DEPARTMENT OF AGRICULTURE, WATER AND THE ENVIRONMENT

To: Mike Smith, Acting Assistant Secretary, Environment Assessments Queensland and Sea Dumping Branch (for decision)

Referral Decision Brief – Gas Supply Security Project, Surat and Bowen Basins, Queensland (2020/8856)

Timing: 18 February 2021 – Statutory timeframe.

Recommended Decision	**NCA** ☐ **NCA(pm)** ☐ **CA** ☒
Designated Proponent	Australia Pacific LNG Pty Ltd ABN: 68 001 646 331
Controlling Provisions Triggered	World Heritage (s12 & s15A) Yes ☐ No ☒ No if PM ☐ National Heritage (s15B & s15C) Yes ☐ No ☒ No if PM ☐ Ramsar wetland (s16 & s17B) Yes ☐ No ☒ No if PM ☐ Threatened species & communities (s18 & s18A) Yes ☒ No ☐ No if PM ☐ Migratory species (s20 & s20A) Yes ☒ No ☐ No if PM ☐ C'wealth marine (s23 & s24A) Yes ☐ No ☒ No if PM ☐ Nuclear actions (s21 & 22A) Yes ☐ No ☒ No if PM ☐ C'wealth land (s26 & s27A) Yes ☐ No ☒ No if PM ☐ C'wealth actions (s28) Yes ☐ No ☒ No if PM ☐ GBRMP (s24B & s24C) Yes ☐ No ☒ No if PM ☐ A water resource – large coal mines and CSG (s24D & s24E) Yes ☒ No ☐ No if PM ☐ C'wealth Heritage o/s (s27B & s27C) Yes ☐ No ☒ No if PM ☐
Public Comments	Yes ☒ No ☐ Number: 2 (Attachment E).
Ministerial Comments	Yes ☒ No ☐ Who: Queensland Department of Environment and Science; Great Barrier Reef Marine Park Authority; Minister for Agriculture, Drought and Emergency Management; Minister for Indigenous Australians; Minister for Resources, Water and Northern Australia (Attachments F, Attachment G and Attachment H).
Assessment Approach Decision	Yes ☒ No ☐ What: Public environment report Bilateral Applies ☐

Recommendations:

1. Consider the information in this brief, the referral (Attachment A) and other attachments.

Considered / Please discuss

2. Agree that the proposed action is not a component of a larger action.

Agreed / Not agreed

3. Agree with the recommended decision under section 75 of the EPBC Act.

Agreed / Not agreed

4. Agree the action be assessed on public environment report under Division 5 of Part 8 of the EPBC Act.

Agreed / Not agreed

5. If you agree to recommendations 2 to 4 above, indicate that you accept the reasoning in the departmental briefing package as the basis for your decision.

Accepted / Please discuss

6. Agree to the designated proponent.

Agreed / Not agreed

7. Agree to the fee schedule with justifications (Attachment I) and that the fee schedule be sent to the person proposing to take the action.

Agreed / Not agreed

8. Note the letter notifying the person proposing to take the action of your referral and assessment approach decisions will include an invoice for Stage 1 of the assessment fees. The guidelines under section 97 of the EPBC Act will be prepared for your signature within 20 business days of the stage 1 payment.

Noted / Please discuss

9. Sign the notice at Attachment K (which will be published if you make the recommended decision).

Signed / Not signed

10. Sign the letters at Attachment L.

Signed / Not signed

s. 47F(1)

Mike Smith
Acting Assistant Secretary
Environment Assessments Queensland and Sea Dumping Branch

Date: 17/02/2021

Comments:

KEY ISSUES:

- The proposed action consists of five coal seam gas development areas (consisting of 10 separate sites) over approximately 476,923 ha within the Surat Cumulative Management Area (CMA), Queensland.

- In the referral, the proponent stated their belief that the proposed action is a controlled action due to significant impacts on listed threatened species and communities, but does not consider a significant impact on water resources likely.
- The department considers the proposed action is likely to have a significant impact on listed threatened species and communities and listed migratory species due to habitat clearance, with an estimated maximum development footprint of 17,041 ha.
- The department considers the proposed action is likely to have a significant impact on water resources due to impacts on the hydrology of a water resource, including a proposed peak extraction rate of 6 GL/year (approximately 10% of all CSG groundwater extraction in the region) over a proposed 50 year project period, drawdown impacts to springs supporting EPBC listed species and threatened ecological communities, and drawdown impacts to watercourse springs, groundwater dependent ecosystems and landowner bores.

BACKGROUND:

Description of the referral

A valid referral was received on 19 January 2021. The action was referred by Australia Pacific LNG Pty Limited (the proponent), which has stated its belief that the proposal is a controlled action for the purposes of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Description of the proposal (including location)

The proposed action, the Gas Supply Security Project (the project), is the development of gas field infrastructure in existing petroleum tenures within the Surat and Bowen Basins, south central Queensland.

The project extends the commercial production area of existing, previously approved Australia Pacific LNG Project (EPBC 2009/4974) gas fields into adjacent development areas not subject to an existing EPBC Act approval. The proposed action will involve the construction, operation, decommissioning and rehabilitation of gas field development infrastructure, including:

- up to 7,700 coal seam gas (CSG) wells;
- 6,800 km of gas and water pipelines;
- 16 combined gas processing and water management facilities; and
- supporting infrastructure (accommodation, access tracks, maintenance facilities, laydown areas and utilities).

The referral notes that the exact number of wells and the extent of the supporting infrastructure are yet to be determined, and that existing infrastructure will be utilised where possible. The referral states that the operational timeframe for the proposed action is approximately 50 years.

The towns that broadly frame the project area extend from near the town of Blackwater in the north, Wandoan in the east, Tara in the south and Springsure in the west. It is located across the four regional council areas of Western Downs, Maranoa, Banana Shire and Central Highlands regional councils.

The project area falls entirely within the Surat Cumulative Management Area (CMA) and encompasses five proposed development areas over approximately 476,923 ha, including Mahalo, Denison, Spring Gully, Peat and Ironbark (Figure 1). The referral states that the maximum development scenario predicts a development footprint of 17,041 ha. The peak

production rate of the project is approximately 6 GL/year, which represents approximately 10% of the annual amount of groundwater produced by the petroleum industry in the Surat CMA.

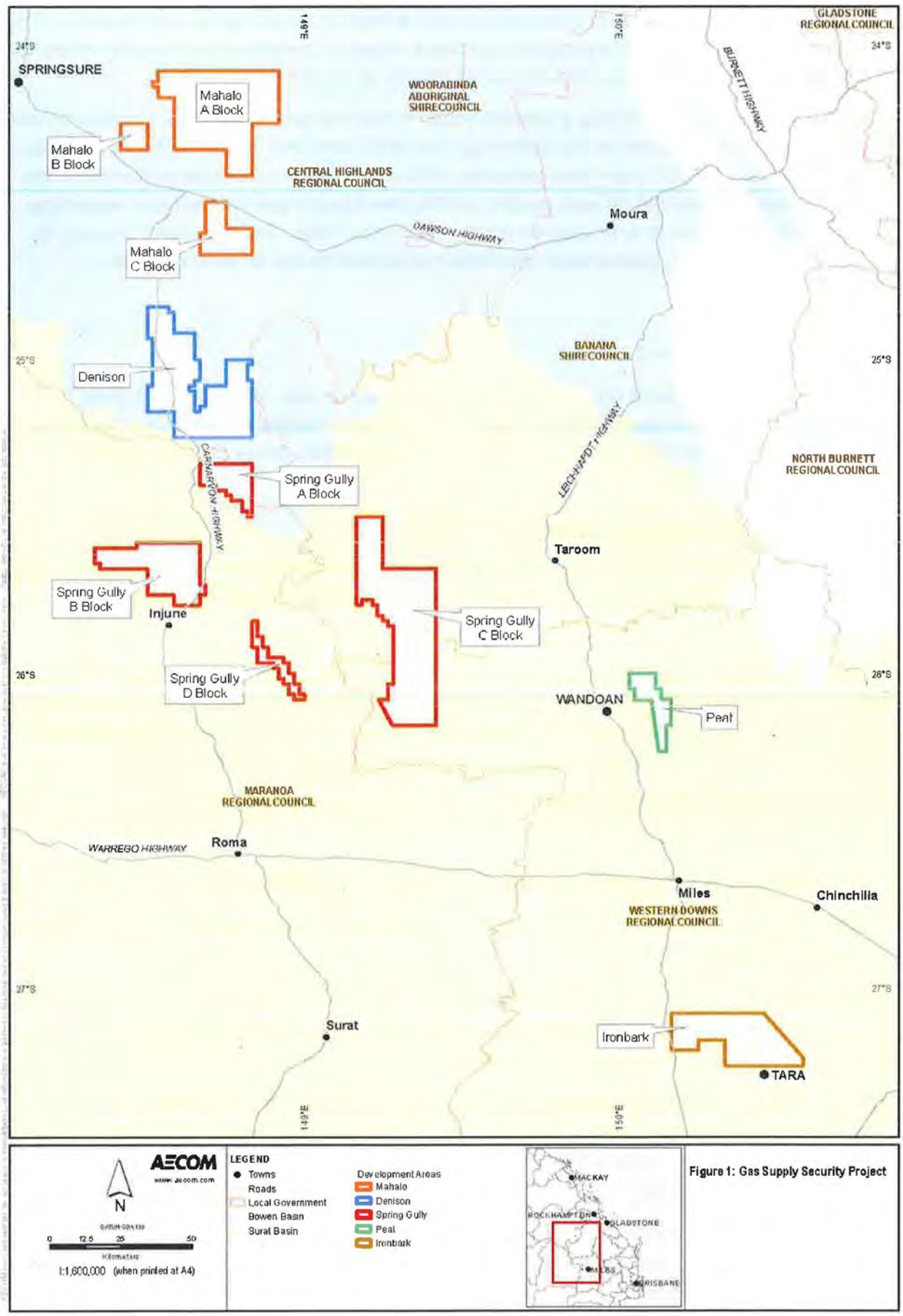


Figure 1: Gas Supply Security Project

Description of the environment

The project area is located in the Brigalow Belt Bioregion within the Condamine-Balonne and Fitzroy Catchments. The Condamine-Balonne Catchment is predominantly comprised of floodplains and a complex system of rivers and creeks. The Fitzroy Catchment contains several large rivers which discharge into the Coral Sea east of Rockhampton.

The project area has north-south topographical highs of the Expedition and Shotover Ranges and an east-west trending topographical high of the Great Dividing Range. Three major river systems are separated by these topographical highs—the Comet River in the north draining to the northwest, the Dawson River in the east draining to the northeast, and the Balonne River in the south draining to the south. The proponent notes that numerous major and minor watercourses traverse across the development areas, but most watercourses are ephemeral, and streamflow only occurs following rainfall events.

The referral states the project area is subject to various land uses, including agricultural production (cropping and cattle grazing), resource extraction (petroleum activities) and protected areas with conservation and recreation values. The proponent notes that remnant vegetation is primarily conserved in national parks and other protected areas, the most notable being the Carnarvon Gorge.

State assessment

The referral states that petroleum and gas tenure approvals have been granted over the project area, including three authorities to prospect (ATP) for exploration and appraisal activities and 11 petroleum leases (PLs) for development and production activities administered under the *Petroleum Act 1923* (Qld), the *Petroleum and Gas (Production and Safety) Act 2004* (Qld) and the *Mineral and Energy Resources (Common Provisions) Act 2014* (Qld).

The project also holds five Environmental Authorities (EAs) issued under the *Environmental Protection Act 1994* (Qld) over all development areas (Attachment A).

The project falls entirely within the Surat Cumulative Management Area (CMA) and will be subject to responsible tenure holder obligations applied through the Surat CMA Underground Water Impact Report (UWIR) under the *Water Act 2000* (Qld).

The department notes that, in response to an invitation to comment on the referral (Attachment F), the Queensland Department of Environment and Science indicated that the referral appears to be proposing approximately 8 times the number of wells currently approved on the relevant tenures under the *Environmental Protection Act 1994* (Qld).

Referral of a larger action – Section 74A

Section 74A(1) of the EPBC Act states that if the Minister (or delegate) is satisfied the action that is the subject of the referral is a component of a larger action, the Minister (or delegate) may decide not to accept the referral. This is a discretionary decision and, as such, you are not obliged to exercise the power.

The *Environment Protection and Biodiversity Conservation Act 1999 (Cth) Policy Statement: Staged Developments – Split referrals: Section 74A of the EPBC Act* states that "[a] referred action that is part of a larger action can be refused only if there is a reasonable basis for doing so. The key question for the Minister is: does the splitting of the project reduce the ability to achieve the objects of the Act?"

The referral states that the proposed action is an extension to the previously approved Australia Pacific LNG Project (EPBC 2009/4974) and is associated with other surrounding approvals granted to the proponent, including:

- EPBC 2009/4977 – LNG processing plant and associated facilities;
- EPBC 2009/4976 – Gas transmission pipeline network;
- EPBC 2016/7720 – 11 CSG wells and associated infrastructure (not a controlled action);
- EPBC 2017/7902 – 68 CSG wells and associated infrastructure;
- EPBC 2017/7881 – 114 CSG wells and associated infrastructure;
- EPBC 2016/7805 – 38 CSG wells and associated infrastructure (withdrawn); and
- EPBC 2019/8534 – 95 CSG wells and associated infrastructure (not a controlled action).

On 4 February 2021, the department sought clarification with regards to the relationship between EPBC 2019/8534 and this referral. The proponent stated that the current referral covers the same area of EPBC 2019/8534, but the proposed activities are new and separate from the activities proposed in EPBC 2019/8534, and the proposed development activities are additional to those assessed in EPBC 2019/8534.

The proponent considers that, although related, the project is a new and separate development to the above existing approvals. While existing infrastructure may be utilised (e.g. gas processing and water management facilities, pipelines, powerlines and roads), the project is a standalone action not dependent on other components not referred.

For these reasons, the department considers that the referred action and the activities described above do not comprise a larger action proposed to be undertaken by the same person. Therefore, the department recommends you accept the referral.

RECOMMENDED DECISION:

Under section 75 of the EPBC Act you must decide whether the action that is the subject of the proposal referred is a controlled action, and which provisions of Part 3 (if any) are controlling provisions for the action. In making your decision you must consider all adverse impacts the action has, will have, or is likely to have, on the matter protected by each provision of Part 3. You must not consider any beneficial impacts the action has, will have or is likely to have on the matter protected by each provision of Part 3.

The department recommends that you decide that the proposal is a controlled action, because there are likely to be significant impacts on the following controlling provisions:

- Listed threatened species and communities (section 18 & section 18A);
- Listed migratory species (section 20 & section 20A); and
- A water resource, in relation to coal seam gas development and large coal mining development (section 24D & section 24E).

These impacts are discussed respectively below.

Listed threatened species and communities (s18 & s18A)

The department's Environment Reporting Tool (ERT) (dated 15 February 2021) identifies 50 threatened species and ecological communities may occur within the project area

(Attachment B). Based on the nature and location of the proposed action, and the likely habitat present, the department considers that impacts will potentially arise.

Habitat assessment

The referral states that the presence and extent of listed threatened species and communities within the project area was estimated through the use of predictive habitat modelling informed by remote sensing, ecology surveys and regional ecosystem mapping. A probabilistic disturbance model was developed by the proponent to provide estimated disturbance totals under a 'maximum development scenario' (i.e. an upper limit estimate).

The proponent notes that the indicative disturbance estimates, under application of the Constraints Planning Protocol (Attachment A) to avoid and minimise disturbance to listed threatened species and communities, would likely be an over-estimation of the realised disturbance from the proposed action.

The proponent notes that the maximum development scenario is conservative as it assumes:

- there are commercial quantities of recoverable gas over the entire project area;
- a maximum intensity of gas field infrastructure is constructed;
- minimal use of existing gas field infrastructure; and
- minimal avoidance of environmental values (i.e. the constraints protocol is not applied).

The department notes that the adequacy of the proponent's habitat modelling will be evaluated against the information in the SPRAT Database and relevant statutory documents during the assessment process.

The following table contains the listed threatened species and communities identified by the proponent in the referral to be within the indicative maximum disturbance footprint of the project area:

Protected matter	**Listing status**	**Disturbance**
Fauna		
Australian Painted Snipe (*Rostratula australis*)	Endangered	1,374 ha
Brigalow Woodland Snail (*Adclarkia cameroni*)	Endangered	29 ha
Collared Delma (*Delma torquata*)	Vulnerable	5,633 ha
Dulacca Woodland Snail (*Adclarkia dulacca*)	Endangered	10 ha
Dunmall's Snake (*Furina dunmalli*)	Vulnerable	5,014 ha
Fitzroy River Turtle (*Rheodytes leukops*)	Vulnerable	209 ha
Greater Glider (*Petauroides volans*)	Vulnerable	4,593 ha
Koala (*Phascolarctos cinereus*)	Vulnerable	5,870 ha
Large-eared Pied Bat (*Chalinolobus dwyeri*)	Vulnerable	3,283 ha
Ornamental Snake (*Denisonia maculata*)	Vulnerable	870 ha
Painted Honeyeater (*Grantiella picta*)	Vulnerable	4,314 ha
Red Goshawk (*Erythrotriorchis radiatus*)	Vulnerable	6,025 ha
South-eastern Long-eared Bat (*Nyctophilus corbeni*)	Vulnerable	6,380 ha

Squatter Pigeon (Southern) (*Geophaps scripta scripta*)	Vulnerable	1,540 ha
Yakka Skink (*Egernia rugosa*)	Vulnerable	4,830 ha
Flora		
Austral toadflax (*Thesium australe*)	Vulnerable	11 ha
Belson's Panic (*Homopholis belsonii*)	Vulnerable	238 ha
Bluegrass (*Dichanthium setosum*)	Vulnerable	111 ha
King Bluegrass (*Dichanthium queenslandicum*)	Endangered	111 ha
Ooline (*Cadellia pentastylis*)	Vulnerable	2,664 ha
Eucalyptus virens	Vulnerable	366 ha
Tara Wattle (*Acacia lauta*)	Vulnerable	452 ha
Aristida annua	Vulnerable	111 ha
Marsdenia brevifolia	Vulnerable	317 ha
Ecological communities		
Brigalow (*Acacia harpophylla* dominant and co-dominant)	Endangered	1,065 ha
Coolibah-Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	95 ha
Natural Grasslands Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin	Endangered	110 ha
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	1,124 ha
Semi-Evergreen Vine Thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	Endangered	13 ha
Weeping Myall Woodlands	Endangered	48 ha

Potential impacts

The referral states that the primary impact mechanism to listed threatened species and communities from the proposed action is habitat clearance. The proponent considers the following potential impacts to listed threatened species and communities may occur as a result of the proposed action:

- habitat loss from vegetation clearance;
- fauna species injury or mortality from project activities;
- reduction in soil viability to support plant growth due to soil compaction;
- displacement of flora and fauna species by invasive species;
- reduction in habitat connectivity;
- edge effects;
- barrier effects; and
- noise, dust and light disturbance.

In the referral, the proponent stated its belief that the proposed action will have a significant impact on listed threatened species and communities due to, among other criteria:

- a reduction in the area of occupancy of an important population of a vulnerable species;

- adversely affecting habitat critical to the survival of a vulnerable species;
- a reduction in the area of occupancy of an endangered species; and
- a reduction in the extent of an endangered ecological community.

The department also notes there will also be potential impacts due to groundwater drawdown, including to the endangered *community of native species dependent on natural discharge of groundwater from the Great Artesian Basin* (GAB springs). Impacts to GAB springs is discussed below in the water resources section.

Conclusion

Based on the information available to the department, including the referral documentation and the SPRAT Database, and with consideration of the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines – Matters of National Environmental Significance* (2013), the department considers there is a real chance or possibility that the proposed action will reduce the area of occupancy of an endangered species, adversely affect habitat critical to the survival of a vulnerable species and reduce the extent of an endangered ecological community.

Therefore, the department considers the proposed action is likely to have a significant impact on listed threatened species and communities, and that sections 18 and 18A to be controlling provisions for the proposed action.

A water resource, in relation to a large coal mining development or coal seam gas development (s24D & s24E)

The referral states that the proposed action will produce gas and extract water from the Walloon Coal Measures, Bandanna Formation, Baralaba Coal Measures (equivalent of the Bandanna Formation), and Reids Dome Beds.

The Queensland Office of Groundwater Impact Assessment (OGIA) has simulated groundwater drawdown for the proposed action using the 2019 Surat CMA Underground Water Impact Report (UWIR) model, including under the following scenarios:

- a base case, which does not simulate any gas production;
- cumulative impacts, including all current and proposed developments plus the proposal; and
- cumulative impacts, excluding the proposal.

