under conditions WT9 and WT10.
WT12	On floodplains, the activity must not: (a) concentrate flood flows; or (b) divert flood flows from natural drainage paths and alter flow distribution; or (c) increase the local duration of floods; or (d) increase the risk of detaining flood flows.
Schedule: Wells and pipelines	
WS1	Pipeline construction, operation and maintenance must be in accordance with the most current edition of the *APGA Code of Environmental Practice: Onshore Pipelines*.
WS2	Oil based or synthetic based drilling muds must not be used in the carrying out of the activity.
WS3	The activity must not cause: (a) the connection of the target gas producing formation and another aquifer; or (b) the connection of any aquifers.
WS4	Practices and procedures must be in place to detect, as soon as practicable any: (a) connection of a target gas producing formation and another aquifer caused by the activity; and (b) connection of any aquifers caused by the activity.
WS5	The activity must not cause a decline in water pressure or water levels in a spring.
WS6	Other than as permitted by this environmental authority, the activity must not adversely impact the water quality of groundwater.
WS7	**Well stimulation** Stimulation activities are not permitted.

WS8	**Water Impact Monitoring Program** Prior to the carrying out of the activity a Water Impact Monitoring Program must be: (a) developed by an appropriately qualified person to detect potential impacts to groundwater caused by the activity; (b) be in place six months prior to activities commencing; and (c) implemented at all times.
WS9	The Water Impact Monitoring Program in condition WS8 must be able to detect: (a) the connection of the target gas producing formation with another aquifer; (b) the connection of any aquifers caused by the activity; (c) a decline in water pressure or water levels in a spring or wetland; (d) adverse impacts to the water quality of groundwater cause by the activity; and (e) for the Baseline monitoring report only, or if methane is detected by a multiparameter gas detector at the wellhead the presence of methane including an analysis for dissolved methane concentrations.

WS10

The Water Impact Monitoring Program must include monitoring from:

(1) three deep bores, each with one nested shallow bore, within the area of PL1034, which are to be located as follows:

Location	Longitude	Latitude	Hydrogeological Unit
North	148.124347	-21.8403	Deep – Rangal Coal Measure Shallow – To Be Confirmed six months prior to activities commencing
Central	148.128916	-21.9077	Deep – Rangal Coal Measure Shallow - To Be Confirmed six months prior to activities commencing
South	148.16369	-21.9406	Deep – Rangal Coal Measure Shallow - To Be Confirmed six months prior to activities commencing

(2) three additional shallow bores to monitor sensitive receptors are to be located as follows:

Location	Longitude	Latitude	Hydrogeological Unit
Wetland	To Be Confirmed six months prior to activities commencing	To Be Confirmed six months prior to activities commencing	To Be Confirmed six months prior to activities commencing

WS11	The Water Impact Monitoring Program must monitor the following analysts and physico-chemical parameters but not necessarily be limited to: (a) pH (b) electrical conductivity [μS/m] (c) total dissolved solids [mg/L] (d) temperature [ºC] (e) dissolved oxygen [mg/L] (f) dissolved gases (methane, chlorine, carbon dioxide, hydrogen sulfide) [mg/L] (g) alkalinity (bicarbonate, carbonate, hydroxide and total as CaCO3) [mg/L] (h) anions (bicarbonate, carbonate, hydroxide, chloride, sulphate) [mg/L] (i) cations (calcium, magnesium, potassium, sodium) [mg/L] (j) dissolved and total metals and metalloids (including but not necessarily being limited to: aluminium, arsenic, barium, borate (boron), cadmium, total chromium, copper, iron, fluoride, lead, manganese, mercury, nickel, selenium, silver, strontium, tin and zinc) [μg/L] (k) total petroleum hydrocarbons [μg/L] (l) BTEX (as benzene, toluene, ethylbenzene, ortho-xylene, para- and meta-xylene, and total xylene) [μg/L] (m) polycyclic aromatic hydrocarbons (including but not necessarily being limited to: naphthalene, phenanthrene, benzo[a]pyrene) [μg/L]
WS12	If the administering authority requests changes to the Water Impact Monitoring Program in conditions WS8, WS9 and WS10 via written correspondence, then the Water Impact Monitoring Program must be amended in accordance with the requested changes and a revised copy provided to the administering authority within 30 business days of the date of the request.
WS13	**Baseline Monitoring Report** A baseline monitoring report is to be provided to the administering authority at least 6 months prior to activities commencing.
WS14	**Annual Water Monitoring Report** An Annual Water Monitoring Report must be submitted to the administering authority by 1 October each year and to any potentially affected landholder on request.
WS15	The Baseline and Annual Water Monitoring Report in conditions WS13 and WS14 must: (a) be prepared by an appropriately qualified person; (b) analyse and summarise all monitoring data collected under Water Impact Monitoring Program required by conditions WS8, WS9, WS10 and WS11 for the previous 12 month period; and (c) assess whether compliance with conditions WS3, WS5, and WS6 has been achieved.
WS16	The groundwater model must be reviewed and updated by an appropriately qualified person not more than 3 years after the commencement of activities, or another date agreed in writing with the administering authority.