Impacts from the proposed action were estimated by assessing the difference between the cumulative impact scenarios. The referral documentation mainly discusses the median (50th percentile) model impact predictions, though the department notes that 95th percentile impact estimates (i.e., greater predicted impacts) were generated by OGIA and are presented in geological formation maps in the referral documentation.

The referral notes that there are three open cut mines located near the Ironbark and Peat development areas (Cameby Downs, Kogan Creek, and Wilkie Creek) that have been represented in the 2019 UWIR, but cumulative drawdown predictions between the operating coal mines and the project near the Mahalo development area are not available. Production activities (including water production) within the Spring Gully D block were not simulated by the OGIA as the target Reids Dome Beds formation is not yet properly represented in the 2019 UWIR model. Further, gas production in the Eastern Contact Zone of the Peat development area was also not simulated for this referral.

The referral states that the proposed action is predicted to produce up to a total of approximately 72.4 GL over the 50-year operational period, with a peak water production rate of approximately 6 GL/year. This represents approximately 10% of the annual amount of groundwater produced by the petroleum industry in the Surat CMA and 4% of the annual amount of groundwater extracted by non-petroleum groundwater use (largely non stock and domestic uses such as irrigation).

In the referral, the proponent stated its belief that the proposed action will not have a significant impact on water resources.

Advice from the Office of Water Science

The department's Office of Water Science (OWS) provided advice on 3 February 2021 (Attachment C), noting that:

- the main impacts from the proposed action relate to groundwater drawdown and clearing of vegetation;
- the proposed action is predicted to result in impacts, both as an individual project and cumulatively with other similar adjacent projects;
- the percentage contribution to cumulative drawdown is varied between proposed development areas and layers within the model.

Groundwater bores

The referral states that, of approximately 4,850 known groundwater bores located within 50 km of the Project, 13 bores (median prediction) are predicted to experience drawdown greater than the Queensland *Water Act 2000* bore trigger as a result of the proposed action. Up to two of these bores are noted as drawing water from within a sandstone aquifer, with the remaining using water from either the Rewan formation, Walloon Coal Measures or Bandana Formation for either town water supply or stock and domestic purposes.

In their advice, OWS notes that, as part of the uncertainty analysis, up to 34 bores are predicted by the proponent to exceed drawdown triggers under the 95th percentile results for the project-only scenario. The Department notes that the groundwater model does not include simulation of extraction from Peat and Spring Gully D Block areas. The implications of this on the number of potential additional bores is uncertain.

The referral notes that, where the potential for impaired capacity has been demonstrated, bores will be subject to additional 'make good' measures (e.g. providing an alternate water supply) to offset potential impacts as prescribed by the *Water Act 2000* (Qld).

The proponent considers that the proposed action will not have a significant impact on groundwater bores.

Surface expression GDEs

The referral states there are a number of potential surface expression GDEs located within 50 km of the project area, including 8 spring complexes (a group of spring vents located close to each other and fed by the same aquifer) and 21 watercourse springs (a section of a watercourse where groundwater enters the stream from an aquifer).

Among those spring complexes identified in the project assessment area, six provide habitat for listed threatened species and four are listed as the endangered *community of native species dependent on natural discharge of groundwater from the Great Artesian Basin* (GAB springs).

There are a number of potential surface expression GDEs in the project assessment area that have also been classified in the 2019 UWIR as 'springs of interest', which are those that overlie an aquifer that is predicted to exceed the 0.2 m drawdown threshold at the location of the spring.

The referral states that drawdown at potential surface expression GDEs is not predicted to exceed the *Water Act 2000* (Qld) spring trigger threshold of 0.2 m under the project-only scenario of the UWIR model. However, a number are predicted to exceed the spring trigger threshold under the cumulative scenario, including:

- 8 spring complexes (3 GAB springs, 2 providing habitat for threatened species), with a percentage contribution to cumulative drawdown of up to 9% (median prediction); and
- 21 watercourse springs, with a percentage contribution to cumulative drawdown of up to 15% (median prediction).

The department notes that the 2019 UWIR model predicts the following impacts on GAB springs from petroleum and gas activities (excluding the project and the influence of any reinjection on water levels):

Spring	Source aquifer	Max impact		Time until 0.2 m (years)	Project contribution
		Metres	Timing (years)		
Yebna2	Precipice sandstone	0.4–0.7	25–27	<10	3%
LuckyLast	Boxvale sandstone	0.2–0.4	26	<5	8%
Cockatoo	Precipice sandstone	0.3–0.5	29	8–12	4%

The referral notes that OGIA have allocated responsible tenure holder obligations (monitoring and mitigation measures) for the springs predicted to exceed the 0.2 m threshold under the cumulative scenario, which prescribe mitigation measures such as the reinjection of water into the source aquifer to reduce impacts to less than 0.2 m. In the case of the springs noted above, the referral states that responsible tenure holder is Santos. Therefore, the proponent considers that the proposed action will not have a significant impact on surface expression GDEs. s. 42(1)

The department understands that the project's reported predicted contributions to the cumulative drawdown levels are the model's median predictions and considers that predicted impacts to springs would be greater using 95th percentile estimates (5% chance). Regardless, the implications to the threatened ecological communities of additional drawdown over and above the existing predicted drawdown has not been considered in the referral documentation, though the department also notes that the overall risk score allocated to the above GAB springs in the 2019 UWIR have increased from previous predictions in 2016.

The referral states that "only EPBC Act listed springs or potential surface expression GDEs providing habitat for EPBC Act listed species represent a matter of national environmental

significance and thus are the only springs of relevance to this assessment." The department does not agree with this position, noting that all water resources are a protected matter under section 24D of the EPBC Act, which takes a water resource to mean:

(a) surface water or ground water; or

(b) a watercourse, lake, wetland or aquifer (whether or not it currently has water in it);

and includes all aspects of the water resource (including water, organisms and other components and ecosystems that contribute to the physical state and environmental value of the water resource).

Terrestrial GDEs

The referral states that remote sensing was used in accordance with the *IESC Information guidelines explanatory note – Assessing groundwater-dependent ecosystems* (2019) to determine the level of groundwater dependence of vegetation associated with potential terrestrial GDEs (TGDEs). Spatial analysis of Landsat imagery taken during historically wet and dry periods was used to identify vegetation change during these climatically diverse intervals.

The referral states that there are potential TGDEs located within proximity to the project area, and are typically associated with alluvial aquifers, permeable rock aquifers (basalts), and unconsolidated and consolidated sedimentary aquifers. The proponent notes that the majority of possible and probable TGDEs within the basalt outcrop area appear to be located in proximity to watercourses, and considers that this indicates localised surface water infiltration is the primary groundwater recharge mechanism for TGDEs in the area.

The proponent notes that, while there are potential TGDEs mapped within areas of predicted drawdown of more than 1 m, the source aquifers for these TGDEs are not predicted to experience drawdown greater than 1 m under the project-only or cumulative modelling scenarios. Therefore, the proponent considers there are no potential terrestrial GDEs with a medium or high risk of significant impact as a result of groundwater drawdown (i.e. those accessing units predicted to exceed 1 m drawdown within layer 1 of the 2019 UWIR model [alluvium and basalt] or aquifer outcrop areas).

Where the proposed action is likely to have a negative impact on TGDEs, the OWS considered that the proponent should implement site-specific monitoring, as well as develop a management plan and an ecohydrological model to ensure TGDEs are not significantly impacted from the proposed action.

Subterranean GDEs

The referral states that an assessment looking to ascertain if favourable conditions for stygofauna exists within each development zone was undertaken.

The OWS advice notes that favourable conditions were found to exist in the Mahalo Development Area within the alluvium, Cenozoic sediments, and Basalt aquifers. However, no physical surveying has been undertaken to determine the composition of stygofauna communities within these aquifers.

The Cenozoic sediments are predicted to experience a maximum predicted drawdown of up to 0.6 m, while the basalt is predicted to experience a maximum predicted drawdown of up to 1.2 m, representing a reduction of between 2% and 12% in saturated thickness.

The referral states that it is unlikely stygofauna are present within the targeted coal seams of the Denison, Spring Gully, Peat or Ironbark development areas given the depths to the targeted

Bandanna Formation, Baralaba Coal Measure and Walloon Coal Measure. In their advice, the OWS agreed with this assessment.

The proponent considers that, based on the minimal reduction in saturated thickness of the groundwater units in the Mahalo Development Area, there will not be a significant impact to stygofauna from the proposed action.

Surface water

The proponent considers significant impacts on surface water flows or quality are not likely, as no new abstractions or discharges are planned, most waterways are ephemeral, and there is very little connectivity between groundwater and surface water.

While the project will utilise existing and approved water management infrastructure authorised under EPBC Act approvals for the Australia Pacific LNG Project (e.g. EPBC 2009/4974), the project does not propose any new or additional authorisations for discharge to, or abstraction from, surface water systems. The referral also states that other potential impacts to surface water are managed through implementation of existing regulatory controls for construction and operational activities. The department considers that the approval for EPBC 2009/4974 would not cover the discharge of produced water from wells associated with this proposal.

In their advice, the OWS noted that:

- the proponent has not conducted surface water modelling as part of the referral;
- drawdown could cause increased seepage, decreased number of flow days and reduce the quality of the surrounding ecosystem; and
- details to manage produced water do not appear to be provided, except that water will be managed through existing infrastructure.

Subsidence

The referral states that the majority of the proposed development areas are targeting formations at depths of 170 mbGL to 1,170 mbGL, with thick aquitards separating the coal seams from the overlying alluvium, indicating that subsidence at near surface is likely minimal. The exception is at the Mahalo A and B blocks, where target coal seams are located less than 90 mbGL and underlie alluvium, Cenozoic sediments, and/or basalt. The proponent considers that potential impacts from subsidence are negligible in terms of impacts to water resources. The Department notes that the Ironbark development area partially overlies an area of the Surat CMA identified in the 2019 UWIR to contain potential terrestrial GDEs at moderate (compaction between 0.1 to 0.2 m) to high risk (compaction greater than 0.2 m) from subsidence.

In their advice, the OWS noted that they generally agree that subsidence impacts from the proposed action are likely to be minor at the regional scale, though locally impacts may be problematic and so should be monitored.

Conclusion

Under section 24D of the EPBC Act, an action which involves a CSG development or a large coal mining development requires approval if the action has, will have, or is likely to have a significant impact on a water resource.

The *Significant impact guidelines 1.3: Coal seam gas and large coal mining developments—impacts on water resources* (2013) state that "an action is likely to have a significant impact on a

water resource if there is a real or not remote chance or possibility that it will directly or indirectly result in a change to:

- the hydrology of a water resource,
- the water quality of a water resource,

that is of sufficient scale or intensity as to reduce the current or future utility of the water resource for third party users, including environmental and other public benefit outcomes, or to create a material risk of such reduction in utility occurring."

Based on the information available to the department, including the referral documentation and OWS advice, and with consideration of the *EPBC Act Policy Statement 1.3 Significant Impact Guidelines – Coal seam gas and large coal mining developments* (2013), the department considers there is a real chance or possibility the proposed action will result in changes to the hydrology of a water resource through a reduction in water quantity. The department considers these changes are of sufficient scale or intensity as to significantly reduce the current or future utility of the water resource for third party users.

Therefore, the department considers the proposed action will likely have a significant impact on water resources, and considers sections 24D and 24E to be controlling provisions for the proposed action.

Listed migratory species (s20 & s20A)

The department's Environment Reporting Tool (ERT) (dated 15 February 2021) indicates that a total of 11 migratory species may occur within the project area (Attachment B). Based on the location of the proposed action and the likely habitat present, the department considers that impacts will potentially arise.

The referral states that migratory species have the potential to occur in the project area, with the presence, abundance and activity of the species dependant on the habitat type and its location in the landscape. In the referral, the proponent stated their belief that significant impacts to migratory species will not result from the proposed action. However, migratory species were not subject to detailed assessment as the proponent considers all species are either common throughout their range and/or opportunistic visitors to wetland environments.

The *EPBC Act Policy Statement 1.1 Significant Impact Guidelines – Matters of National Environmental Significance* (2013) state that an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- substantially modify, destroy or isolate an area of important habitat for a migratory species;
- result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or
- seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species.

Further, the guidelines identify important habitat for a migratory species as:

- habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species;
- habitat that is of critical importance to the species at particular life-cycle stages;
- habitat utilised by a migratory species which is at the limit of the species range; and/or

- habitat within an area where the species is declining.

The referral states that wetland environments will be avoided during detailed design (in accordance with the Constraints Planning Protocol), so impacts were considered based on the likelihood of population level effects. While not taking into account the proposed Constraints Planning Protocol in the referral stage, the department notes that only Ramsar-listed wetlands are incorporated in the Constraints Planning Protocol ('no-go area'), with all other MNES constraints, besides habitat for critically endangered species ('high constraint area'), categorised as 'moderate constraint area' and permitting all petroleum activities.

The *Draft referral guideline for 14 birds listed as migratory species under the EPBC Act* (2015) provides ecologically significant proportions for fourteen migratory species populations. The referral states that studies within the project area do not provide evidence that ecologically significant proportions of migratory bird species are present. Given the nature of impacts from the project, which are both linear and widespread across the project area, the proponent considers it unlikely that aggregations of these population sizes would occur. Although the construction of CSG wells and associated pipelines are linear, the department notes that up to 16 combined gas processing and water management facilities are proposed, with a construction footprint of up to 120 ha per combined facility.

The referral states the Brigalow Belt Bioregion is also not at the limit of migratory species range for the species relevant to this assessment and any area where these species may be declining are not known. Given the size of the project area and that a substantial proportion has been historically cleared (76% according to the referral), the department considers it not unreasonable that the project area would support migratory species habitat in an area where the species is declining.

The proponent considers there is no evidence to suggest that habitat throughout the project area is of critical importance to the species at particular life-cycle stages. The referral states that habitat in central Queensland in general, and within the project area more specifically, is unlikely to be considered important habitat for migratory species. Further, important habitat for migratory shorebirds is primarily located in coastal areas, where large flocks of birds aggregate for overwinter foraging.

The department notes the *Draft referral guideline for 14 birds listed as migratory species under the EPBC Act* (2015) provides species-specific definitions of important habitat for a number of listed migratory species identified in the ERT Report as 'may', 'likely' or 'known' to occur within the project area. Further, the guideline provides area thresholds of important habitat likely to result in a significant impact.

Satin Flycatcher (*Myiagra cyanoleuca*)

The department's ERT Report (Attachment B) identified the Satin Flycatcher as a migratory species that 'may' occur across the entire project area, and is 'known' or 'likely' to occur across several development areas.

The *Draft referral guideline for 14 birds listed as migratory species under the EPBC Act* (2015) considers important habitat for the species as "eucalypt forest and woodlands, at high elevations when breeding. They are particularly common in tall wet sclerophyll forest, often in gullies or along water courses. In woodlands they prefer open, grassy woodland types. During migration, habitat preferences expand, with the species recorded in most wooded habitats except rainforests". The guideline provides the following threshold values for area of habitat and number of individuals that likely result in a significant impact to the species:

Species	Area		Individuals	
	0.1%*	1%^	0.1%*	1%^
Satin Flycatcher	440 ha	4,400 ha	170	1,700

*Upper threshold – likely significant impact

^Lower threshold – actions should be investigated further

Based on the location of the proposed action and the estimated 17,041 ha project footprint, the department considers it likely that important habitat for the Satin Flycatcher occurs within the project area that would meet or exceed the above values.

The guideline also states that "strategic regional planning will be required where cumulative loss of small patches of habitat is occurring that may collectively exceed area thresholds. Such planning should involve targeted surveys and best practice mitigation design and implementation".

Other migratory species

With consideration of the above discussion, along with the lack of information in the referral regarding potential populations of migratory species and utilisation of the project area, the department considers it not unlikely that important habitat for other listed migratory species would occur within the project area in the proportions prescribed as significant in the *Draft referral guideline for 14 birds listed as migratory species under the EPBC Act* (2015).

Conclusion

Considering the information provided in the referral, the discussion provided above, the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines - Matters of National Environmental Significance* (2013) and the *Draft referral guideline for 14 birds listed as migratory species under the EPBC Act* (2015), the department considers there is a real chance or possibility that the proposed action will:

• substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species;

• result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species; or

• seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

Therefore, the Department considers there is a real chance or possibility that the proposed action will have a significant impact on migratory species, and considers sections 20 and 20A to be controlling provisions for the proposed action.

PROTECTED MATTERS THAT ARE NOT CONTROLLING PROVISIONS:

Ramsar Wetlands (s16 & s17B)	There are no Ramsar listed wetland of international importance within the project area. However, the Ironbark Development Area is located within the upstream catchment of the Narran Lake Nature Reserve. The referral states that the proposed action is not expected to significantly modify the hydrology of the Reserve given its distance from the project site.

	Given the information contained in the referral documentation, the nature and scale of the proposed action and its potential impacts, and the distance to Ramsar listed wetlands of international importance, the department considers the proposed action is unlikely to have a significant impact on Ramsar listed wetlands of international importance. For these reasons, the department considers that sections 16 and 17B are not controlling provisions for the proposed action.
World Heritage properties (s12 & s15A)	The ERT did not identify any World Heritage properties located within or adjacent to the proposed action area. Further, given the information contained in the referral documentation, the nature and scale of the proposed action and its potential impacts, and the distance to World Heritage properties, the proposed action is unlikely to have a significant impact on World Heritage properties. For these reasons, the department considers that sections 12 and 15A are not controlling provisions for the proposed action.
National Heritage places (s15B & s15C)	The ERT did not identify any National Heritage places located within or adjacent to the proposed action area. Further, given the information contained in the referral documentation, the nature and scale of the proposed action and its potential impacts, and the distance to National Heritage places, the proposed action is unlikely to have a significant impact on National Heritage places. For these reasons, the department considers that sections 15B and 15C are not controlling provisions for the proposed action.
Commonwealth marine environment (s23 & s24A)	The proposed action does not occur in a Commonwealth marine area. Further, given the information contained in the referral documentation, the nature and scale of the proposed action and its potential impacts, and the distance to a Commonwealth marine area, the proposed action is unlikely to have a significant impact on the environment in a Commonwealth marine area. For these reasons, the department considers that sections 23 and 24A are not controlling provisions for the proposed action.
Commonwealth action (s28)	The referring party is not a Commonwealth agency. For this reason, the department considers that section 28 is not a controlling provision for the proposed action.
Commonwealth land (s26 & s27A)	The proposed action is not being undertaken on Commonwealth land. Further, given the information contained in the referral documentation, the nature and scale of the proposed action and its potential impacts, and the distance to Commonwealth land, the proposed action is unlikely to have a significant impact on the environment on Commonwealth land. For these reasons, the department considers that sections 26 and 27A are not controlling provisions for the proposed action.
Nuclear action (s21 & s22A)	The proposed action does not meet the definition of a nuclear action as defined in the EPBC Act. For this reason, the department considers that

	sections 21 and 22A are not controlling provisions for the proposed action.
Great Barrier Reef Marine Park (s24B & s24C)	The proposed action is not being undertaken in the Great Barrier Reef Marine Park. Given the information contained in the referral documentation, the nature and scale of the proposed action and its potential impacts, and the distance to the Great Barrier Reef Marine Park, the proposed action is unlikely to have a significant impact on the Great Barrier Reef Marine Park. Further, on 4 February 2021, GBRMPA provided comments to the department noting that the proposed action is unlikely to have a significant impact on the Great Barrier Reef Marine Park (Attachment G). For these reasons, the department considers that sections 24B and 24C are not controlling provisions for the proposed action.
Commonwealth Heritage places overseas (s27B & s27C)	The proposed action is not located overseas. For this reason, the department considers that sections 27B and 27C are not controlling provisions for the proposed action.

SUBMISSIONS:

Public submissions

The proposal was published on the department's website on 19 January 2021 and public comments were invited until 3 February 2021. Due to an incorrect attachment being uploaded at the time of publication, the public comment period was extended until 10 February 2021 to ensure the full referral documentation was available for 10 business days in accordance with section 74(3) of the EPBC Act. Under section 75(1A) of the EPBC Act, you must consider all comments received in response to that invitation within the public comment period.

Two public submissions were received in response to that invitation, which are summarised below and attached at Attachment E.

Joint submission

On 10 February 2021, the department received a joint submission from 58 individuals, which stated that the proposed action should be:

- determined a controlled action and that relevant controlling provisions are listed threatened species and communities (s18 & s18A), migratory species (s20 & s20A) and water resources (s24D & s24E);
- assessed by public environment report or environmental assessment (taken by the department to mean 'environmental impact statement'); and
- referred to the IESC.

The submission also noted:

- concerns with a lack of data and investigation of key issues in relation to groundwater monitoring bores and impacts to stream complexes;

- a perceived significant lack of monitoring bores in the project area, including a lack of replicate sample sites; and
- a lack of localised information and investigation regarding faults and impacts to GDEs.

The submission also called for the data and modelling by OGIA for the proposed action to be made available to the public.

Lock the Gate Alliance

On 10 February 2021, the department received a submission from Lock the Gate Alliance, which raised a number of issues, including their view that:

- water resources should be recognised as a controlling provision for the proposed action;
- the proposed action should be assessed by environmental impact statement;
- although the proponent has acknowledged there is likely to be a significant impact on threatened species, these impacts are likely to be substantially understated;
- there are incongruities between the development areas mapped and the text description provided in the referral; and
- there is inadequate baseline water monitoring, including limited monitoring bores;

The Department notes the above comments in relation to the referral and considers that the relevant matters raised can be addressed through the assessment process.

Comments from Commonwealth Ministers

By letter dated 19 January 2021, the following ministers were invited to comment on the referral:

- The Hon Keith Pitt, Minister for Resources, Water and Northern Australia;
- The Hon Karen Andrews MP, Minister for Industry, Science and Technology;
- The Hon Ken Wyatt AM MP, Minister for Indigenous Australians;
- The Hon David Littleproud MP, Minister for Agriculture, Drought and Emergency Management; and
- The Hon Angus Taylor MP, Minister for Energy and Emissions Reduction.

By letter dated 19 January 2021, an invitation to comment was also provided to the Great Barrier Reef Marine Park Authority (GBRMPA).

No comments were received from Minister Taylor or Minister Andrews in response to that invitation.

On 29 January 2021, on behalf of Minister Pitt, comments were received from the Murray Darling Basin Authority (MDBA) and the National Water Policy Branch of the Department of Agriculture, Water and the Environment (Attachment H2). On 10 February 2021, comments were received from Geoscience Australia (Attachment H3).

Murray Darling Basin Authority

The MDBA noted that:

- there is a need to monitor the groundwater drawdown in the shallow Condamine Alluvium and to assess leakage from the Condamine Alluvium to the Walloon Coal Measures due to CSG development; and

- if there is any evidence of enhanced drawdown in Condamine Alluvium, and hence leakage form the Alluvium to the Walloon Coal Measures, it has to offset by buying groundwater entitlements from the Alluvium.

National Water Policy Branch

The National Water Policy Branch noted that:

- management of both surface water and groundwater quantity and quality are covered by the Condamine-Balonne Water Resource Plan (WRP), which was accredited by Minister Pitt on 21 September 2019; and
- the WRP identifies a medium risk in the Upper Condamine Alluvium at current rates of interception by CSG industries.

Geoscience Australia

Geoscience Australia considered that:

- without a review of local scale conceptualisations, it is unclear if the regional scale assessment provided in the UWIR modelling is appropriate to represent the potential local scale groundwater impacts for each area; and
- there is insufficient information and assessment at the project scale to rule out the potential for direct impacts to water resources to be significant.

On 4 February 2021, Minister Littleproud responded, noting that he had no comments from an agricultural perspective on whether the proposed action may have significant impacts on matters of national environmental significance (Attachment H1). However, he requested that, when assessing the referral, particular attention is made to ensuring the proponent has a fit-for-purpose surface subsidence monitoring program in place to ensure agricultural production within the vicinity of the gas field developments is not negatively impacted.

On 4 February 2021, GBRMPA provided comments to the department noting that the proposed action is unlikely to have a significant impact on the Great Barrier Reef Marine Park (Attachment G).

On 10 February 2021, a delegate of Minister Wyatt responded (Attachment H4), noting that:

- the proponent has developed a Cultural Heritage Management Plan with the Iman people;
- other traditional groups affected by the proposed project, including the Gaangalu Nation people, Bidjara people and Kanolu people, may have been excluded from the process;
- the proponent should be encouraged to engage in a thorough and genuine manner with all traditional owners in the Surat and Bowen Basins to ensure that all potentially affected Indigenous parties are provided the opportunity to engage; and
- should the project proceed, to help realise its economic potential for local Indigenous people, the proponent should be encouraged to work with the National Indigenous Australians Agency (NIAA) and traditional owner groups to create sustainable Indigenous enterprise and employment opportunities.

Comments from State Ministers

By letter dated 19 January 2021, s. 47F(1) , delegated contact for the Hon Meaghan Scanlon MP, Minister for the Environment and the Great Barrier Reef and Minister for Science and Youth Affairs, was invited to comment on the referral.

On 10 February 2021, s. 47F(1) responded, advising that the proposed action will not be assessed in a manner under which the bilateral agreement between the Commonwealth and the State of Queensland would apply (Attachment F). Further, the response noted that:

- the extent of the approvals under the proponent's EAs does not translate entirely to the proposed project area;
- the referral appears to be proposing approximately 8 times the number of wells currently approved on the relevant tenures under the *Environmental Protection Act 1994* (Qld);
- EER have not received any applications seeking any significant increase to activities on the relevant sites; and
- it is expected that all relevant EAs will require amendments to authorise any expansion required for the proposed action.

ASSESSMENT APPROACH:

If you agree that the action is a controlled action, you must also decide on the approach for assessment in accordance with section 87 of the EPBC Act. The department recommends that this proposal be assessed by public environment report (PER) under Part 8 of the EPBC Act.

Given the number of matters likely to be impacted, the large scale of the action and the complexity of potential impacts from the action, PER represents an appropriate method that will ensure that impacts on protected matters are appropriately assessed.

The matters for consideration in making a decision on assessment approach are outlined in section 87(3) of the EPBC Act and summarised in the table below.

In making your decision you must consider the matters summarised in the table below:

Matter to be considered	Comment
Information relating to the action given to the Minister in the referral of the proposal to take the action – s87(3)(a)	The referral is at Attachment A.
Any other information about the impacts of the action considered relevant (including information in a report on the impacts of the action under a policy, plan or program under which the action is to be taken that was given to the Minister under an agreement under Part 10) – s87(3)(b)	Relevant information is discussed in the department's advice on relevant impacts contained in the referral decision brief.
Any comments received from a State or Territory minister relevant to deciding the appropriate assessment approach – s87(3)(c)	There was one comment received in response to an invitation under s74(2)(b)(ii) for this proposal. As noted above, the Queensland Department of Environment and Science advised that the proposed action will not be assessed under the bilateral agreement with the Queensland Government (Attachment F).

Guidelines (if any) published under s87(6), and matters (if any) prescribed in the regulations – s87(3)(d) and (e)	No guidelines have been made and no regulations have been prescribed.

OTHER MATTERS FOR DECISION-MAKING:

Significant impact guidelines

The department has reviewed the information in the referral against the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines – Matters of National Environmental Significance* (December 2013) and other relevant material. While this material is not binding or exhaustive, the factors identified are considered adequate for decision-making in the circumstances of this referral. Adequate information is available for decision-making for this proposal.

Precautionary principle

In making your decision under section 75, you are required to take account of the precautionary principle (section 391). The precautionary principle is that a lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage.

Bioregional Plans

In accordance with section 176(5), you are required to have regard to a bioregional plan in making any decision under the Act to which the plan is relevant.

There is no bioregional plan that is relevant to your decision.

Management Plans for Commonwealth Reserves

In accordance with section 362(2), the Commonwealth or a Commonwealth agency must not perform its functions or exercise its powers in relation to a Commonwealth reserve inconsistently with a management plan that is in operation for the reserve.

There is no Commonwealth reserve management plan that is relevant to your decision.

Cost Recovery

The fee schedule (with justifications) for your consideration is at Attachment I. The fee schedule (without justifications) at Attachment J will be sent to the person taking the action, including an invoice for Stage 1, seeking fees prior to the commencement of any further activity.

s. 22(1)(a)(ii)
A/g Director
Queensland North Assessments
15 February 2021

s. 22(1)(a)(ii)
Queensland North Assessments
Ph: s. 22(1)(a)(ii)

ATTACHMENTS

A: Referral documentation

B: ERT Report (dated 15 February 2021)

C: Advice from the Office of Water Science (OWS)

D: s. 42(1)

E: Public comments

F: DES comments

G: GBRMPA comments

H: Ministerial comments

H1: Comment from Minister Littleproud

H2: Comment from MDBA and National Water Policy Branch

H3: Comment from Geoscience Australia

H4: Comment from Minister Wyatt

I: Fee schedule (with justifications)

J: Fee schedule (without justifications)

K: Decision notice – FOR SIGNATURE

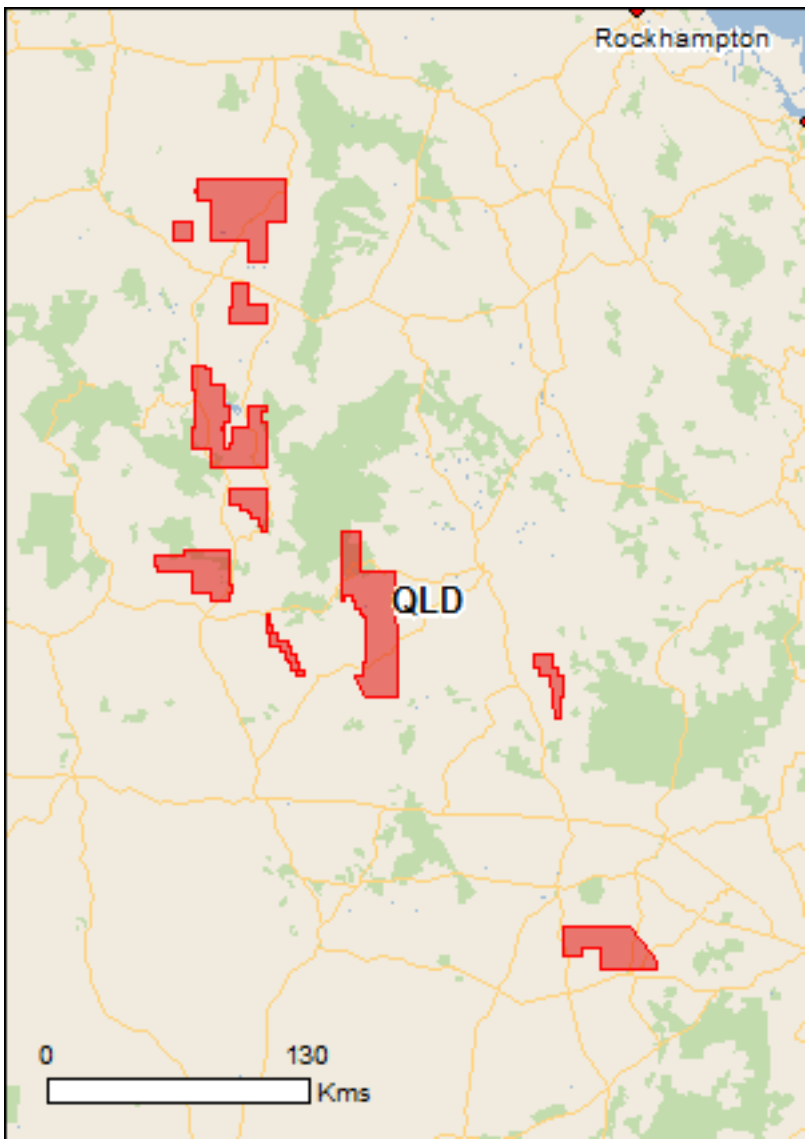
L: Letters to the proponent & relevant Ministers – FOR SIGNATURE

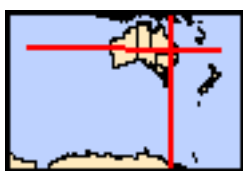
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

2020/8856 ERT Report

Report created: 15/02/2021 04:28:13





Summary

Matters of National Environment Significance

World Heritage Properties:	None
National Heritage Places:	None
Ramsar Wetlands:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Threatened Ecological Communities:	8
Threatened Species:	42
Migratory Species:	11

Other Matters Protected by the EPBC Act

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	17
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	6
Regional Forest Agreements:	None
Invasive Species:	29
Nationally Important Wetlands:	1
EPBC Act Referrals:	50
Key Ecological Features (Marine):	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Name	Proximity
Banrock station wetland complex	1200 - 1300km upstream from Ramsar site
Narran lake nature reserve	300 - 400km upstream from Ramsar site
Riverland	1100 - 1200km upstream from Ramsar site
The coorong, and lakes alexandrina and albert wetland	1300 - 1400km upstream from Ramsar site

Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Name	Status	Type of Presence
Brigalow (Acacia harpophylla dominant and co-dominant)	Endangered	Community known to occur within area
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community likely to occur within area
Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin	Endangered	Community likely to occur within area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community likely to occur within area
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	Endangered	Community likely to occur within area
The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin	Endangered	Community likely to occur within area

Name	Status	Type of Presence
Weeping Myall Woodlands	Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area

Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Current Scientific Name	Status	Type of Presence
BIRD		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat known to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Neochmia ruficauda ruficauda Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat likely to occur within area
Poephila cincta cincta Southern Black-throated Finch [64447]	Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
FISH		

Current Scientific Name	Status	Type of Presence
[Maccullochella peelii](#) Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
[Chalinolobus dwyeri](#) Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat known to occur within area
[Dasyurus hallucatus](#) Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
[Macroderma gigas](#) Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area
[Petauroides volans](#) Greater Glider [254]	Vulnerable	Species or species habitat known to occur within area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
PLANT		
[Acacia curranii](#) Curly-bark Wattle [3908]	Vulnerable	Species or species habitat may occur within area
[Acacia grandifolia](#) [3566]	Vulnerable	Species or species habitat known to occur within area
[Acacia lauta](#) Tara Wattle [4165]	Vulnerable	Species or species habitat known to occur within area

Current Scientific Name	Status	Type of Presence
Aristida annua [17906]	Vulnerable	Species or species habitat may occur within area
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area
Bertya opponens [13792]	Vulnerable	Species or species habitat likely to occur within area
Cadellia pentastylis Ooline [9828]	Vulnerable	Species or species habitat known to occur within area
Dichanthium queenslandicum King Blue-grass [5481]	Endangered	Species or species habitat likely to occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
Eriocaulon carsonii Salt Pipewort, Button Grass [10584]	Endangered	Species or species habitat known to occur within area
Eucalyptus beaniana Bean's Ironbark [56320]	Vulnerable	Species or species habitat known to occur within area
Eucalyptus virens [10181]	Vulnerable	Species or species habitat likely to occur within area
Homopholis belsonii Belson's Panic [2406]	Vulnerable	Species or species habitat may occur within area
Marsdenia brevifolia [64585]	Vulnerable	Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
[Thesium australe](#) Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
[Tylophora linearis](#) [55231]	Endangered	Species or species habitat may occur within area
[Xerothamnella herbacea](#) [4146]	Endangered	Species or species habitat likely to occur within area
REPTILE		
[Delma torquata](#) Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat likely to occur within area
[Denisonia maculata](#) Ornamental Snake [1193]	Vulnerable	Species or species habitat known to occur within area
[Egernia rugosa](#) Yakka Skink [1420]	Vulnerable	Species or species habitat known to occur within area
[Elseya albagula](#) Southern Snapping Turtle, White-throated Snapping Turtle [81648]	Critically Endangered	Species or species habitat likely to occur within area
[Furina dunmalli](#) Dunmall's Snake [59254]	Vulnerable	Species or species habitat known to occur within area
[Rheodytes leukops](#) Fitzroy River Turtle, Fitzroy Tortoise, Fitzroy Turtle, White-eyed River Diver [1761]	Vulnerable	Species or species habitat likely to occur within area
SNAIL		
[Adclarkia cameroni](#) Brigalow Woodland Snail [83886]	Endangered	Species or species habitat likely to occur within area
[Adclarkia dulacca](#) Dulacca Woodland Snail [83885]	Endangered	Species or species habitat likely to occur within area

Migratory Species		[Resource Information]
Current Scientific Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area

Current Scientific Name	Threatened	Type of Presence
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Current Scientific Name	Threatened	Type of Presence
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Anseranas semipalmata		
Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area overfly marine area
Ardea modesta as Ardea alba		
Eastern Great Egret [82410]		Species or species habitat known to occur within area overfly marine area

Current Scientific Name	Threatened	Type of Presence
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
[Chalcites osculans as Chrysococcyx osculans](#) Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area overfly marine area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area

Current Scientific Name	Threatened	Type of Presence
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area
[Rostratula australis as Rostratula benghalensis (sensu lato)](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Carnarvon National Park	QLD
Expedition (Limited Depth) National Park	QLD
Humboldt National Park	QLD
Lonesome Holding NRS Addition - Gazettal in Progress	QLD
Moorabinda Nature Refuge	QLD
Nuga Nuga National Park	QLD

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit,

Name	Status	Type of Presence
Bird		
[Acridotheres tristis](#) Common Myna, Indian Myna [387]	Feral	Species or species habitat likely to occur within area
[Anas platyrhynchos](#) Mallard [974]	Feral	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Columba livia		
Rock Pigeon, Rock Dove, Domestic Pigeon [803]	Feral	Species or species habitat likely to occur within area
Passer domesticus		
House Sparrow [405]	Feral	Species or species habitat likely to occur within area
Sturnus vulgaris		
Common Starling [389]	Feral	Species or species habitat likely to occur within area
Frog		
Rhinella marina		
Cane Toad [83218]	Feral	Species or species habitat known to occur within area
Mammal		
Bos taurus		
Domestic Cattle [16]	Feral	Species or species habitat likely to occur within area
Canis familiaris listed as Canis lupus familiaris		
Domestic Dog, Dingo [17]	Feral	Species or species habitat likely to occur within area
Equus caballus		
Horse [5]	Feral	Species or species habitat likely to occur within area
Felis catus		
Cat, House Cat, Domestic Cat [19]	Feral	Species or species habitat likely to occur within area
Feral deer		
Feral deer species in Australia [85733]	Feral	Species or species habitat likely to occur within area
Lepus capensis		
Brown Hare [127]	Feral	Species or species habitat likely to occur within area
Mus musculus		
House Mouse [120]	Feral	Species or species habitat likely to occur within area

Name	Status	Type of Presence
[Oryctolagus cuniculus](#) Rabbit, European Rabbit [128]	Feral	Species or species habitat likely to occur within area
[Rattus rattus](#) Black Rat, Ship Rat [84]	Feral	Species or species habitat likely to occur within area
[Sus scrofa](#) Pig [6]	Feral	Species or species habitat likely to occur within area
[Vulpes vulpes](#) Red Fox, Fox [18]	Feral	Species or species habitat likely to occur within area

Plant		
[Cryptostegia grandiflora](#) Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913]	WoNS	Species or species habitat likely to occur within area
[Hymenachne amplexicaulis](#) Hymenachne, Olive Hymenachne, Water Stargrass, West Indian Grass, West Indian Marsh Grass [31754]	WoNS	Species or species habitat likely to occur within area
[Jatropha gossypiifolia listed as Jatropha gossypifolia](#) Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [89505]	WoNS	Species or species habitat likely to occur within area
[Lantana camara](#) Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]	WoNS	Species or species habitat likely to occur within area
[Opuntia spp.](#) Prickly Pears [82753]	WoNS	Species or species habitat likely to occur within area
[Parkinsonia aculeata](#) Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]	WoNS	Species or species habitat likely to occur within area
[Parthenium hysterophorus](#) Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]	WoNS	Species or species habitat likely to occur within area

Name	Status	Type of Presence
[Pinus radiata](#) Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]	Invasive	Species or species habitat may occur within area
[Solanum elaeagnifolium](#) Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]	WoNS	Species or species habitat likely to occur within area
[Vachellia nilotica](#) Prickly Acacia, Blackthorn, Prickly Mimosa, Black Piquant, Babul [84351]	WoNS	Species or species habitat likely to occur within area
[Vachellia nilotica subsp. indica listed as Acacia nilotica subsp. indica](#) Prickly Acacia [87881]	WoNS	Species or species habitat may occur within area

Reptile		
[Hemidactylus frenatus](#) Asian House Gecko [1708]	Feral	Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
[Lake Nuga Nuga](#)	QLD

EPBC Act Referrals [Resource Information]

Further details about the referral is available in the Environmental Impact Assessment System (EIAS); click on the title to access.

Referral			
Title	Reference	Referral Outcome	Assessment Status

s. 47G(1)(a)

Title	Reference	Referral Outcome Manner)	Assessment Status

s. 47G(1)(a)

Title	Reference	Referral Outcome	Assessment Status

s. 47G(1)(a)

Title	Reference	Referral Outcome	Assessment Status

s. 47G(1)(a)

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment, Energy and Science, New South Wales
-Department of Environment, Land, Water and Planning, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Government of South Australia, Department for Environment and Water, South Australia
-Department of Environment and Natural Resources, Northern Territory
-Department of Environment and Science, Queensland
-Department of Biodiversity, Conservation and Attractions, Western Australia
-Environment, Planning and Sustainable Development Directorate, ACT
-Birdlife Australia
-Department of Environment and Energy, Australian Bird and Bat Banding Scheme
-CSIRO, Australian National Wildlife Collection
-Natural history museums of Australia
-Australian Museum
-Museums Victoria
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-Forestry Corporation of NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

OFFICE OF WATER SCIENCE ADVICE
GAS SUPPLY SECURITY PROJECT, SURAT AND BOWEN BASINS, QLD

Requesting section	Environmental Assessments Queensland North	**Requesting officer**	S22(1)(a)(ii)
Date of request	19 January 2021		
EPBC reference	EPBC 2020/8856	**OWS reference**	OWS 2021-005
Project assessment stage	Referral		
OWS contact officer	S22(1)(a)(ii)		
Cleared by	s. 22(1)(a)(ii) Director / Senior Principal Research Scientist	**Date of Advice**	3 February 2021

The OWS provides technical advice for internal Departmental decision making and briefing purposes only. OWS advice should not be forwarded directly to external parties in the format provided. Please contact OWS before providing the advice directly to an external source. OWS does not speak for, and our response has not been endorsed by, the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development.