WS17	The review and update in condition WS16 must: (a) develop a numerical groundwater model in accordance with the most recent version of the *Australian Groundwater Modelling Guidelines*; (b) be undertaken to the satisfaction of the administering authority; (c) include model validation and recalibration with groundwater monitoring data collected under this environmental authority and from other suitable sources; (d) provide sensitivity analysis which includes varying hydraulic parameters in addition to volumes of groundwater removed; and (e) be detailed in a report that is submitted to the administering authority within 3 months of completion of the model review, or another date agreed in writing with the administering authority.

Definitions

Where a word or phrase in this document is defined in this Schedule, it has its corresponding meaning. Where a word or phrase in this document is not defined in this Schedule, it has the meaning given to it in (in order of priority):

- the *Environmental Protection Act 1994* (EP Act), its regulations or its environmental protection policies;
- *Environmental Offsets Act 2014*;
- *Regional Planning Interests Act 2014*;
- *Waste Reduction and Recycling Act 2011*;
- the *Acts Interpretation Act 1954*;
- the Macquarie Dictionary (taking account of the context in which the word or phrase is used in this document).

For example, environmental value, environmental harm, environmental nuisance, material environmental harm, serious environmental harm and relevant act are defined in the EP Act and groundwater is defined in the Environmental Protection Regulation 2019.

Defined words or phrases in the singular include the plural and vice versa.

Acceptable standards for release to land means untreated associated water or pipeline waste water which:

(a) meets the limits in *Table – Acceptable standards for release to land*; and

(b) does not contain biocides.

Table – Acceptable standards for release to land

Contaminant	Limit	Limit type
electrical conductivity (EC)	3000 µS/cm	Maximum
sodium adsorption ratio (SAR)	8	Maximum
pH	6.0-9.0	Range
Aluminium	20 mg/L	Maximum
Arsenic	2 mg/L	Maximum
Boron	1 mg/L	Maximum
Cadmium	0.05 mg/L	Maximum
Chromium	1 mg/L	Maximum
Cobalt	0.1 mg/L	Maximum
Copper	5 mg/L	Maximum
Fluoride	2 mg/L	Maximum
Iron	10 mg/L	Maximum
Lithium	2.5 mg/L	Maximum
Lead	5 mg/L	Maximum
Manganese	10 mg/L	Maximum
Mercury	0.002 mg/L	Maximum
Molybdenum	0.05 mg/L	Maximum
Nickel	2 mg/L	Maximum

Contaminant	Limit	Limit type
Zinc	5 mg/L	Maximum

Adjacent land use means the ecosystem function adjacent to an area of disturbance, or where there is no ecosystem function, the use of the land. An adjacent land use does not include an adjacent area that shows evidence of edge effect.

Alternative arrangement means a written agreement about the way in which a particular impact from the activity will be dealt with at a sensitive place, and may include an agreed period of time for which the arrangement is in place. An alternative arrangement may include, but is not limited to, a range of nuisance abatement measures to be installed at the sensitive place, or provision of alternative accommodation for the duration of the relevant nuisance impact.

Approved quality criteria for the purposes of residual drilling materials, means the residual drilling material meet the following quality standards:

Part A In all cases:

Parameter	Maximum concentration
pH	6–10.5 (range)
Electrical Conductivity	20dS/m (20,000µS/cm)
Chloride*	8000mg/L

*Chloride analysis is only required if an additive containing chloride was used in the drilling process

The limits in Part A must be measured in the clarified filtrate of oversaturated solids prior to mixing.

Part B If any of the following metals are a component of the drilling fluids, then for that metal:

Parameter	Maximum concentration
Arsenic	20mg/kg
Selenium	5mg/kg
Boron	100mg/kg
Cadmium	3mg/kg
Chromium (total)	400mg/kg
Copper	100mg/kg
Lead	600mg/kg

The limits in Part B and Part C refer to the post soil/by-product mix.

Part C If a hydrocarbon sheen is visible, the following hydrocarbon fractions:

TPH	Maximum concentration

C6-C10	170mg/kg
C10-C16	150mg/kg
C16-C34	1300mg/kg
C34-C40	5600mg/kg
Total Polycyclic Aromatic Hydrocarbons (PAHs)	20mg/kg
Phenols (halogenated)	1mg/kg
Phenols (non-halogenated)	60mg/kg
Monocyclic aromatic hydrocarbons *(Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene)*	7mg/kg
Benzene	1mg/kg

Areas of pre-existing disturbance means areas where environmental values have been negatively impacted as a result of anthropogenic activity and these impacts are still evident. Areas of pre-existing disturbance may include areas where legal clearing, logging, timber harvesting, or grazing activities have previously occurred, where high densities of weed or pest species are present which have inhibited re-colonisation of native regrowth, or where there is existing infrastructure (regardless of whether the infrastructure is associated with the activity). The term 'areas of pre-existing disturbance' does not include areas that have been impacted by wildfire/s, controlled burning, flood or natural vegetation die-back.

Associated water has the meaning in the *Petroleum and Gas (Production and Safety) Act 2004*.

Bankfull means the channel flow rate that exists when the water is at the elevation of the channel bank above which water begins to spill out onto the floodplain. The term describes the condition of the channel relative to its banks (e.g. overbank, in-bank, bankfull, low banks, high bank).

Biodiversity values means environmentally sensitive areas, prescribed environmental matters and wetlands.

Category A Environmentally Sensitive Area has the meaning in the Environmental Protection Regulation 2019.

Category B Environmentally Sensitive Area has the meaning in the Environmental Protection Regulation 2019.

Category C Environmentally Sensitive Area means any of the following areas:

- nature refuges as defined in the conservation agreement for that refuge under the *Nature Conservation Act 1992*;
- koala habitat areas as defined under the Nature Conservation (Koala) Conservation Plan 2017;
- state forests or timber reserves as defined under the *Forestry Act 1959*;
- resources reserves under the *Nature Conservation Act 1992*;
- an area validated from ground-truthing surveys as 'essential habitat' in accordance with the *Vegetation Management Act 1999* for protected wildlife; and
- 'of concern regional ecosystems' that are remnant vegetation and identified in the database called 'Regional ecosystem description database' containing regional ecosystem numbers and descriptions.

Clearing —

(a) means remove, cut down, ringbark, push over, poison or destroy in any way including by burning, flooding or draining; but

(b) does not include destroying standing vegetation by stock, or lopping a tree.

Commercial place means a place used as a workplace, an office or for business or commercial purposes and includes a place within the curtilage of such a place reasonably used by persons at that place.

Daily peak design capacity for sewage treatment works, has the meaning in Schedule 2, section 63(4) of the Environmental Protection Regulation 2019 as the higher equivalent person (EP) for the works calculated using each of the formulae found in the definition for EP.

Declared plant pest species are species listed as:

- 'prohibited matter' or 'restricted matter' species under the *Biosecurity Act 2014*; or
- 'Weeds of National Significance' under the Australian Weeds Strategy 2017–2027.

Ecologically dominant layer has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 5.1 March 2020) and means the layer making the greatest contribution to the overall biomass of the site and the vegetation community (NLWRA 2001). This is also referred to as the ecologically dominant stratum or the predominant canopy in woody ecosystems.

Ecosystem function means the interactions between and within living and nonliving components of an ecosystem and generally correlates with the size, shape and location of the vegetation community.

Enclosed flare means a device where the residual gas is burned in a cylindrical or rectilinear enclosure that includes a burning system and a damper where air for the combustion reaction is admitted.

Environmental offset as defined in section 7 of the *Environmental Offsets Act 2014*.

Environmentally sensitive area or **ESA** means Category A, B or C environmentally sensitive areas.

Equivalent person or **EP** has the meaning under section 3 of the Planning Guidelines For Water Supply and Sewerage, 2010, published by the Queensland Government. It is calculated in accordance with Schedule 2, Section 63(4) of the Environmental Protection Regulation 2019.