Origin Energy Upstream Operator Pty Ltd (the proponent), the operator for Australia Pacific LNG Pty Ltd, propose the Gas Supply Security Project (the proposal) as an extension to the Australia Pacific LNG Project (EPBC 2009/4974). The proposal will produce additional coal seam gas, extracted from the Surat and Bowen basins, for domestic and export markets. The proponent is seeking approval for petroleum tenures held by Australia Pacific LNG that are not subject to an existing EPBC Act approval or decision, covering approximately 476,492 ha in central and southwest Queensland (Origin Energy 2020c, p. 1).

The proposal includes the construction, operation, decommissioning and rehabilitation of gas field development infrastructure. This includes up to 7,700 wells, 6,800 km of gas and water pipelines, 16 gas combined processing and water management facilities and supporting infrastructure (accommodation, access tracks, maintenance facilities, laydown areas and utilities) (Origin Energy 2021, Tab. 4, p. 33). The exact number of wells and extent of the supporting infrastructure are yet to be determined. Where possible, the proposal will utilise existing infrastructure (e.g. EPBC 2009/4974) (Origin Energy 2021, p.33). Developments will occur incrementally, with a proposed start and cessation date of 2024 and 2089 respectively (Origin Energy 2021, p.34).

The main impacts of the proposal relate to groundwater drawdown and clearing of vegetation, where the maximum development footprint is anticipated to be 17,041 ha (Origin

Energy 2020c, p. 2). The proposal is predicted to produce a total of 72.4 GL, with a peak water production rate of approximately 6 GL/year in three years between 2034 – 2039 (KCB 2020, pp. 23 – 24). Cumulative drawdown is primarily predicted to impact 13 bores, four EPBC Act-listed springs located within 50 km of the proposal, five non EPBC Act-listed spring complexes, and 21 non EPBC Act-listed watercourses (Origin Energy 2021, pp. 7, 13 – 14 and 74).

Question 1: What does the OWS consider is the likely nature and extent of impacts to water resources?

1. The proposal is to continue APLNG's existing operations (EPBC 2009/4974) by developing infrastructure in existing petroleum tenures that are not included by previous EPBC approvals (Origin Energy 2021, p. 254). However, OWS notes the Mahalo Development Area CSG Project (EPBC 2019/8534), determined not a controlled action on 15 May 2020, appears to be included within this proposal's documentation (APLNG 2019, p. 1; KCB 2020, Tab. 1.1, p. 3). The relationship between EPBC 2019/8534 and EPBC 2020/8856 requires clarification.

Groundwater

2. Potential impacts of the proposal to groundwater and associated groundwater-surface water interactions have been investigated by the Queensland Office of Groundwater Impact Assessment (OGIA). OGIA simulated potential impacts of three development scenarios using the 2019 version of their cumulative impact groundwater model for the Surat Cumulative Management Area (CMA) based on information provided by the proponent. The three scenarios included (a) a base case, which does not simulate any gas production, (b) cumulative impacts, including all current and proposed developments plus the proposal and (c) cumulative impacts excluding the proposal. Proposal only impacts were estimated by assessing the difference between the cumulative impact scenarios (KCB 2020, pp. 102 – 103).

    a. The proponent acknowledges that the OGIA model is regional in scale; however, also notes that the IESC 2019 factsheet recognises the impact assessment is of high quality at the regional-scale. In order to try and address this and given the lack of local-scale information and conceptualisation, the OGIA model was used to undertake an uncertainty analysis of hydraulic parameters. This provides OWS increased confidence in the area likely to be impacted and some confidence in drawdown magnitudes.

        i. KCB (2020, App. III – VII) provides site specific data used to inform the conceptualisation of the development areas. OWS notes that the OGIA model is updated at a minimum of every three years with development data, providing confidence in predicted impacts as the industry matures.

b. Assumptions and limitations of the model are provided in OGIA (2019) and summarised in KCB (2020, pp. 96 – 98). In addition, OWS notes the following.

    i. The UWIR model includes 32 regional geological faults, where OGIA considers that, although there is potential to increase connectivity with overlying aquifers at some locations, widespread connectivity is not expected (KCB 2020, pp. 63 and 91). As the proposal is located in an area identified to contain faults (KCB 2020, Fig. 5.3 and 7.3 – 7.4, p. 62 and 92 – 93), the potential influence of local faults should be considered if monitoring indicates drawdown is greater than predicted.

    ii. There are operating coal mines located in close proximity of the proposal. The proponent notes that "three open cut mines located near the Ironbark and Peat development areas… have been represented in the 2019 Surat CMA [groundwater model]; however, cumulative drawdown predictions between the operating coal mines and the proposal near the Mahalo development area are not available. OGIA is currently amending the 2019 [groundwater model] to include additional operating mines" (KCB 2020, p. 137).

    iii. Gas production in the Eastern Contact Zone (Peat Development Area) was not simulated for this proposal, and that production from this area may be undertaken in the future (KCB 2020, App. XV, p. 1).

3. The proposal is predicted to produce a total of 72.4 GL, with a peak water production rate of approximately 6 GL/year in three years between 2034 – 2039 (KCB 2020, pp. 23 – 24). The peak production rate is approximately 10% and 4% of the annual total petroleum (60 GL/year) and non-petroleum (164 GL/year) industry production in the 2019 Surat CMA area respectively (KCB 2020, p. i).

    a. Drawdown contours based on the 5th and 95th percentile estimates are provided in KCB (2020, parts 7 – 9) and predicted impacts of the proposal are discussed in response to Question 2. Drawdown is primarily predicted in the target Walloon Coal Measures in the Ironbark Development Area (>200 m), and the Walloon Coal Measures and Bandana Formation in the Peat, Spring Gully, Denison and Mahalo development areas (>200 m).

        i. Adjacent to the Ironbark Development Area, drawdown is also predicted in the Springbok Sandstone (150 – 200 m), Hutton Sandstone (50 – 100 m), Precipice Sandstone (10 – 50 m) and Durabilla Formation (10 – 50 m).

        ii. Adjacent to the Peat, Spring Gully, Denison and Mahalo development areas, drawdown is also predicted in the Cattle Creek Formation (>200 m), Springbok Sandstone (100 – 150 m), Lower Bowen (50 – 100 m), Rewan Formation (10 – 50 m), Westbourne Formation (10 – 50 m) and Durabilla Formation (10 – 50 m).

iii. Within and adjacent to the development areas, drawdown of between 0.2 – 1 m is predicted in the alluvium including in areas around Wambo and Wilkie creeks and an unnamed creek near Taroom.

iv. Water quality of geological formations is provided in KCB (2020, Tab. 5.4, pp. 69 – 71). OWS notes that the Walloon Coal Measures and Bandana Formation have a sodium concentration (50th percentile) of 1,160 mg/L and 1,470 mg/L respectively (potential impacts of salt disposal are outlined in Paragraph 8).

b. OWS notes that the proposal is predicted to result in impacts both as an individual project and cumulatively with other similar adjacent projects. The percentage contribution to cumulative drawdown is varied between proposed development area's and layers within the model. OWS notes that the areas where the proposal contributes up to 90 – 100% of cumulative drawdown include to (KCB 2020, App. XV, pp. 1 – 2): the Walloon Coal Measures in the Ironbark Development Area; Bandanna Formation in the Peat, Spring Gully and Denison development areas; Clematis Group in the Spring Gully Development Area; and Mahalo Development Area (as the groundwater model does not simulate production from surrounding developments in this area).

i. OWS does note that the predicted impact in the Precipice Sandstone, for example (KCB 2020, App. XIV, Fig. 4, p. 5), extends over a much broader area than that shown in the 2019 UWIR Figures 7-1 and 7-2 (OGIA 2019). This requires clarification.

4. Groundwater monitoring is proposed to be undertaken through the UWIR process. Whilst additional monitoring is not currently proposed (Origin Energy 2020a, p. 3), the proponent acknowledges that additional monitoring bores may become a statutory obligation and that there are existing bores within the area which may be suitable (Origin Energy 2020a, p. 28).

a. OWS also notes that APLNG is part of a Joint Industry Plan (JIP) to adaptively manage potential impacts to listed springs through their existing operations. The JIP is currently being revised to the 'Joint Industry Framework: Managing impacts to groundwater resources in the Surat Cumulative Management Area under the EPBC Act approvals' (JIF). Noting potential impacts identified in response to Question 2, the JIP and/or JIF may require updates to include this proposal should it be determined a controlled action.

5. The proponent asserts that potential impacts from subsidence are considered to be negligible in terms of impacts to water resources (KCB 2020, p. 127). This conclusion is based on previous studies in the broader area, where subsidence is predicted to be a maximum of approximately 280 mm, and monitoring at APLNG's Orana, Talinga and Condabri gas fields between 2012 and 2017 indicated that subsidence for the Walloon Coal Measures was up to 40 mm/year (mean of 8 mm/year). Further, monitoring at the

Arrow Surat Gas Project Daandine field, which also targets the Walloon Coal Measures, detected 60 mm subsidence between 2012 – 2016, although there was variability of ground movement between bores (KCB 2020, p. 45). OWS generally agrees that subsidence impacts from the proposal are likely to be minor at the regional scale, though locally impacts may be problematic and so considers that subsidence should continue to be monitored as per the EPBC 2009/4974 approval.

6. Hydraulic stimulation is proposed as part of the proposal (KCB 2020, p. 23); however, the number of wells proposed to be stimulated does not appear to be provided. Whilst OWS considers that risks are generally low if the proponent manages the process consistent with leading-practice standards:

    a. three biocides have been listed for use in the process of hydraulic stimulation: Glutaraldehyde, Methanol and Tributyl tetradecyl phosphonium chloride. EHS (2020, Tab. 9, pp. 107 – 112) outlines the chemical risk assessment of the listed substances.

        i. Although Glutaraldehyde is listed as a low risk and biodegradable chemical (EHS 2020, Tab. 11, pp. 114 - 115), EHS (2020, Tab. 9, pp. 107 – 112) listed it as ‘Very toxic to aquatic life. Toxic to aquatic life with long lasting effects. Low concern to terrestrial organisms’. The Material Safety Data sheet provided by Halliburton lists Glutaraldehyde and Methanol as Category 1 – H400 – Acute Aquatic Life Toxicity (EHS 2020, App. I, p. 510). Tetrakis (hydroxymethyl) phosphonium sulphate (THPS), used in drilling muds, is listed as having a high acute toxicity concern to aquatic organisms (EHS 2020, App. I, p. 700);

    b. a recent CSIRO (2020, within EHS 2020, p. 50) report found that most of the waters injected during stimulation operations were returned to the surface within 20 to 40 days and peak concentrations of inorganics and geogenic chemicals were also observed within the first few days of produced water (EHS 2020, p. 50). However, OWS notes not all injected waters are returned; and

    c. the proponent intends to reuse waste drilling fluids at the site, including for drilling, dust suppression, construction and operational uses. Landspraying-While-Drilling is also proposed as a beneficial use of drilling products that do not contain active biocides (EHS 2020, pp. 8 – 9). Surface runoff from rainfall may result in sprayed, dispersed waste being carried to local waterways under some scenarios.

Surface Water

7. The proponent has not conducted surface water modelling as part of this referral. However, significant impacts on surface water flows or quality are not considered likely by the proponent, as no new abstractions or discharges are planned, most waterways are ephemeral, and there is very little connectivity between groundwater and surface water (KCB 2020, pp. iii and 157).

a. OWS notes that ephemeral streams can be affected by groundwater drawdown. Groundwater flow can reduce the duration of non-flowing periods, preserve pools of water at the surface, and maintain carbon and nutrient recycling in the sediments of the streambed (Department of the Environment and Energy, 2018). Drawdown could cause increased seepage, decreased number of flow days and reduce the quality of the surrounding ecosystem.

    i. The proponent has used the Surat CMA geological model where they have not obtained local-scale information in all areas. OWS notes, however, that local ambiguities exist (KCB 2020, p. 99), where primary risks to surface water associated with drawdown in the alluvium are discussed in Paragraph 3.a.iii.

8. Details to manage produced water do not appear to be provided, except that water will be managed through existing infrastructure (KCB 2020, p. iii).

    a. The proponent should provide a water balance for the proposal to demonstrate that existing infrastructure has capacity to accommodate additional water under a range of potential climatic scenarios.

        i. Details of proposed discharges should also be provided, including for beneficial uses. OWS notes that the proponent currently has permits to discharge water, such as 10.2 ML/day (700 ML/year) into the Eurombah Creek (KCB 2020, App. V, p. 20), where it is unclear whether the proponent intends to continue these releases as part of this proposal. If discharges are proposed, including through existing operations, there may be surface water impacts.

    b. Brine and other water treatment by-products are proposed to be disposed of at a facility licenced under the EP Act (Origin Energy 2020b, p. 36). The proponent should provide a more detailed plan for brine disposal, including expected volumes of brine for disposal and measures that will be implemented to ensure brine will not contaminate groundwater and the surrounding environment over the long-term.

9. The proponent has stated that there is a small potential for erosion of stream banks due to the construction of pipelines and access paths across and near waterways (KCB 2020, p. 144).

    a. The location and routing of these constructions does not appear to be provided.

Question 2: If available in the associated documentation, please state the 95th percentile drawdown impact estimates for: number of bores/EPBC GAB Community Springs/GDEs, as well as the upper estimate of overall water extraction.

10. Estimated water extraction is discussed in Paragraph 3. Drawdown is predicted by the proponent to exceed Queensland *Water Act 2000* bore trigger thresholds in 11 and 13 bores under a proposal only and cumulative impact scenario respectively (Origin

Energy 2020a, p. 7). Following a bore impact assessment, make good provisions are proposed to mitigate impacts consistent with state guidelines (Origin Energy 2020a, pp. 25 – 26).

a. Bores predicted to be impacted by the proposal are provided in Table 1 (Origin Energy 2020a, p. 13). Up to two bores are noted as drawing water from within a sandstone aquifer, with the remaining using water from either the Rewan Formation, Walloon Coal Measures or Bandanna Formation (Origin Energy 2020a, p. 7; Origin Energy 2021, p. 12) for either town water supply (two bores in the Walloon Coal Measures) or stock and domestic purposes (KCB 2020, pp. 111 – 112). Six of these bores appear to be within, or in close proximity to, the Mahalo site (Origin Energy 2020a, Fig. 3, p. 8).

    i. However, as part of the uncertainty analysis, up to 34 bores are predicted by the proponent to exceed drawdown triggers under the 95th percentile results for the proposal only scenario, whilst there is a decrease in the number of bores to three predicted under the 5th percentile results (KCB 2020, p. 112). Clarification is required of this statement as it relates to the percentile predictions discussed within Paragraph 3.

b. As part of the bore assessment, there are a number of bores screened across multiple stratigraphic units, and that for the purpose of this assessment, one stratigraphic unit was assigned per bore (either the unit closest to the gas target or the deepest layer if the bore is screened across multiple layers within the gas target) (KCB 2020, p. 42). Given the proponent has committed to bore assessments and implementing make good provisions, OWS agrees with this approach.

11. There are no EPBC Act-listed springs occurring within the proposal's development area. However, there are four EPBC Act-listed springs located within 50 km of the area, and these form part of the community of native species dependent on natural discharge of groundwater from the Great Artesian Basin. These four springs include the Cockatoo, Lucky Last, Yebna2 and Dawson River 8 complexes (Origin Energy 2021, p. 74).

    a. The Cockatoo spring complex is associated with the Precipice Sandstone aquifer, and the outcropping formation off the spring in the Evergreen Formation aquitard (Origin Energy 2021, p. 74). The spring is predicted to experience drawdown of approximately 0.02 m because of the proposal; however, the cumulative drawdown when other factors are accounted for increases the predicted drawdown to 0.4 m. Drawdown greater than 0.2 m is expected within 8 to 12 years of commencement of the project.

    b. The source of the Lucky Last complex is interpreted to be either the Hutton Sandstone, Boxvale Sandstone or Evergreen Formation (Origin Energy 2021, p. 74). The spring is predicted to experience project specific

drawdown of 0.03 m; however, the cumulative drawdown is predicted to be 0.3 m. Drawdown greater than 0.2 m is predicted in less than 4 years.

c. The Yebna 2 complex is associate with the Precipice Sandstone and the Evergreen Formation (Origin Energy 2021, p. 74). The spring is predicted to experience project specific drawdown of 0.01 m; however, the cumulative drawdown is predicted to be 0.6 m. Drawdown greater than 0.2 m is expected within 1 to 3 years (Origin Energy 2021, p. 228).

d. These drawdown values, assumed to be the 95th predictions, are in exceedance of the 0.2 m Queensland *Water Act 2000* spring trigger threshold. However, due to the proposal's small contribution to the overall cumulative impact, the proponent states that it will not have a significant impact to the EBPC Act-listed springs (Origin Energy 2021, p. 13).

    i. OWS notes that Santos Pty Ltd are the responsible tenure holders for the management of these spring complexes as part of the Surat CMA (Origin Energy 2021, p. 228). Consequently, updates to the Surat CMA UWIR and JIP (refer to Paragraph 4.a.) may be required for this proposal.

12. There are also a number of non-EPBC Act listed spring complexes and watercourse springs that exceed the 0.2 m drawdown trigger threshold based on predicted cumulative drawdown. This includes the 311, Spring Rock Creek, Barton, Lonely Eddie, and Wambo spring complexes, as well as 21 watercourses (Origin Energy 2021, pp. 13 – 14).

    a. Specific impacts of this drawdown do not appear to be discussed, as these areas exceeded relevant drawdown triggers prior to predicted impacts of the proposal (KCB 2020, p. 135). As these springs are considered matters of National Environmental Significance under the EPBC Act, potential impacts should be investigated. Updates to the Surat CMA UWIR and JIP (refer to Paragraph 4.a.) may be required for this proposal.

    b. Two nationally important wetlands are also located within 55 km of the Ironbark Development Area. The Gums Lagoon is located approximately 14 km south of the proposal, within an adjacent catchment of the project. Lake Broadwater is located more than 50 km upstream of the project (KCB 2020, App. III, p. 14). OWS considers that risks to the Gums Lagoon appear low; however, notes that Lake Broadwater appears to be located within an area where drawdown is predicted to be between 0.2 – 1 m (KCB 2020, parts 7 – 9). Specific impacts of this drawdown do not appear to be discussed.

13. Four EPBC Act listed threatened water-dependant ecological communities were identified as likely to occur within the area (Origin Energy 2021, p. 127).

    a. Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions (Endangered).

i. The Coolibah Black Box TEC has been verified within the Spring Gully Development Area. Because Coolibah Black Box is found on swamp margins, ephemeral wetlands and stream levees, changes to hydrology within the region is considered likely have a negative impact to this community (Origin Energy 2021, p. 137). There is approximately 2,198 ha of potential Coolibah Black Box TEC with the project area, with 133 hectares of this likely to experience a significant residual impact (Origin Energy 2021, p. 138).

b. Poplar Box Grassy Woodland on Alluvial Plains (Endangered).

i. This TEC was verified within the Mahalo, Spring Gully, and Denison development areas. Changes to hydrology and salinization are considered likely to have significant negative impact on the community (Origin Energy 2021, p. 141). There is approximately 22,777 hectares of potential Coolibah Black Box TEC with the project area, with 1,016 hectares of this likely to experience a significant residual impact (Origin Energy 2021, p. 142).

c. Weeping Myall Woodlands (Endangered).

i. The Weeping Myall Woodlands have been verified within the Mahalo, Spring Gully and Denison development areas (Origin Energy 2021, p. 145) and are commonly associated with Gilgai's, which provide habitat for the Ornamental snake (*Denisonia maculate*) and the Australian painted snipe (*Rostratula australis*), both of which are threatened fauna known to occur in the proposal's development area.

d. Community of native species dependent on the natural discharge of groundwater from the Great Artesian Basin (Endangered).

i. This TEC was found to present within the Spring Gully Development Area, and given its high level of ecological significance, this area has been declared a no-go zone (Origin Energy 2021, p. 131). This area is commonly associated with Shiny-leaved Ironbark (*Eucalyptus virens)* which is a threated flora species (Origin Energy 2021, p. 147).

e. Where the proposal is considered likely to have a negative impact on the above listed TEC's, such as in the areas of potential drawdown outlined in Paragraph 3.a., the proponent should implement site-specific monitoring, as well as develop a management plan and an ecohydrological model. Offsets commensurate with the areas most affected should also be provided if impacts cannot be mitigated.

14. An assessment looking to ascertain if favourable conditions for stygofauna exists within each development zone was undertaken.

a. Within the Mahalo Development Area favourable conditions were found to exist within the alluvium, Cenozoic Sediments, and Basalt aquifers. The Cenozoic sediments are predicted to experience a maximum predicted drawdown of up to 0.6 m, while the basalt in predicted to experience a maximum predicted drawdown of up to 1.2 m. These numbers represent a reduction of between 2% and 12% in saturated thickness, and as such the proponent claims there will not be a significant impact to stygofauna (Origin Energy 2021, p. 220).

    i. However, that no physical surveying has been undertaken to determine the composition of stygofauna communities within this area. Surveying should be undertaken to increase confidence that drawdown will not have a significant impact.

b. The proponent considers that it is unlikely stygofauna are present within the targeted coal seams of the Denison Development Area. Given that the targeted Bandanna Formation is located at depths between 215 m and 865 m, and stygofauna are rarely found at depths greater than 100 m below ground level (mbgl) (KCB 2020, p. 41; KCB 2020, App. VI, p. 85), OWS agrees with this assessment.

c. The proponent considers that it is unlikely that stygofauna will be present within the targeted coal seams in the Spring Gully Development Area. The targeted Bandanna Formation is located at depths between 170 m and 3,355 m, while the targeted Reids Dome Beds are located at depths between 730 m and 950 m. Given the depths of the coal seams and that stygofauna are rarely found at depths greater than 100 mbgl (KCB 2020, p. 41; KCB 2020, App. V, p. 118), OWS agrees with this assessment.

d. The proponent considers that it is unlikely stygofauna are present within the targeted coal seams of the Peat Development Area. The targeted Baralaba Coal Measure is located at depths between 605 m and 1,380 m, and have an average EC of 6,303 µS/cm. Given the depths of the coal seams and that stygofauna are rarely found at depths greater than 100 mbgl (KCB 2020, p. 41; KCB 2020, App. IV, p. 77), OWS agrees with this assessment.

e. The proponent considers that it is unlikely stygofauna are present within the targeted coal seams of the Ironbark Development Area. Given that the targeted Walloon Coal Measure is located at depths between 560 m and 1,310 m and that stygofauna are rarely found at depths greater than 100 mbgl (KCB 2020, p. 41; KCB 2020, App. III, p. 99), OWS agrees with this assessment.

15. There are no Ramsar wetlands of international importance within the proposal's area. However, the Ironbark Development Area is located within the upstream catchment of the Narran Lake Nature Reserve. The proponent states that the project is not expected to significantly modify the hydrology of the Reserve given its distance from the proposal site (Origin Energy 2021, p. 72). Given the Reserve is located approximately 400 km downstream of the proposal, OWS agrees with the proponent's assessment.

Water Assessment Information Portal (WAIP): for more information on water-related environmental impacts, please see the WAIP (accessible on the intranet via Home ⇨ Themes ⇨ Water ⇨ Water Assessment Information Portal).

References

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ss. 22(1)(a)(ii), 42(1)

s. 42(1)

s. 42(1)

ss.22(1)(a)(ii), 42(1)

ss. 22(1)(a)(ii), 42(1)

ss. 22(1)(a)(ii), 42(1)

Submission on 2020/8856 Australia Pacific LNG/Energy Generation and Supply (non-renewable)/Surat and Bowen basins/Queensland/Gas Supply Security Project

Submitted by:

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We request all the above personal information to be kept confidential by the Department.

Please contact s. 47F(1) at s. 47F(1) regarding any questions on the submission.

Referrals Gateway
Assessment & Governance Branch
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Email: epbc.comments@awe.gov.au

10 February 2020

Dear Sir/Madam

Submission on 2020/8856 Australia Pacific LNG/Energy Generation and Supply (non-renewable)/Surat and Bowen basins/Queensland/Gas Supply Security Project

1. We would like to thank the Department of Agriculture, Water and the Environment (**Department**) for consulting on the Referral by Australia Pacific LNG Pty Ltd (**APLNG**) to expand the Asia Pacific LNG Project by developing gas field infrastructure in existing petroleum tenures within the Surat and Bowen basins. (**Proposed Action**). The Proposed Action covers an approximate area of 476,492 hectares and is located in central and south west Queensland within the Surat and Bowen Basins (**Project Area**).

2. We do not support the use of the referral process under Chapter 4, Part 7 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Act**) as a substitute for the robust assessment of impacts under Chapter 4, Part 8 of the EPBC Act and referral of large-scale coal seam gas projects to the IESC.

3. Using the referral process for this purpose undermines the role of the statutory role of the IESC in assessing the impacts of coal seam gas projects under the EPBC Act. It also undermines public confidence in the integrity of the Commonwealth environmental regulatory framework because the referral process under Chapter 4, Part 7 of the EPBC Act was never intended by the legislature to function as an alternative assessment process.

4. In considering the likely impacts of the Proposed Action on water resources, we consider that the Minister of the Environment should have careful regard to the adequacy of the information submitted by APLNG with regard to the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (**IESC**)'s requirements as set out in the *Information guidelines for proponents preparing coal seam gas and large coal mining development proposals* (**IESC Guidelines**). [1]

5. This submission focuses on the question of whether the Proposed Action is likely to have a significant impact on water resources. We submit that, given the nature and scale of the Proposed Action, the Minister should decide that the Proposed Action:

    a. is a matter that should be referred to the IESC under s 131AB of the EPBC Act;

    b. is a controlled action under s 75(1) of the EPBC Act and that the relevant controlling provisions for the purposes of s 75(2) are ss 18 and 18A (listed threatened species or

[1] *Information guidelines for proponents preparing coal seam gas and large coal mining development proposals* 2018 (Cth).

endangered communities), ss 20 and 20A (listed migratory species) and ss 24D and 24E (water resources); and

c. should be assessed by public environment report or environmental assessment.

6. Additionally, we call for:

a. The data and modelling by OGIA for the Proposed Action to be made available to the public; and

b. The precautionary principle to be applied by the Minister regarding impacts to migratory birds and shorebirds until the nature and extent of impacts to water resources can be determined with sufficient certainty due to the presence of suitable habitat for migratory birds and shorebirds on site.

Contents

1. Background

8. The Proposed Action will involve the construction and operation of infrastructure that proposes to extract significant volumes of water estimated at 6,000,000,000 litres of water per year at peak production rates.[2]

9. The Project Area comprises of 5 main development areas – Ironbark, Peat, Spring Gully, Denison and Mahalo. These are shown in the Figure 1 below.[3]

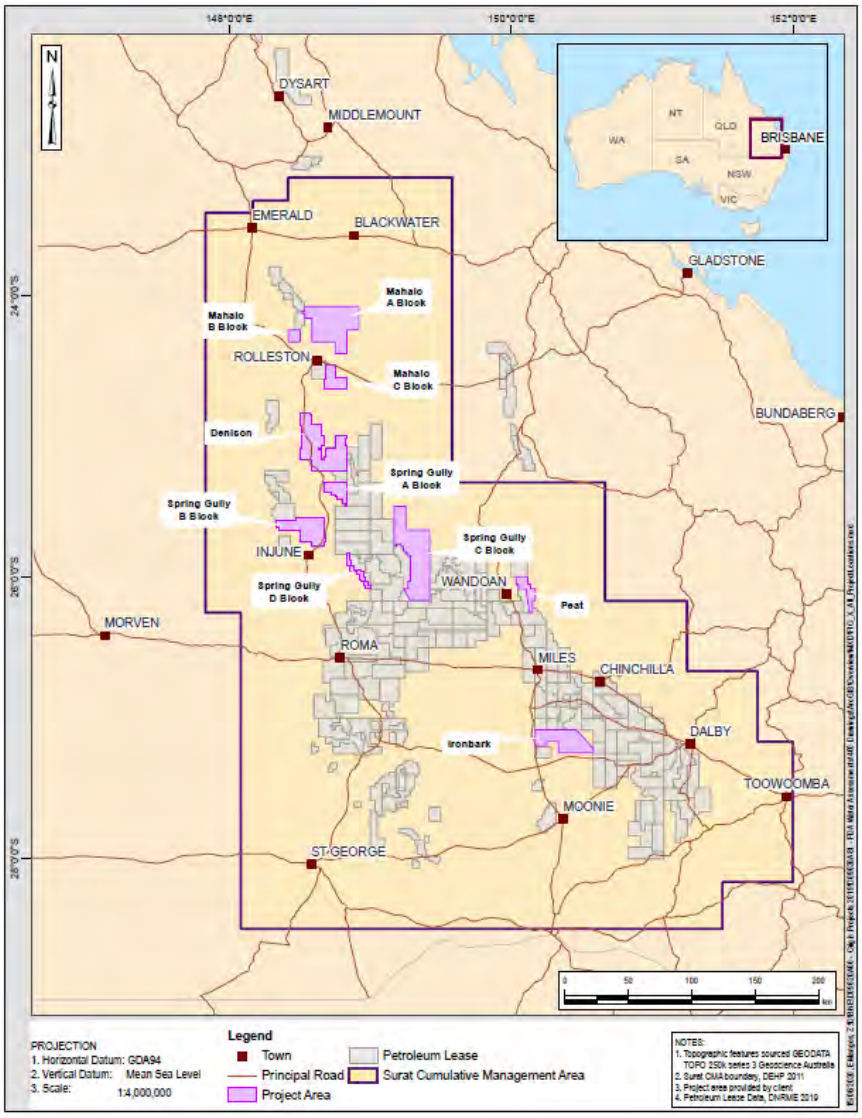

Figure 1: Gas Supply Security Project Areas

[2] Klohn Crippen Berger "Origin Energy Gas Supply Security Project Water Assessment Report" (December 2020) i.
[3] Ibid 2.

2. Statutory Context

10. Any action involving coal seam gas or large coal mining development with a significant impact on water resources must not be taken unless that action has been referred and approved under the EPBC Act.

11. Sections 24D and 24E of the EPBC Act are found within Subdivision FB, *Protection of water resources from coal seam gas development and large coal mining development*, within Part 3 of Chapter 2, *Protecting the environment*. Section 24D provides:

> ***"24D Requirement for approval of developments with a significant impact on water resources***
>
> *(1) A constitutional corporation, the Commonwealth or a Commonwealth agency must not take an action if:*
>
> *(a) the action involves:*
>
> *(i) coal seam gas development; or*
>
> *(ii) large coal mining development; and*
>
> *(b) the action:*
>
> *(i) has or will have a significant impact on a water resource; or*
> *(ii) is likely to have a significant impact on a water resource.*
>
> *Civil penalty:*
>
> *(a) for an individual—5,000 penalty units;*
>
> *(b) for a body corporate—50,000 penalty units.*
> *…*
>
> *(4) Subsections (1) to (3) do not apply to an action if:*
>
> > *(c) there is in force a decision of the Minister under Division 2 of Part 7 that this section is not a controlling provision for the action and, if the decision was made because the Minister believed the action would be taken in a manner specified in the notice of the decision under section 77, the action is taken in that manner…"*

12. Section 24D(1)(a) contains what is subsequently referred to herein as "the first limb" of the water trigger, while section 24D(1)(b) is referred to as the "second limb".

13. The *Significant Impact Guidelines 1.1 Matters of National Environmental Significance*[4] (**Significant Impact Guidelines 1.1**) provide the following guidance on the interpretation on the assessment of "significant impact" in s 24D(1):

[4] *Significant Impact Guidelines 1.1 Matters of National Environmental Significance* 2013 (Cth).

*"**What is a significant impact?***

A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts. You should consider all of these factors when determining whether an action is likely to have a significant impact on matters of national environmental significance."

When is a significant impact likely?

To be 'likely', it is not necessary for a significant impact to have a greater than 50% chance of happening; it is sufficient if a significant impact on the environment is a real or not remote chance or possibility.

If there is scientific uncertainty about the impacts of your action and potential impacts are serious or irreversible, the precautionary principle is applicable. Accordingly, a lack of scientific certainty about the potential impacts of an action will not itself justify a decision that the action is not likely to have a significant impact on the environment."[4]

3. Water Assessment

14. The groundwater modelling of this project was performed by the Queensland Office of Groundwater Impact Assessment (**OGIA**) using the 2019 Underwater Water Impact Report (**UWIR**) for the Surat Cumulative Management Area (**CMA**). The results of this modeling were used by Klohn Crippen Berger (**KCB**) to assess impacts on water resources.

15. In the Water Assessment (**WA**) for the Proposed Action[5], KCB identified the following key groundwater impacts:

    a. impacts to groundwater dependent ecosystems (**GDEs**);

    b. impacts to flow rates and areas of spring complexes;

    c. impacts to water levels in bores; and

    d. reduction in surface water flows.

16. Based on its analysis of the Proposed Action, KCB concluded that "the Project will not have a significant impact on water resources."[6]

17. We note that KCB's analysis of water impacts was found by the Office of Water Science (**OWS**) to be significantly deficient with provision of adequate information for the purpose of enabling the Department's consideration of potential impacts on water resources in previous cases such as the Mahalo CSG project. We submit that the same issues arise in the current Referral such as the lack of local scale data, the lack of baseline groundwater monitoring data

[5] Klohn Crippen Berger "Origin Energy Gas Supply Security Project" (December 2020).
[6] Ibid iv.

and lack of consideration of impacts to GDEs. These deficiencies are further discussed in the following sections.

4. Information and investigation deficiencies

18. We are concerned with the lack of data and investigation of key issues by APLNG and KCB in relation to groundwater monitoring bores and impacts to stream complexes. These deficiencies are discussed in further detail below.

4.1 2019 Surat CMA UWIR

19. KCB based its analysis of drawdown from the project on OGIA's 2019 Surat CMA UWIR. However, OGIA's groundwater model is a regional scale model and limited in its ability to predict impacts at a local scale. While OGIA's monitoring includes uncertainty analysis scenarios, it does not replace the need for local scale data or monitoring and does not provide the requisite level of confidence that local scale differences in hydraulic parameters have been considered when assessing groundwater impacts.

20. Further, KCB's assessment lacks consideration of cumulative impacts to water resources because the 2019 Surat CMA UWIR does not include coal mines located within the Surat and Clarence-Moreton Basins.[7] It is also unlikely to involve additional projects that have been proposed since the 2019 Surat CMA UWIR was published.

4.2 Lack of monitoring bores

21. The IESC checklist requires the following information:

> *"Provide data to demonstrate the varying depths to the hydrogeological units and associated standing water levels or potentiometric heads, including direction of groundwater flow, contour maps, and hydrographs. All boreholes used to provide this data should have been surveyed."*[8]
>
> *"Provide sufficient data on physical aquifer parameters and hydrogeochemistry to establish pre-development conditions, including fluctuations in groundwater levels at time intervals relevant to aquifer processes."*[9]
>
> *"Provide hydrochemical (e.g. acidity/alkalinity, electrical conductivity, metals, and major ions) and environmental tracer (e.g. stable isotopes of water, tritium, helium, strontium isotopes, etc.) characterisation to identify sources of water, recharge rates, transit times in aquifers, connectivity between geological units and groundwater discharge locations."*[10]

[7] KCB, above n5, 128.
[8] IESC, above n1, 16.
[9] IESC, above n1, 19.
[10] IESC, above n1, 16.

22. The use of groundwater monitoring bores is fundamental to assess baseline conditions in key aquifers. Groundwater bores should have been placed in all geological units in the project area. However, there is a significant lack of monitoring bores in the Project Area. For example:

    a. only two groundwater monitoring bores were present in the Ironbark development area (Figure 2 below).;

    b. only one groundwater monitoring bore was present in the Peat Development Area (Figure 3 below); and

    c. only one groundwater monitoring bore was present in the Denison Development Area (Figure 4 below).

23. The lack of replicate sample sites for any of these areas is an inadequate basis upon which to provide a sufficient level of confidence in predicted impacts. Replication requires an absolute minimum of three samples per area, and where areas are extensive, local variation requires sampling of each of those variations.

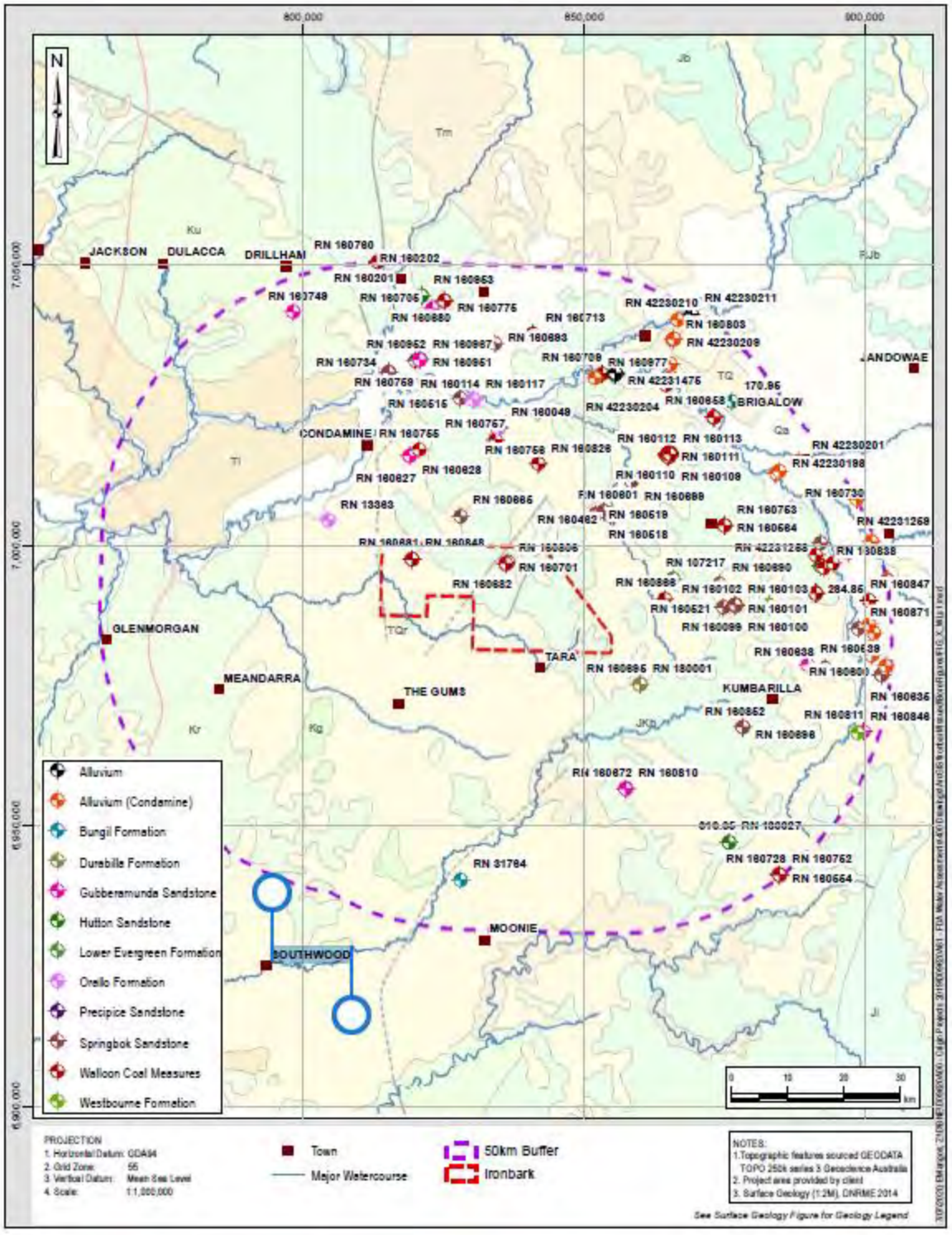

Figure 2: Groundwater monitoring bores in Ironbark Development Area[11]

[11] KCB, above n5, III-49.