Essential activities mean activities that are essential to bringing the resource to the surface and are only the following:

- low impact activities
- geophysical, geotechnical, geological, topographic and cadastral surveys (including seismic, sample/test/geotechnical pits, core holes)
- single well sites not exceeding 1 hectare disturbance and multi-well sites not exceeding 1.5 hectare disturbance
- well sites with monitoring equipment (including monitoring bores):
    - for single well sites, not exceeding 1.25 hectares disturbance
    - for multi-well sites, not exceeding 1.75 hectares disturbance
- well sites with monitoring equipment (including monitoring bores) and tanks (minimum 1 ML) for above ground fluid storage:
    - for single well sites, not exceeding 1.5 hectares disturbance
    - for multi-well sites, not exceeding 2.0 hectares disturbance
- associated infrastructure located on a well site necessary for the construction and operations of wells:
    - water pumps and generators
    - flare pits
    - chemical / fuel storages
    - sumps for residual drilling material and drilling fluids

  - tanks, or dams which are not significant or high consequence dams to contain wastewater (e.g. stimulation flow back waters, produced water)
  - pipe laydown areas
  - soil and vegetation stockpile areas
  - a temporary camp associated with a drilling rig that may involve sewage treatment works that are no release works
  - temporary administration sites and warehouses
  - dust suppression activities using water that meets the quality and operational standards approved under the environmental authority
- communication and power lines that are necessary for the undertaking of activities and that are located within well sites, well pads and pipeline right of ways without increasing the disturbance area of activities
- supporting access tracks
- gathering / flow pipelines from a well head to the initial compression facility
- activities necessary to achieve compliance with the conditions of the environmental authority in relation to another essential activity (e.g., sediment and erosion control measures, rehabilitation).

Flare pit means a containment area where any hydrocarbon that is discovered in an over-pressured reservoir during a drilling and work over process on a petroleum well is diverted to for combustion.

Flare precipitant means waste fluids which result from the operation of a flare.

Floodplains has the meaning in the *Water Act 2000*.

GDA means Geocentric Datum of Australia.

Greywater means wastewater generated from domestic activities such as laundry, dishwashing, and bathing. Greywater does not include sewage.

Groundwater dependent ecosystem or **GDE** means ecosystems which require access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services.

For the purposes of the environmental authority, groundwater dependent ecosystems do not include those mapped as “unknown”.

High ecological value waters see the Environmental Protection (Water and Wetland Biodiversity) Policy 2019, schedule 2.

$L_{Aeq,\ adj,\ T}$ means the A-weighted sound pressure level of a continuous steady sound, adjusted for tonality (+ 5 dBA if present) and impulsiveness (+ 5 dBA if present), that within any 15 minute period has the same square sound pressure as a sound level that varies with time.

Land degradation has the meaning in the *Vegetation Management Act 1999*.

Linear infrastructure means powerlines, pipelines, flowlines, roads and access tracks.

Linear Infrastructure Register means a singular register that includes all of the following information for all linear infrastructure construction and maintenance activities in a wetland of general environmental significance and watercourses:

(a) location of the activity (e.g. GPS coordinates (GDA2020) and watercourse name);

(b) estimated flow rate of surface water at the time of the activity;

(c) duration of works; and

(d) results of impact monitoring carried out under conditions WT5.4 and WT5.5.

Low impact activities means activities which do not result in the clearing of native vegetation, cause disruption to soil profiles through earthworks or excavation or result in significant disturbance to land which cannot be

rehabilitated immediately using hand tools after the activity is completed. Examples of such activities include but are not necessarily limited to soil surveys (excluding test pits), topographic surveys, cadastral surveys and ecological surveys, may include installation of monitoring equipment provided that it is within the meaning of low impact and traversing land by car or foot via existing access tracks or routes or in such a way that does not result in permanent damage to vegetation.

Map of Queensland wetland environmental values see the Environmental Protection (Water and Wetland Biodiversity) Policy 2019, schedule 2.

Max $Lp_{A,T}$ means the absolute maximum instantaneous A-weighted sound pressure level, measured for not less than 15 minutes.

Max $Lp_{,T}$ means the absolute maximum instantaneous sound pressure level, measured for not less than 15 minutes.

Maximum extent of impact means the total, cumulative, residual extent and duration of impact to a prescribed environmental matter that will occur over a project's life after all reasonable avoidance and reasonable on-site mitigation measures have been, or will be, undertaken.