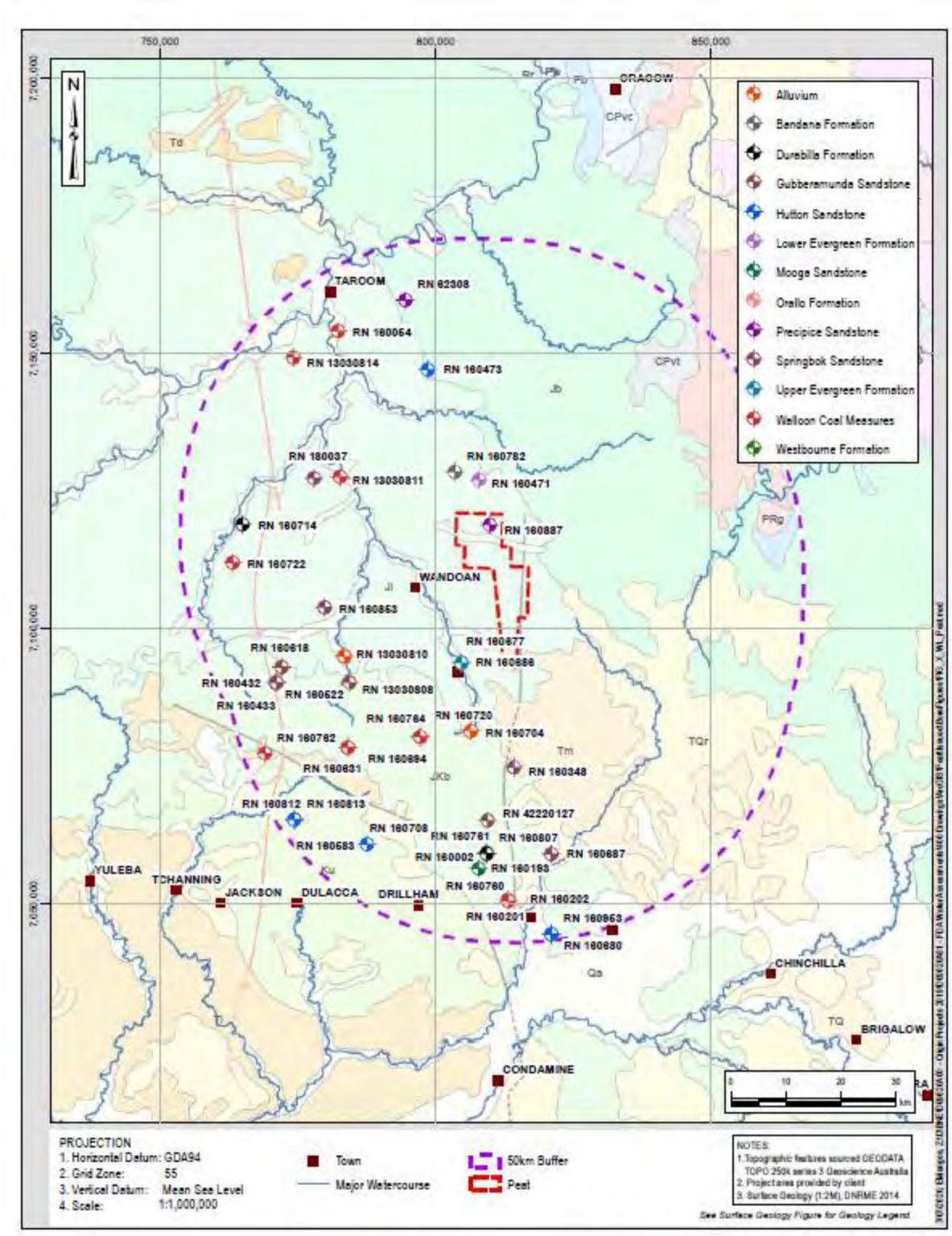

Figure 3: Groundwater monitoring bores in Peat Development Area[12]

[12] KCB, above n5, IV-44.

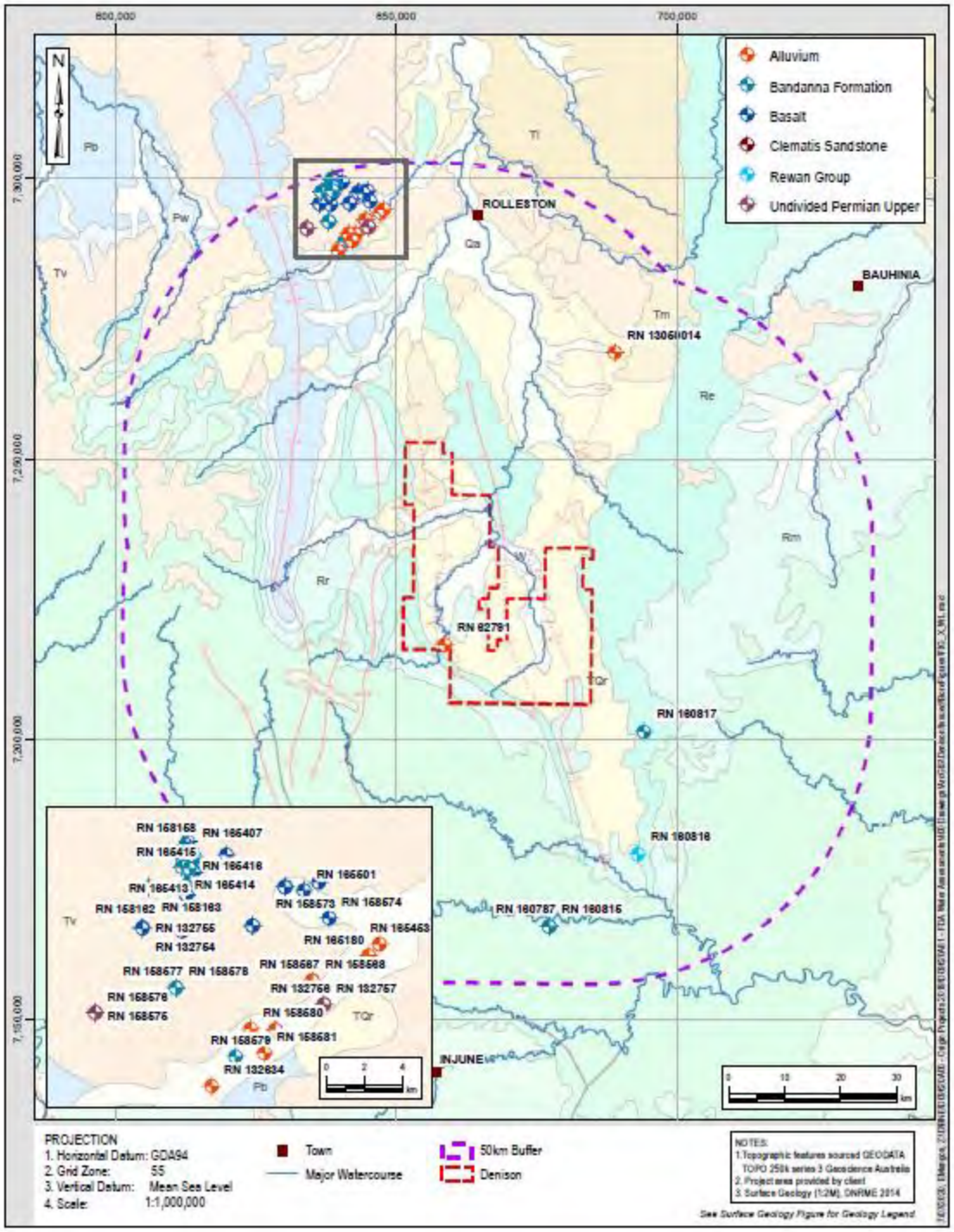

Figure 4: Groundwater monitoring bores in the Denison Development Area[13]

[13] KCB, above n5, VI-46.

4.3 Lack of localised information and investigation regarding faults

24. The IESC Guidelines require the following information to be provided:

    "Define and describe or characterise significant geological structures (e.g. faults, folds, intrusives) and associated fracturing in the area and their influence on groundwater – particularly groundwater flow, discharge or recharge.

    – Site-specific studies (e.g. geophysical, coring/wireline logging etc.) should give consideration to characterising and detailing the local stress regime and fault structure (e.g. damage zone size, open/closed along fault plane, presence of clay/shale smear, fault jogs or splays).

    – Discussion on how this fits into the fault's potential influence on regional-scale groundwater conditions should also be included."

25. Several faults are present within and close vicinity the project area. These faults create the possibility of enhanced connectivity between deep and shallow aquifers. The faults may also be important controls on the occurrence of springs in the region.

26. The information and analysis by KCB of significant geological structures and associated fracturing and their influence on groundwater are inadequate to meet IESC requirements. While the 2019 Surat CMA UWIR provides a broad overview of the characteristics of faults in the area, any conclusions regarding connectivity by APLNG/KCB are highly speculative without:

    a. analysis of water level data on either side of the faults;

    b. direct sampling of geologic material; and

    c. hydrochemical analysis of groundwater in the vicinity of the faults.

27. The lack of appropriate data and analysis regarding faults was identified as a substantive deficiency in KCB's assessment of impacts in the Mahalo Development Area by the Office of Water Science and Professor Matthew Currell in EPBC Referral 2019/8534. To address this deficiency, KCB was required to conduct additional investigations including:

    a. site specific resource drilling and seismic surveys to interpret the extent and characteristics of the Rewan Group;

    b. analysis regarding the hydraulic connection across the Rewan Group based on groundwater levels from paired monitoring bores screened within hydrostratigraphic units above and below the Rewan Group; and

    c. analysis regarding the connectivity values of the Rewan Group from various approved development projects within the vicinity of the project area.

28. It is submitted that, consistent and best practice regulation requires, at minimum, the information and analysis specified in paras 22(a)-(c) and 23(a)-(c) above.

29. In particular, we are concerned about the lack of information regarding:

a. Burunga Fault and the Cockatoo Fault in the Peat Development Area – We note that the throw of the Burunga Fault is significant and ranges between 100m- 600m. Further, the absence of the Rewan Group aquitard in the project area to the east of the Burunga Fault has given rise to a "potential connection between the Precipice Sandstone aquifer and the underlying Baralaba Coal".[14] The WA provides:

> "*As reported in the 2019 UWIR (OGIA 2019b), there is currently insufficient data to assess the degree of connectivity between the Precipice Sandstone and Baralaba Coal Measures. The 2019 UWIR model conservatively assumes that the Precipice Sandstone and Bandanna Formation are in direct contact with one another in the Eastern Contact Zone."*[15]

b. Merivale and Bullaroo faults in the Denison Development Area- We note that the Merivale fault has caused significant displacement (~240m) of Clematis Group, Rewan Group, Bandanna Formation and lower Bowen Basin units.

c. Undulla Nose in the Ironbark Development Area – We note that "there is an increased intensity of fracturing around the Undulla Nose. In addition, coal measures within the Undulla Nose are observed to have higher permeability due to the high density of faulting, facilitating flow in the horizontal plane".[16]

4.4 Lack of localised information and investigation regarding impacts to GDEs

30. The IESC Guidelines require the following information to be provided:

> "*Identify water-dependent assets, including:*
>
> *– water-dependent fauna and flora and provide surveys of habitat, flora and fauna (including stygofauna) (see Doody et al. 2019).*
>
> *– public health, recreation, amenity, Indigenous, tourism or agricultural values for each water resource."*
>
> "*Estimate the ecological water requirements of identified GDEs and other water-dependent assets (see Doody et al. 2019)."*
>
> *"Identify the hydrogeological units on which any identified GDEs are dependent (see Doody et al.2019)"*
>
> *"Provide an outline of the water-dependent assets and associated environmental objectives and the modelling approach to assess impacts to the assets"*

[14] KCB, above n5, IV-41.
[15] KCB, above n5, IV-42.
[16] KCB, above n5, III-42.

"Describe the conceptualisation and rationale for likely water-dependence, impact pathways, tolerance and resilience of water-dependent assets. Examples of ecological conceptual models can be found in Commonwealth of Australia (2015)."[17]

31. APLNG/KCB provided inadequate information to characterize hydrogeological conditions within the project area, including bores along river areas to confirm the nature and extent of alluvium and associated groundwater levels and quality. For example, drawdown between 0.2 – 1 m is projected for the Mahalo Development Area in the Alluvium and Basalt Layers in the vicinity of Humboldt Creek (Figures 5 and 6 below). Despite projected drawdown and the presence of GDEs by Humboldt Creek (Figure 7 below):

    a. no monitoring bores were placed in the Humboldt Creek Alluvium;

    b. no monitoring bores were placed in the Humboldt Creek Cenozoic Sediments;

    c. no monitoring bores were placed in the Humboldt Creek Basalt; and

    d. no monitoring bores were placed in the Humboldt Creek Rewan or Bandanna Formations.

32. We note that the lack of basic monitoring regarding hydrogeological conditions in the project areas along rivers and streams is unacceptable and APLNG/KCB's assertions regarding the lack of impacts to GDEs is not supported by the evidence it has provided.

[17] IESC, above n1, 22.

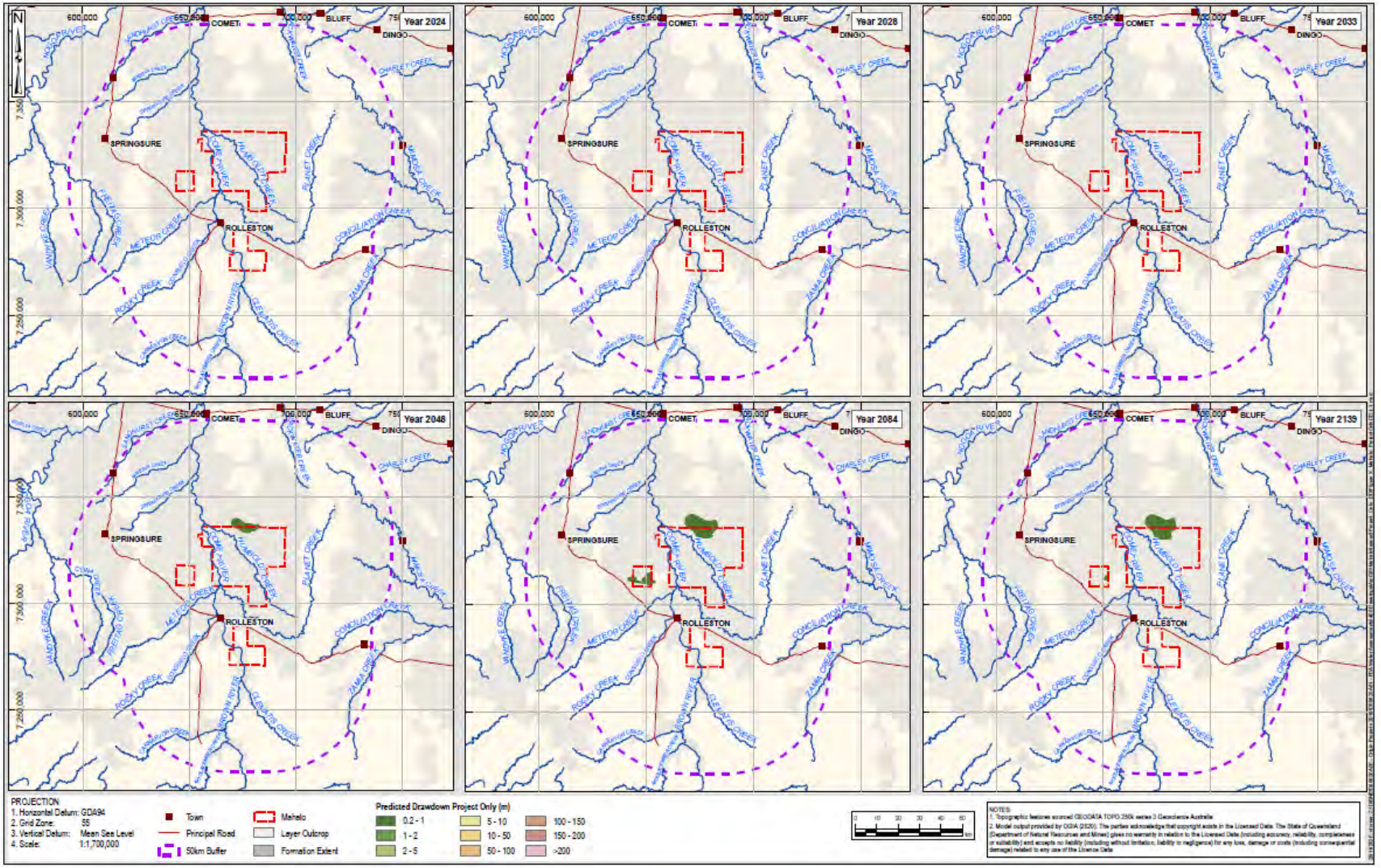

Figure 5: Project Only Scenario Drawdown for Model Layer 1 (All Alluvium and Basalt) – Mahalo Development Area[18]

[18] KCB, above n5, x92

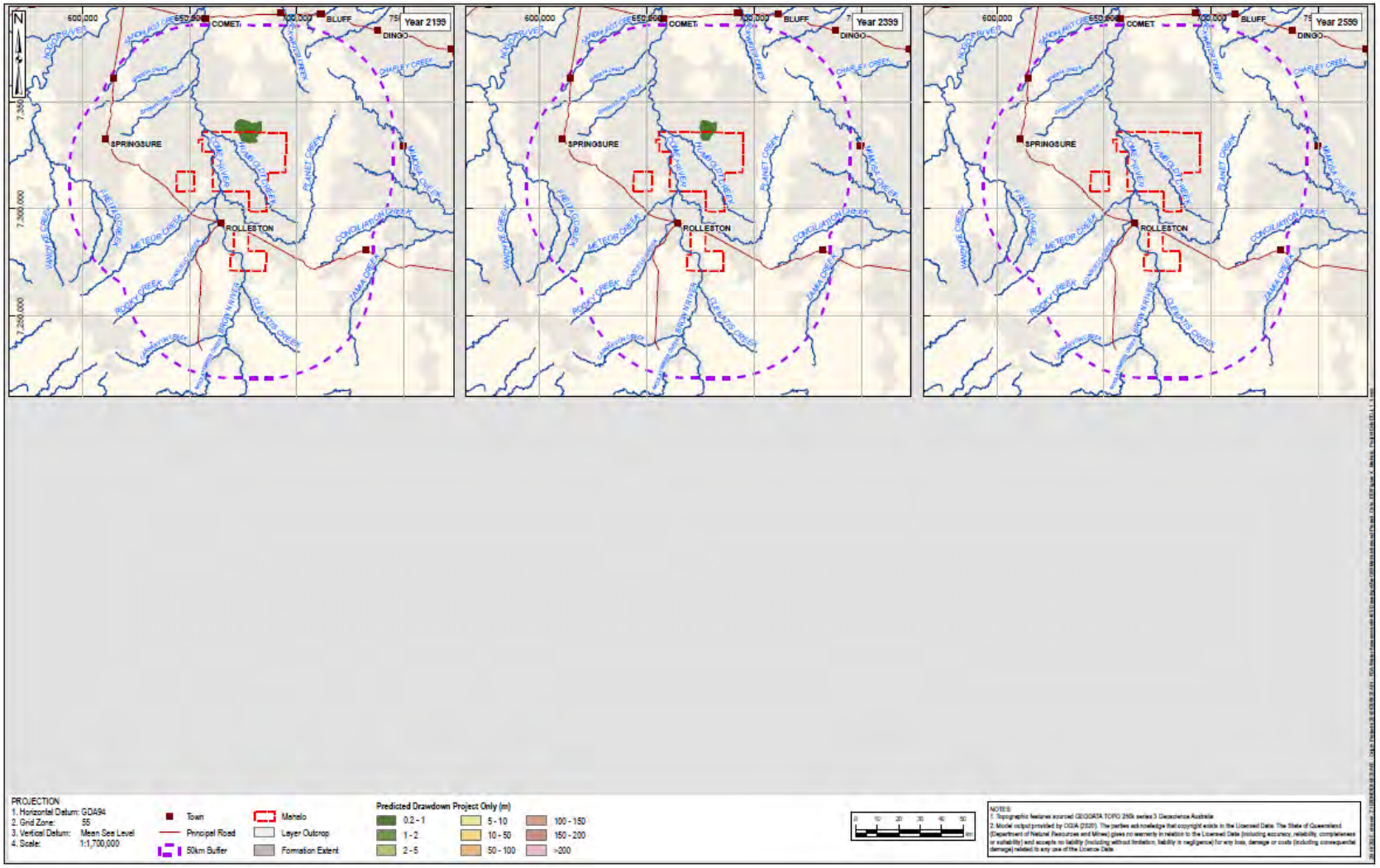

Figure 6: Project Only Scenario Drawdown for Model Layer 1 (All Alluvium and Basalt) – Mahalo Development Area[19]