Mix-bury-cover method means the stabilisation of residual drilling solids in the bottom of a sump by mixing with subsoil and which occurs in accordance with the following methodology:

- the base of the subsoil and residual solid mixture must be separated from the groundwater table by at least one metre of a continuous layer of impermeable subsoil material (kw=10–8m/s) or subsoil with a clay content of greater than 20%;
- the residual solids is mixed with subsoil in the sump and cover;
- the subsoil and residual solids is mixed at least three parts subsoil to one part waste (v/v);
- a minimum of one metre of clean subsoil must be placed over the subsoil and residual solids mixture; and
- topsoil is replaced.

Monitor, **monitored** and **monitoring** means monitoring the impact of an activity on the receiving environment and includes analysing, assessing, examining, inspecting, measuring, modelling or reporting any of the following matters—

(a) the quantity, quality, characteristics, timing and variability of the release of any contaminant; and

(b) the effectiveness of any control measure; and

(c) the characteristics of, and impact on, the receiving environment; and

(d) the effectiveness of remedial or rehabilitation measures (if applicable to the relevant monitoring requirement).

Monitoring bore means a groundwater bore that provides access to groundwater for measuring its quality and level; and allows groundwater samples to be withdrawn for laboratory analysis.

Prescribed environmental matters has the meaning in the *Environmental Offsets Act 2014* and includes any of the following matters:

- a matter of National environmental significance; and/or
- a matter of State environmental significance; and/or
- a matter of Local environmental significance.

Pipeline waste water means hydrostatic testing water, flush water or water from low point drains.

Pre-disturbed land use means the function or use of the land as documented prior to significant disturbance occurring at that location.

Predominant species has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 5.1 March 2020) and means a species that contributes most to the overall above-ground biomass of a particular stratum.

Primary protection zone means an area within 200m from the boundary of any Category A, B or C ESA.

Produced water has the meaning in the *Petroleum and Gas (Production and Safety) Act 2004*.

Protected wildlife has the meaning in the *Vegetation Management Act 1999.*

Protection zone means the primary protection zone of any Category A, B or C ESA or the secondary protection zone of any Category A or B ESA.

Regional ecosystem has the meaning in the Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Version 5.1 March 2020) and means a Vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil.

Reinstate or **reinstatement** for pipelines, means the process of bulk earth works and structural replacement of pre-existing conditions of a site (i.e. soil surface typography, watercourses, culverts, fences and gates and other landscape(d) features) and is detailed in the most current edition of the APGA Code of Environmental Practice: Onshore Pipelines.

Reporting limit means the lowest concentration that can be reliably measured within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes, the reporting limit is selected as the lowest non-zero standard in the calibration curve. Results that fall below the reporting limit will be reported as “less than” the value of the reporting limit. The reporting limit is also referred to as the practical quantitation limit or the limit of quantitation. For polycyclic aromatic hydrocarbons, the reporting limit must be based on super-ultra trace methods and, depending on the specific polycyclic aromatic hydrocarbon, will range between 0.005 ug/L–0.02 ug/L.

Residual drilling material means waste drilling materials including muds and cuttings or cement returns from well holes and which have been left behind after the drilling fluids are pumped out.

Secondary protection zone in relation to a Category A or Category B ESA means an area within 100 metres from the boundary of the primary protection zone.

Secondary treated class A standards means treated sewage effluent or greywater which meets the following standards:

- total phosphorous as P, maximum 20mg/L;
- total nitrogen as N, maximum 30mg/L;
- 5-day biochemical oxygen demand (inhibited) (e.g. release pipe from sewage treatment plant), maximum 20mg/L;
- suspended solids, maximum 30mg/L;
- pH, range 6.0 to 8.5;
- E-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 100cfu per 100mL, maximum 1000cfu per 100mL.

Secondary treated class B standards means treated sewage effluent or greywater which meets the following standards:

- total phosphorous as P, maximum 20mg/L;
- total nitrogen as N, maximum 30mg/L;
- 5-day biochemical oxygen demand (inhibited) (e.g. release pipe from sewage treatment plant), maximum 20mg/L;
- suspended solids, maximum 30mg/L;
- pH, range 6.0 to 8.5; and
- E-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 1000cfu per 100mL, maximum 10 000cfu per 100mL.