[19] KCB, above n5, x93

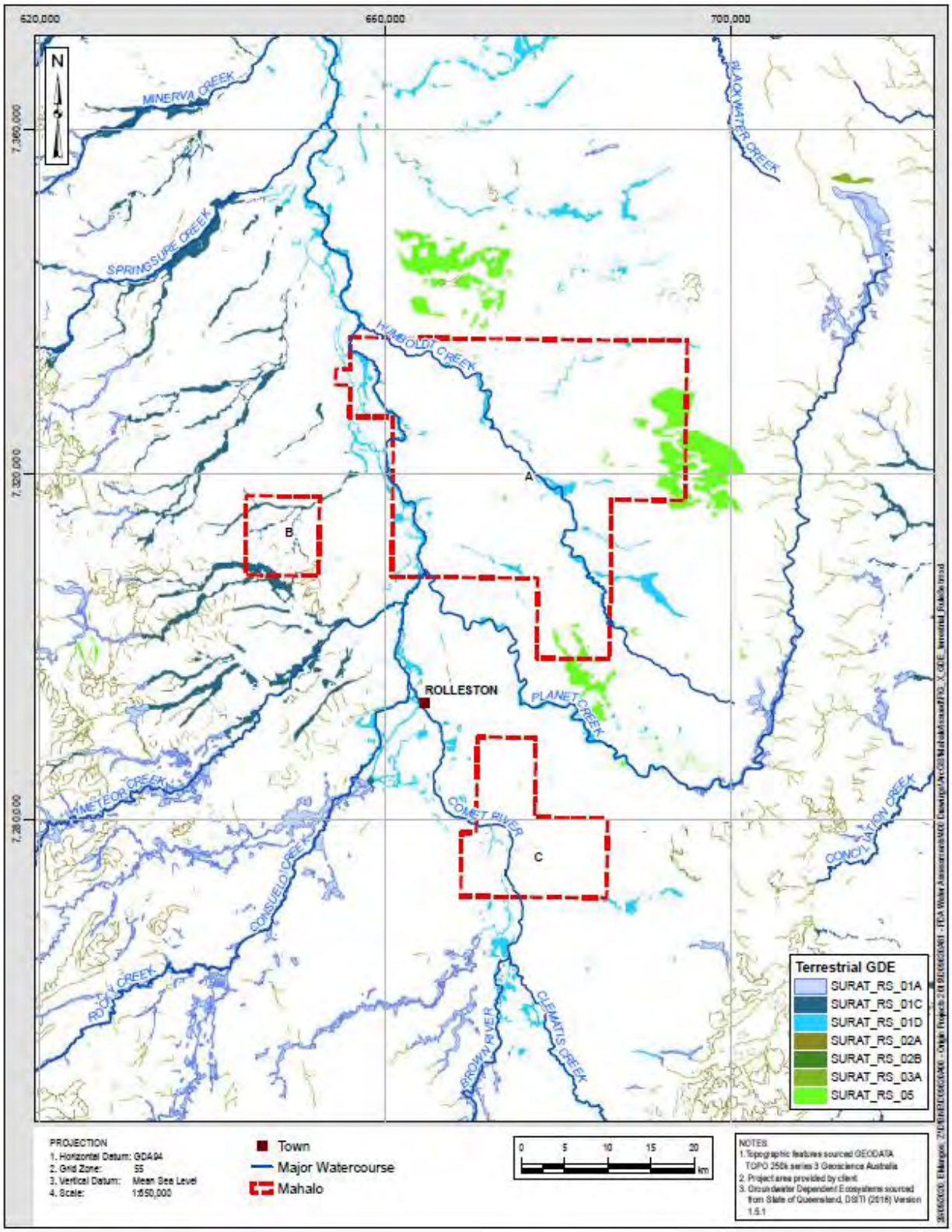

Figure 7: Potential GDEs in the vicinity of the Mahalo Development Area

5. Long term impacts to groundwater levels

33. While the 2019 Surat CMA UWIR does not replace the need for local-scale information and analysis, it is a useful tool for predicting impacts on a regional scale. According to KCB, the 2019 Surat CMA UWIR incorporates the Proposed Action. On this basis, we submit that it is likely that the Proposed Action will have a significant impact on water resources because it will result in significant "long term affected areas", which are defined in the 2019 Surat CMA UWIR as:

> "*A **Long-term Affected Area** (LAA) is defined in the Water Act as an aquifer area within which water levels are predicted to fall by more than the trigger threshold at any time in the future, due to water extraction by petroleum tenure holders. A water bore that is accessing water from the LAA of an aquifer is an LAA bore. In a multi-layered aquifer system such as the GAB, LAAs may partially overlap."*[20]

34. The term "bore trigger threshold" is defined as:

> "***bore trigger threshold** is a reference to a decline in the water level in an aquifer, defined in the Water Act as five metres for consolidated aquifers (such as sandstone) and two metres for unconsolidated aquifers (such as alluvium)."*[21]

35. The 2019 Surat CMA UWIR indicates that the Proposed Action will result in significant long-term drawdown to aquifers, in particular to Springbok Sandstone, which directly overlies the Walloon Coal Measures and the Walloon Coal Measures. In particular, expected impacts are described as follows:

    a. Springbok Sandstone –

    > "*Impacts of more than 5 m are expected in the long term across much of the planned CSG production area. While the number of water bores likely to be affected in the long term has also increased, around half of the LAA bores are likely to experience an impact of less than 15 m."*[22]

    b. Walloon Coal Measures –

    > "*As would be expected, the time taken for groundwater levels to recover is related to the magnitude of the maximum drawdown. Groundwater levels in the Walloon Coal Measures in areas located close to the edge of the predicted LAA are expected to recover within five years. Conversely, groundwater levels within CSG production areas may take more than 1,000 years to fully recover. Predictions for the Walloon Coal Measures suggest that around 25% of impacted bores would recover to within 5 m levels in 250 years and around 75% of bores in 1,000 years. The current predicted LAA for the Walloon Coal Measures is larger than previously predicted, particularly towards areas where the formation is present at the surface or overlain by the Condamine Alluvium and the Main Range Volcanics. This is due*

[20] 2019 Surat CMA UWIR 93.
[21] 2019 Surat CMA UWIR 93.
[22] 2019 Surat CMA UWIR 101.

to the combined effects of revised geological mapping (suggesting the Main Range Volcanics is less extensive than previously mapped) and generally lower modelled permeabilities. In combination, these two changes reduce the volume of water drawn from adjacent formations, resulting in CSG extraction impacts within the Walloon Coal Measures spreading further east than previously predicted."[23]

36. Figure 8 below shows LAAs that within and around the vicinity of the project area.

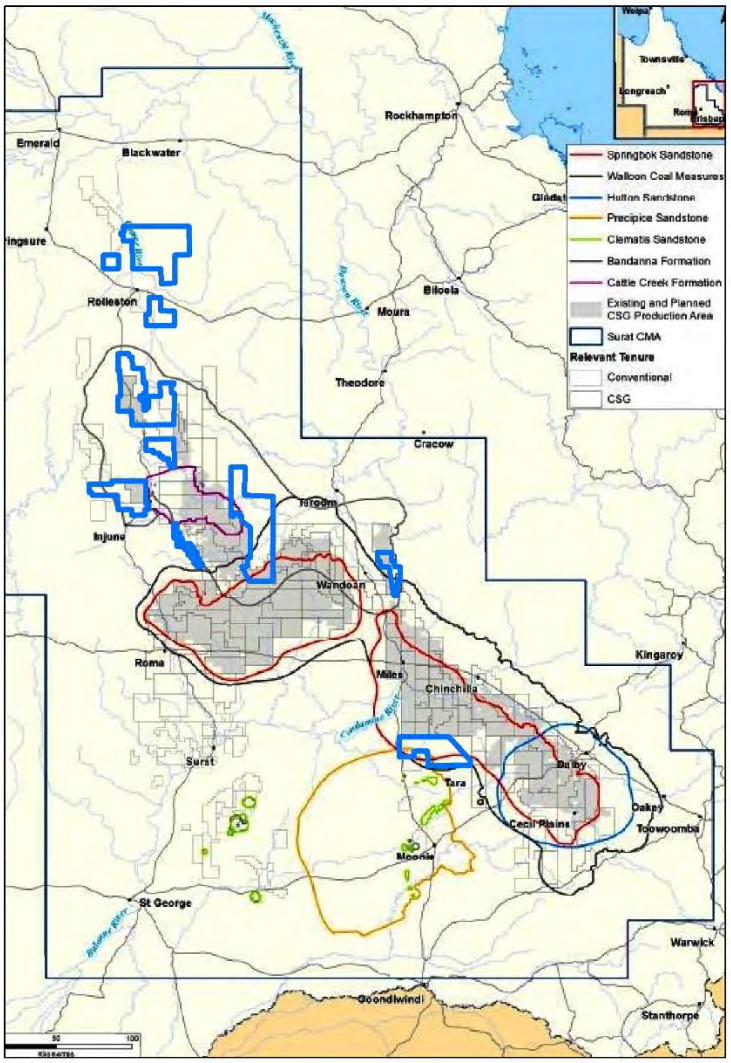

Figure 8: Extent of Long Affected Areas in the vicinity of the project area[24]

37. We also note that further information is required to support APLNG/KCB's assessment of likely impacts to groundwater users. Although the APLNG/KCB asserts that "13 bores are predicted to experience drawdown in exceedance of the Water Act (Qld) bore trigger

[23] 2019 Surat CMA UWIR 101.
[24] 2019 Surat CMA UWIR 99.

thresholds that were not predicted to exceed the trigger thresholds based on the 2019 Surat CMA UWIR", further investigation should be made of impacts on bore users due to the regional scale of the 2019 Surat CMA UWIR. Such investigation should be based on local data regarding inter-aquifer connectivity, aquifer and aquitard hydraulic properties and geological structures.

6. Likelihood of impacts

38. The Significant Impact Guidelines 1.1 describe the threshold at which the Minister should be satisfied that a significant impact is "likely" as follows:

> "*When is a significant impact likely?*
>
> *To be 'likely', it is not necessary for a significant impact to have a greater than 50% chance of happening; it is sufficient if a significant impact on the environment is a real or not remote chance or possibility.*
>
> *If there is scientific uncertainty about the impacts of your action and potential impacts are serious or irreversible, the precautionary principle is applicable. Accordingly, a lack of scientific certainty about the potential impacts of an action will not itself justify a decision that the action is not likely to have a significant impact on the environment.*"

39. It is submitted that, in the present case, a significant impact on water resources if "a real and not remote chance or possibility" for the following reasons:

    a. the high volumes of groundwater extraction (6,000,000,000 litres of water year at peak production);

    b. the high number of production wells (up to 7,700 wells under a maximum development scenario);

    c. the high number of groundwater users in the vicinity of the project area (4,850 groundwater bores within 50 km of the project); and

    d. the significant number of surface water systems in the vicinity of the project area.

40. Further, it is submitted that the considerable scientific uncertainty about the impacts of the Proposed Action invokes the application of the Precautionary Principle. This is discussed further below.

7. Precautionary principle

41. APLNG and KCB's lack of adequate modelling and assessment of impacts for the Proposed Action invokes the precautionary principle. The uncertainty regarding impacts is increased due to the lack of transparency regarding OGIA's modelling of the cumulative impacts of the project.

42. The Minister is required to precautionary principle when making decisions pursuant to section 391 of the EPBC Act when there is a lack of full scientific certainty regarding the potential for serious or irreversible environmental damage.

43. Section 391 of the EPBC Act provides:

"(2) The precautionary principle is that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage."

44. Significant Impact Guidelines 1.1 provide:

"When deciding whether or not a proposed action is likely to have a significant impact on a matter of national environmental significance, the precautionary principle is relevant. Accordingly, where there is a risk of serious or irreversible damage, a lack of scientific certainty about the potential impacts of an action will not itself justify a decision that the action is not likely to have a significant impact on a matter of national environmental significance."

45. The Hon. Justice Preston, Chief Justice of the Land and Environment Court of New South Wales provides guidance on the interpretation and application of the precautionary principle in Ministerial decision making. His Honour states that "an assessment must be made that a serious threat exists and that there is considerable scientific uncertainty about that threat for the principle to operate."[25]

46. In particular, the Proposed Action is:

a. located in an environmentally sensitive area with threatened ecological communities and listed threatened species;

b. over a large geographical area (development footprint of 476,492 hectares);

c. proposing to withdraw significant quantities of groundwater;

d. near other CSG projects, which are already impacting the environment; and

e. inconclusive as to the significant direct and indirect impacts over time due to inadequate modelling, data and analysis.

47. These factors contribute to the potential for irreversible and irreparable changes and damage to the location of the proposed action. Accordingly, the precautionary principle should be invoked, at the very least, to determine whether there is a serious and irreversible threat of

[25] The Honourable Justice Preston, Chief Justice of the Land and Environment Court of New South Wales, "The Judicial Development of the Precautionary Principle" to the Queensland Government, Environmental Management of Firefighting Foam Policy Implementation Seminar, 21 February 2017, Brisbane, Page 18. Accessed on 9 January 2019 <
http://www.lec.justice.nsw.gov.au/Documents/Speeches%20and%20Papers/PrestonCJ/Justice%20Brian%20J%20Preston%20SC%20Keynote%20Address%20-%20Precautionary%20Principle%20%20delivered%2021.02.17.pdf>

environmental damage based on a process of analysis inclusive of, inter alia, technical, methodological and/or epistemological measures.[26]

7. Conclusion

48. For the reasons above, we submit that the proposed action is a controlled action within the meaning of s 67 of the EPBC Act. We request the Minister to decide under s 75(1) that the Proposed Action requires her approval, that the controlling provisions are ss 18 and 18A (listed threatened species or endangered communities), ss 20 and 20A (listed migratory species) and ss 24D and 24E (water resources).

49. We further submit that the Minister should obtain advice from the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development and require assessment by public environment report or environmental assessment.

[26] As above at page 11 citing Telstra Corp Ltd v Hornsby Shire Council [2006] NSWLEC 133; (2006) 67 NSWLR 256, 27 [41]; cited in Environment East Gippsland Inc v VicForests [2010] VSC 335; (2010) 30 VR 1, 48 [195].

Submission on Origin Gas Supply Security Project 2020/8856

Please accept this proposal from Lock the Gate Alliance on the project above. We contend that water resources should be recognised as a controlling provision for this project, and we reject claims by Origin that the project is unlikely to have a significant impact on water resources.

We request that water resources are included in any referral decision as a controlling provision and that the proponent is required to undertake a full Environmental Impact Statement setting out the risks to water resources and threatened species.

Firstly, we reject the title that Origin have given the project, as it is actually a project that will reduce gas supply and increase gas costs in Australia, given it is clearly intended to be used to supply gas for export from the Port of Gladstone.

The export of vast amounts of gas from Australia has led to a doubling of Australian gas prices and domestic shortages of gas, and it is abundantly clear that approving massive projects like this will only further exacerbate the problem. As a result, this project runs directly counter to the national interest.

We also note that whilst the proponent acknowledges there is likely to be a significant impact on threatened species and communities, they still in our view substantially understate that impact. Notably, they state that there are 'no outstanding natural features' within the project area, when in fact the area includes part of Carnarvon Gorge National Park. Whilst they are not proposing to drill within the area, they will be drilling and fracking in close proximity to it, and this adds to a growing cumulative impact of gas wells surrounding the Park.

We note that the landscapes covered by the project are very heavily cleared, with an estimated 76% of the project area already cleared and only 24% of native vegetation remaining. It is well-recognised in nature conservation, that clearing of greater than 70% represents a major long-term threat to species survival. Therefore, this massive development is proposed in a heavily depleted landscape, where all remaining vegetation is essential to species survival. The proponent acknowledges that it will likely impact on 6 Threatened Ecological Communities, 10 threatened plant species and 16 threatened fauna species, but it is also likely to have a major impact on generally more common species that are under threat in such heavily-cleared landscapes.

Furthermore, Origin downplay the impacts on threatened species and communities by applying a method to derive a 'significant residual impact' measure that is a tiny fraction of the habitat which they will disturb. For example, they estimate that 5,870 ha of koala habitat will be disturbed, but then say that the 'significant residual impacts' will only be 34 hectares. We consider this an extraordinary sleight of hand, which they repeated across most of the species that will be impacted. An EIS should be required to assess the full impact on threatened species.

We also note there is considerable ambiguity as to the area to which this project applies. The map incorporates areas, such as the Mahalo CSG Project, that have previously been

referred to the Federal Government under the EPBC Act. However, whilst it includes such areas in the mapping, it appears to exclude them via text in the referral which states that

> *"The Project Area is subject to a range of petroleum and other activities carried out by Origin Energy that do not form part of this Project or referral under the EPBC Act, including, but are not limited to:*
> *• all exploration, appraisal and surveying activities, including associated ancillary and incidental activities*
> *• ongoing, authorised Australia Pacific LNG Project activities (which are either authorised or do not require approval under the EPBC Act)*
> *• separate construction, production, operation and decommissioning activities and projects, including associated ancillary and incidental activities, currently authorised under the EPBC Act (including, by way of example, production operations within petroleum lease (PL) 101 and authorised projects undertaken by other third parties)*
> *• any currently anticipated or future necessary changes to each of the activities summarised above, including their approvals and tenements, as required and approved from time to time, which do not form part of Project activities."*

As a result of this incongruity between the mapped areas and the text as to what constitutes the referral, it has been difficult for the public to understand exactly what area is subject to this referral. We contend that Origin should be required to re-submit a referral which clarifies this, and which is provided to the public for comment.

In addition, we note that Origin places a lot of weight throughout the referral on existing approvals and permits that it has from the Queensland Government. However, they appear to substantially overstate this. For example, whilst they refer to holding EAs, we believe that a number of these are for exploration only, given they do not hold production licences for those areas. Certainly, whilst they put a lot of attention also on petroleum titles, a number of them are Authorities to Prospect. In short, there is a long way for them to go before they have all relevant approvals in Queensland. In addition, Origin have recently garnered major environmental approvals for CSG in Queensland without undertaking an Environmental Impact Assessment and without conducting formal public notification, as with the Mahalo CSG Project. Therefore, their attempts to rely on Queensland processes as a justification for mitigating water impacts, for example, are in our view unacceptable and invalid.

Water trigger

We strongly disagree with Origins assertion that this project is unlikely to have a significant impact on water resources. We contend that water resources must be a controlling provision for the project.

In particular, we note the following:

- The project will extend across 476,492ha of land and may drill up to 7,700 gas wells, lay down 6,800km of gas and water pipelines, and build 16 gas processing and/or water treatment facilities (see page 33 of Attachment 1), which places it amongst the biggest developments ever proposed in Queensland and indeed, the country

- The project will involve hydraulic fracturing (described as 'stimulation' in the referral) as set out in the chemical risk assessment, although the full extent of the likely number of wells that are likely to be fracked is not identified. We contend it's impossible to make an informed consideration of the risks to water resources without more detailed information on the likely extent of hydraulic fracturing of wells. In the absence of that, not setting water resources as a controlling provision raises concerns about potential seismic risks that have not been considered but which may pose an additional threat to water.

- The project will drain 6 gigalitres of groundwater per annum and bring that water to the surface. To put this in perspective, the actual annual water take from the entire CSG industry reported in UWIR 2019 was 60 GL, indicating that this project alone represents an increase of 10% of water extraction from the industry in the Surat Basin, which is very substantial.

- There are 4,850 water bores within 50km of the project area.

<u>Bore impacts</u>

In relation to groundwater, Origin rely on the OGIA groundwater model to conclude that 13 bores are likely to be significantly drawn down by the project. However, they claim that impact is insignificant. A drawdown in 13 bores is not insignificant – either for the farmers affected, or for the future sustainability of agriculture in the affected area.

It is important to note that the OGIA model is a regional scale cumulative model that is not designed to deliver environmental impact assessment for individual projects. It is not a local scale model, and as such, cannot provide the level of certainty in relation to hydrological impacts required to approve a project of this extraordinary scale and impact. Other notable factors to consider in relation to reliance on the OGIA model are that:

- It acknowledges a high level of uncertainty, stating that "*There is uncertainty in relation to the parameters used in the groundwater flow model. Uncertainty analysis results suggest that the number of water bores affected in the long term could vary from approximately 13% lower to 28% higher than the numbers in Table 7-3".*

- The UWIR 2019 found that of 122 bores affected to date, 71 had had to be completely decommissioned. This highlights that the bore drawdown is more significant than modelled, and that measures such as extending bores have been largely ineffective, indicating that the beneficial aquifers have been completely dewatered. The magnitude of the impact is a cause for great concern, both in regards to impacts on agriculture and the environment.
- The UWIR 2019 also found that whilst 122 bores had been affected, only 99 make good agreements had been signed, indicating that make good agreements are not a sufficient measure on their own to mitigate impacts or address impacts on farmers. Indeed, we have worked with numerous farmers for whom negotiating a make good agreement is an incredibly difficult and fraught process, which rarely provides them with long-term secure water supply of the same quality as that which was lost.
- The UWIR, and the UWIR model, does not take into consideration the impacts of new bores that are sunk for make good purposes, which represent an additional major drawdown on aquifers in the region. The impacts of make good bores on water resources should be a consideration in impact assessment of CSG projects. Specifically, if the Origin seek to rely on make good as a mitigating consideration in relation to water impacts, then the make good impacts need to be modelled because it is part of the impact of the project.