Secondary treated class C standards means treated sewage effluent or greywater which meets the following standards:

- total phosphorous as P, maximum 20mg/L;

- total nitrogen as N, maximum 30mg/L;
- 5-day biochemical oxygen demand (inhibited) (e.g. Release pipe from sewage treatment plant), maximum 20mg/L;
- suspended solids, maximum 30mg/L;
- pH, range 6.0 to 8.5; and
- E-coli, 80th percentile based on at least 5 samples with not less than 30 minutes between samples, 10 000cfu per 100mL, maximum 100 000cfu per 100mL.

Sensitive place includes the following and includes a place within the curtilage of such a place reasonably used by persons at that place:

(a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or

(b) a motel, hotel or hostel; or

(c) a kindergarten, school, university or other educational institution; or

(d) a medical centre or hospital; or

(e) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 2004* or a World Heritage Area; or

(f) a public park or garden; or

(g) for noise, a place defined as a sensitive receptor for the purposes of the Environmental Protection (Noise) Policy 2019.

Species richness means the number of different species in a given area.

Spring has the meaning in the *Water Act 2000*.

Stable has the meaning in Schedule 8 of the Environmental Protection Regulation 2019.

Stimulation means a technique used to increase the permeability of natural underground reservoir that is undertaken above the formation pressure and involves the addition of chemicals. It includes hydraulic fracturing / hydrofraccing, fracture acidizing and the use of proppant treatments.

Note: This definition is restricted from that in the *Petroleum and Gas (Production and Safety) Act 2004* in order to only capture the types of stimulation activities that pose a risk to environmental values of water quality in aquifers.

Substantial low frequency noise means a noise emission that has an unbalanced frequency spectrum shown in a one-third octave band measurements, with a predominant component within the frequency range 10 to 200 Hz. It includes any noise emission likely to cause an overall sound pressure level at a noise sensitive place exceeding 55 dB(Z).

Subterranean cave GDE means

- an area identified as a subterranean cave in the mapping produced by the Queensland Government and identified in the Queensland Government Information System, as amended from time to time; or
- a cave ecosystem which requires access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain its communities of plants and animals, ecological processes and ecosystem services.

Note: the Subterranean GDE (caves) dataset can be displayed through the Queensland Government Wetland Info mapping program.

Note: the Subterranean GDE (caves) dataset can be obtained from the Queensland Government Information System.

Sump means a pit in which waste residual drilling material or drilling fluids are stored only for the duration of drilling activities.

Synthetic based drilling mud means a mud where the base fluid is a synthetic oil, consisting of chemical compounds which are artificially made or synthesised by chemically modifying petroleum components or other raw materials rather than the whole crude oil.

Topsoil means the surface (top) layer of a soil profile, which is more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300mm in depth from the natural surface.

Total density of coarse woody material means the total length of logs on the ground greater than or equal to 10cm diameter per hectare and number of logs on the ground greater than or equal to 10cm diameter per hectare.

Transfer category 2 assets means only the following:

- Well pad areas of wells plugged and abandoned in accordance with the Petroleum and Gas (Safety) Regulation 2018
- Fences/gates/grids
- Access tracks
- Sealed private roads
- Gas flow lines
- Water or associated water flow lines
- Water pumping stations
- Water pipeline infrastructure
- Electrical distribution infrastructure including national metering identifier (NMI) points, switch boards, cabling
- Communication infrastructure including towers
- Power generation equipment including solar panels
- Earthen bunds/contour banks that are less than 10 metres x 2 metres high
- Empty and cleaned liquid waste storages that are:
    - Fabricated or manufactured tanks or containers; or
    - Sumps or earthen pits (including those that have been used to temporarily store residual drilling materials and drilling fluids during drilling and well completion activities).
- Above ground fuel and chemical storage facilities that are less than the ERA threshold
- Accommodation facilities (not including greywater, septic or sewage treatment systems)
- Workshops/sheds/concrete slabs
- Hardstand areas
- Laydown areas.

Waters includes a 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.

Waste fluids has the meaning in section 13 of the *Environmental Protection Act 1994* in conjunction with the common meaning of “fluid” which is “a substance which is capable of flowing and offers no permanent resistance to changes of shape”.

Wells includes exploration, appraisal and development wells

Well integrity means the ability of a well to contain the substances flowing through it.

Wetland of general environmental significance means a 'Wetland of general ecological significance' shown on the map of Queensland wetland environmental values.

Written correspondence means a signed letter from a delegate of the administering authority.

END OF ENVIRONMENTAL AUTHORITY