We spoke directly to OGIA about the model run results which they provided to APLNG. It was clear from that discussion, that they simply provide data, and do not provide any conclusions as to the significance or otherwise of impacts. Origin has taken data showing serious impacts on 13 bores and 3 nationally-threatened spring systems, and somehow concluded that such impact is not significant. In our view, that is clearly a biased an incorrect reading of the data. It is also notable that the OGIA model run may not represent a 'full' cumulative impact, because OGIA said they modelled just the Origin project area plus the production area utilised in UWIR 2019, and did not attempt to model any other projects put forward in the interim.

Spring complexes

The referral also admits that the project will contribute to the drawdown of 3 EPBC-listed spring complexes – Lucky Last, Yebna 2 and Cockatoo – which are all Great Artesian Basin spring systems. The 2019 Underground Water Impact Report identifies each of the three spring systems as at high or very high risk from water drawdown from CSG development. They are placed in the highest risk categories in the UWIR. The UWIR 2019 assigned Lucky Last and Yebna 2 spring complexes the highest risk category, a rating of 5, in their assessment and assigned Cockatoo a risk score of 4, the second highest rating.

The Lucky Last spring complex is recognised as providing habitat for the EPBC Act listed species *Eriocaulon carsonii* and has identified high conservation value. Lucky Last is predicted by UWIR 2019 to be drawndown by up to 0.4m, with impact expected to exceed 0.2m in less than 5 years. This spring complex is believed to have its source in the Boxvale Sandstone. The other two spring complexes are believed to have their source in the Precipice Sandstone.

Cockatoo is predicted to experience up to 0.5m draw down, and to exceed 0.2m within 8-12 years. Yebna 2 is predicted to experience up to 0.7m draw down and to exceed 0.2m in less than 10 years.

The Federal Government must acknowledge that any potential drawdown to these spring systems is significant. Origin attempt to downplay the impact by stating that it is a small percentage of the impact to these springs compared to other CSG projects. However, that ignores the uncertainty in the model and also ignores the fact that even the smallest impact on spring systems can lead them to dry out for longer periods of time, which is likely to lead to values being lost.

There are numerous reasons to be concerned about these springs and the impact from the project. Firstly, it is notably that the threshold for impacts on springs in the UWIR is 20cm, and springs that are predicted to be drawn down by greater than 20cm are recognised as potentially affected springs. The UWIR 2019 report notes that the number of potentially affected springs increased from 2016 to 2019. The UWIR 2019 also identified a much higher level of risk to spring complexes generally then the UWIR 2016 - Thirteen of the eighteen were categorised as being at high or very high risk in UWIR 2019, whilst in 2016 only 3 spring complexes/watercourse springs were categorised as high or very high risk. This highlights the uncertainty in the UWIR, and the growing knowledge about spring impacts. Whilst APLNG seek to downplay the impact, the UWIR reports have effectively shown it to be expanding as more information is gained. Therefore, any precautionary approach must properly and thoroughly consider the impacts on the Great Artesian Basin spring complexes, including through detailed local-scale hydrological modelling and intensive monitoring.

Of further note is the fact that two of the Great Artesian Basin spring complexes that will be affected by this project, Cockatoo and Lucky Last, were only recently identified in the 2019 UWIR as being high risk springs and had not been identified in the 2016 UWIR (UWIR 2019) as high risk. Therefore, the information available about the threat to these springs is only just emerging. This is despite the fact that Federal Government research in 2014 highlighted a very serious risk from CSG extraction to Lucky Last. Therefore, we contend that the UWIR model has been very slow to recognise impacts on spring systems, and we have little confidence that the current status of the model is sufficient to assess risk accurately. It is also important to note that there were no mitigation actions currently in place for either of those spring complexes at the time of the UWIR 2019 report (UWIR 2019). This undermines suggestions by the proponent that these spring complexes can be addressed through mitigation measures, when such measures are in their infancy.

Baseline water monitoring

The baseline water monitoring for this project is inadequate. The use of groundwater monitoring bores to establish baseline conditions is the bedrock on which assessments of risks of aquifer drawdown proceed. As such, groundwater bores should have been placed in all relevant geological units in the project area. Instead, the actual monitoring bores are incredibly limited.

For example, there are only two paired monitoring bores in the entire Ironbark development area; and only one in each of the Peat and Denison development areas.

Overall, we would like to highlight the similarities between this analysis and that provided by Origin for the Mahalo CSG project, which was found to be significantly deficient by the Office of Water Science. The same issues beset this referral, including the lack of local scale data, the lack of baseline groundwater monitoring and the inadequacy of field-based studies to inform impacts on GDEs.

Queensland Government

Department of
Environment and Science

Ref 101/0003868

8 February 2021

s. 22(1)(a)(ii)
Director
Environment Queensland (North)
Environment Assessments Queensland and Sea Dumping
Department of Agriculture, Water and the Environment
GPO Box 858
CANBERRA ACT 2601

Dears 22(1)(a)(ii)

Invitation to comment on referral – Gas Supply Security Project, Surat and Bowen basins, QLD (EPBC 2020/8856)

Thank you for your department's email dated 19 January 2021 requesting advice on whether the above action will be assessed in a manner described in Schedule 1 of the Agreement between the Commonwealth of Australia and the State of Queensland (the Bilateral Agreement) developed under Section 45 of the *Environment Protection and Biodiversity Conservation Act 1999.*

I advise the proposal will not be assessed using the environmental impact statement process in Chapter 3 of the *Environmental Protection Act 1994*. Please find attached comments from the department's Energy and Extractive Resources Project management.

The State Development, Infrastructure, Local Government and Planning has advised that the proposal is not currently being assessed as a coordinated project under Part 4 of the *State Development and Public Works Organisation Act 1971* and is not likely to be assessed under this process in the future.

Should you have any further enquiries, please contact me on telephone s. 47F(1)

Yours sincerelv

s. 47F(1)

Director, Technical and Assessment Services

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COMMENTS RELEVANT TO REFERRAL EPBC 2020/8856 GAS SUPPLY SECURITY PROJECT QLD

Energy and Extractive Resources (EER) Project management

- EER manage the area known as the Gas Supply Security Project (the project area) as separate project areas under five environmental authorities (EA)
    - Mahalo and Denison EPPG00872113, Spring Gully EPPG00885313, Peat EPPG00653413, Ironbark EPPG00801813, Injune, Membrance and Lonesome (forming part of) EPPG00968013.
- The project area includes one tenure from the Spring Gully EA EPPG00885313, therefore the extent of the approvals under this EAs does not translate entirely to the relevant project area. Table 1 below reflects the currently approved scale and intensity for the relevant EAs and tenures.
- The referral appears to be proposing approximately 8 times the number of wells currently approved on the relevant tenures under the *Environmental Protection Act 1994* (EP Act).
- EER have not received any applications seeking any significant increase to activities on the relevant sites.
- Origin have stated there are plans to submit an application to amend conditions and authorise exploration activities for Ironbark EPPG00801813 prior to submission of an application to include a Petroleum Lease and production activities on the EA.
- The major development areas included in the Australia Pacific LNG Project (2009/4974) were amalgamated into one environmental authority (EPPG00968013) in 2019. There is a current application seeking approval for that EA, to authorise the maximum extent of activities in the 2009 EIS (i.e. 9000 wells).
    - Upon application in 2020, it was determined a change in impacts to environmental values since the EIS was completed, had occurred; therefore, an information request and public notification stage was required. The decision to publicly notify was appealed and the internal review upheld the original decision.
    - Authority to Prospect (ATP) 592 known as Injune, Petroleum Lease (PL) 219 known as Membrance, and PL220 known as Lonesome, are managed under the abovementioned EPP00968013 EA, although sit outside of the APLNG Project area. These are listed tenures in the 2020/8856 referral.
- It is expected that all relevant EAs will require amendments to authorise any expansion required for the Gas Supply Security Project. EA amendments will include impacts to prescribed environmental matters and consideration of offsets under the *Environmental Offsets Act 2014.*
- Mahalo and Denison EPPG00872113 is a joint venture project equally held between Santos QNT Pty Ltd and Australia Pacific Pty Limited.

Table 1 – current approved scale and intensity for relevant EAs and tenures

Project site name	Tenures on EA that are in project area	Tenures not in project area	Environmental Authority	Wells approved under EA
Mahalo/Denison	ATP1191/ATP337* PL1082 PL1083 ATP1191 PL450 PL451 PL1012* PL457*	-	EPPG00872113	383 wells 487 ha
Spring Gully	PL419^	PL416 PL195 PL204 PL268 PL417 PL200 PL415 PL414 PL418	EPPG00885313	600 wells 720ha (note: the project area only includes PL419 from this EA)
Injune	ATP592*	-	EPPG00968013 parts 3 to 5	Exploration only
Lonesome	PL220*	-		7 wells 13ha
Membrance	PL219**	-		9 wells 13ha
Peat	PL101^	-	EPPG00653413	Not specified
Ironbark	ATP788	-	EPPG00801813	Exploration only

* applicant has listed against Spring Gully in Table 3 of MNES Assessment Report Part 1 of 2
**applicant has listed against Denison in Table 3 of MNES Assessment Report Part 1 of 2
^ not the whole tenure is relevant to the project Area

Impacts to MSES

- The referral material indicates the maximum development scenario is up to 7,700 wells, 68,000km gas and water pipelines, up to 16 GPF and water management facilities (Doc#38520142, Table 4). It has not been determined what the location or site distribution is proposed for these activities and Matters of State Environmental Significance (MSES) have not been discussed. Therefore, an indication of potential impacts to state matters cannot be determined.
- Areas of Expedition National Park and Carnarvon National park overlap parts of the project area and Nuga Nuga National Park is in proximity. The presence of these sites will increase public interest in the project.
- There is a significant presence of springs and Groundwater Dependent Ecosystems (GDEs) in the general area, with some springs and known GDEs within the project area, specifically Denison and Injune. Potential impacts on groundwater are managed through an adaptive management regime under both the EP Act and Chapter 3 of the *Water Act 2000*.
- Areas of wildlife essential habitat and regulated vegetation are mapped within the project area, particularly those sites in proximity with national parks.
- Wetlands of high ecological significance are present in the project area

Australian Government
Great Barrier Reef
Marine Park Authority

s. 22(1)(a)(ii)
Director
Environment Queensland (North)
Environment Assessments Queensland and Sea Dumping
Department of Agriculture, Water and the Environment
GPO Box 858
CANBERRA ACT 2601

REF – 2020-8856

Dear s. 22(1)(a)(ii)

EPBC Referral 2020/8856 – Gas Supply Security Project

Thank you for the opportunity to provide advice in relation to the likely impacts of the proposed action involving the construction, operation, decommissioning and rehabilitation of coal seam gas field development infrastructure, including:

- wells
- gas and water pipelines
- gas processing facilities
- water management facilities; and
- supporting infrastructure (including accommodation, access tracks, maintenance facilities, laydown areas and utilities).

This action is connected to EPBC approved action 2009/4974 for the Australia-Pacific LNG Project. The proposed action is authorised under State Environmental Authority that contains conditions to protect environmental values, including a Rehabilitation Plan. The project does not include any new or additional discharge to, or abstraction from, surface water systems.

Location

The proposed action is located within the Surat and Bowen Basins. The project extends from Blackwater in the north, Wandoan in the east, Tara in the South and Springsure in the West. The project area lies within the Condamine-Balonne River and Fitzroy River basins. The Condamine-Balonne Basin does not discharge into the Great Barrier Reef Marine Park, so any impacts relating to the Condamine Balonne River basins will not be considered within this advice. This advice will only relate to activities resulting in potential impacts within the Fitzroy River basin.

The main systems potentially affected by the proposed action are the headwaters of the Comet River, and upper and lower Dawson River. The ground waters potentially affected by the proposed action are located within the Surat Cumulative Management Area.

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Groundwater recharge of the aquifers within this area occurs via localised recharge, preferential pathway flow and diffuse recharge.

The majority of recharge occurs along the Great Dividing Range. There are no groundwater resources or groundwater dependent ecosystems affected by the proposed action that are directly connected to the Great Barrier Reef Marine Park.

Basis of Advice

The Great Barrier Reef Marine Park Authority (the Authority) will provide advice regarding the following matters of national environmental significance:

- Great Barrier Reef Marine Park (Part 3, Division1, Subdivision FA (24)(b) and (24)(c)).

The Great Barrier Reef Marine Park Authority, in providing this advice, have taken into account:

- the *Environment Protection and Biodiversity Conservation Act 1999* referral documentation (2020/8856) provided by the proponent,
- the findings of the Outlook Report 2019,
- the Reef 2050 Long-term Sustainability Plan,
- Great Barrier Reef Marine Park Authority position statements, and
- any other information that the Authority deems relevant.

Table 1 details the Authority's assessment of the proposed project on the Significant Impact Criteria. A 'likely' rating means that Authority is satisfied, based on the evidence available that an impact (either direct or indirect) will occur on or within the Great Barrier Reef Marine Park. An 'unlikely' rating means the Authority is satisfied, based on the evidence available that an impact (either direct or indirect) is unlikely to occur on or within the Great Barrier Reef Marine Park. An 'uncertain' rating means that the Authority cannot ascertain at this point in time, based on the evidence available, whether a direct or indirect impact is likely to occur on or within the Great Barrier Reef Marine Park.

Table 1 GBRMPA assessment of the proposed project on the Great Barrier Reef Marine Park Matters of National Environmental Significance.

Controlling Provision (MNES)	Significant Impact Criteria	Likely	Unlikely	Uncertain
The Great Barrier Reef Marine Park (S24B and 24C) An action is likely to have a significant impact on the environment of the Great Barrier Reef Marine Parks if there is a real chance or possibility that the action will:	Modify, destroy, fragment or disturb an important, substantial, sensitive, or vulnerable are of habitat or ecosystem component such that an adverse impact on marine ecosystem health functioning or integrity in the GBRMP.	☐	☒	☐
	Have a substantial adverse effect on a population of a species or cetacean including its lifecycle	☐	☒	☐
	Result in a substantial change in air quality or water quality (or temperature) which may adversely impact on biodiversity, ecological health or integrity, social amenity or human health.	☐	☒	☐
	Result in a known or potential pest species being introduced or becoming established in the GBRMP	☐	☒	☐
	Result in persistent organic chemicals, heavy metals or other potentially harmful chemicals accumulating in the GBRMP such that biodiversity, ecological integrity, social amenity or human health may be adversely effected.	☐	☒	☐
	Have a substantial adverse impact on heritage values of the GBRMP including damage or destruction of an historic shipwreck.	☐	☒	☐

The Authority advises that the proposed action is considered unlikely to result in a real chance or possibility of significant impact on the Great Barrier Reef Marine Park Matter of National Environmental Significance. The justification for this statement is below:

- The proposed action is currently permitted under State legislation, with appropriate surface water and groundwater conditions of permission that would ensure impact, if any, on the Great Barrier Reef Marine Park is negligible.
- The proposed action is a further stage within an already EPBC approved action (EPBC 2009/4974) that was not subject to the controlling provision – Great Barrier Reef Marine Park; and contains conditions that ensure impact, if any, on the Great Barrier Reef Marine Park is negligible.
- No discharge is proposed in additional to that already allowed under existing approvals. Produced water will be diverted to existing water management infrastructure, treated and beneficially reused e.g. under 'make good' agreements; stock watering, construction, and irrigation of existing crops/pastures (e.g. existing Spring Gully irrigation scheme and Fairymeadow Road Irrigation Pipeline). Although some facilitated impacts from irrigated agriculture/increased stocking may occur, the Authority considers these impacts as existing impacts as the approved water infrastructure has the capacity to deliver to these established downstream users.
- No groundwater systems or groundwater dependent ecosystems have a direct link to the Great Barrier Reef Marine Park that may be impacted by this action.

Should you have any questions regarding this advice, please contact s. 47F(1) , Acting Director, Environmental Assessments and Protection on s. 47F(1) or via email s. 47F(1) @gbrmpa.gov.au.

Yours sincerely

s. 47F(1)

Acting Director
Environmental Assessment and Protection

04 February 2021

Interpretations:

Direct impacts are considered impacts that have a direct effect on a value either in space or time. Direct impacts occur when the proposed activity directly interacts with the values of the Marine Park at that location. For example, lethal sampling of fish species for the purpose of research or removal of seagrass meadow for the construction of a marina[1].

Indirect impacts are considered to include *downstream*, *upstream*, *consequential* and *facilitated* impacts. Indirect impacts are considered relevant where they are "sufficiently close to the action to be said to be a consequence of the action", and they can be reasonably be estimated to be considered by the proponent.

- *Downstream* impacts are impacts from an action that occur at another location but are caused by the action. Examples of downstream impacts are sediment, fertilisers or chemicals washed or discharged into river systems that impact the Marine Park.
- *Upstream* impacts are impacts that occur from an action at another location that are required for the action to occur. An example of upstream impacts are extraction of water that may reduce environmental flows of rivers that flow into the Marine Park.
- *Consequential* impacts are impacts that can result from an action when an impact on one value creates another impact on a different value. An example of a consequential impact is when removal or degradation of seagrass will have consequences on species that feed on seagrass such as turtles or dugong.
- *Facilitated* impacts are impacts of the action resulting from further actions (including actions from third parties) which are made possible or facilitated by the action. An example of a facilitated impact is the construction of a dam for irrigation water that allows use of that water by irrigators with associated impacts or the construction of a new resource mine for export of materials that will result in increased port activities and shipping.

Cumulative impacts are defined as the interaction of effects between one or more impacts and past, present and reasonably foreseeable future pressures[2]. Cumulative impact assessment takes into account direct, indirect and consequential impacts and the incremental and compounding effects of these impacts over time, including past, present and reasonably foreseeable future pressures.

[1] Great Barrier Reef Marine Park Authority 2019, Assessment and Decision Guidelines, GBRMPA, Townsville.
[2] Great Barrier Reef Marine Park Authority 2018, Cumulative impact management policy, GBRMPA, Townsville.

The Hon. David Littleproud MP
Minister for Agriculture, Drought and Emergency Management
Deputy Leader of the Nationals
Federal Member for Maranoa

Ref: MS21-000107

s. 22(1)(a)(ii)

04 FEB 2021

Director
Environment Queensland (North)
Environment Assessments Queensland and Sea Dumping
Department of Agriculture, Water and the Environment
GPO Box 858
CANBERRA ACT 2601

Dear s. 22(1)(a)(ii)

Thank you for your correspondence of 19 January 2021 from s. 22(1)(a)(ii) A/g Director, Referrals Gateway, Department of Agriculture, Water and the Environment, inviting comment on referral 2020/8856 Gas Supply Security Project, Surat and Bowen basins, Queensland, under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

I have no comments from an agricultural perspective on whether the proposed action may have significant impact(s) on any matters of national environmental significance protected under the EPBC Act.

I do, however, request that when assessing this referral, particular attention is made to ensuring the proponent has a fit-for-purpose surface subsidence monitoring program in place to ensure agricultural production within the vicinity of the gas field developments is not negatively impacted.

Thank you for the opportunity to comment on referral EPBC 2020/8856.

Yours sincerely

DAVID LITTLEPROUD MP

s. 22(1)(a)(ii)

From: s. 22(1)(a)(ii)
Sent: Friday, 29 January 2021 10:45 AM
To: s. 22(1)(a)(ii)
Cc: s. 22(1)(a)(ii)@awe.gov.au; s. 22(1)(a)(ii) (Agriculture); s. 22(1)(a)(ii) (Agriculture); s. 22(1)(a)(ii) s. 22(1)(a)(ii)
Subject: RE: Co-ordinated Response: Referral – Resources (EPBC 2020/8856) Gas Supply Security Project, QLD [SEC=UNOFFICIAL]

Many thanks s. 22(1)(a)(ii)

Kind regards
s. 22(1)(a)(ii)

s. 22(1)(a)(ii)

Director, Queensland North Assessments
Environment Assessments Queensland and Sea Dumping Branch
Department of Agriculture, Water and the Environment
t: s. 22(1)(a)(ii) | m: s. 22(1)(a)(ii) | a: GPO Box 858 CANBERRA ACT 2600
e: s. 22(1)(a)(ii)@awe.gov.au

From: s. 22(1)(a)(ii) @awe.gov.au>
Sent: Friday, 29 January 2021 10:24 AM
To: s. 22(1)(a)(ii) @awe.gov.au>
Cc: s. 22(1)(a)(ii) (Agriculture) <s. 22(1)(a)(ii)@agriculture.gov.au>; s. 22(1)(a)(ii) (Agriculture) <s. 22(1)(a)(ii)@agriculture.gov.au>
Subject: Co-ordinated Response: Referral – Resources (EPBC 2020/8856) Gas Supply Security Project, QLD [SEC=UNOFFICIAL]

s. 22(1)(a)(ii)

Good morning – response for Water Division cleared by :

s. 22(1)(a)(ii)

A/g Assistant Secretary
National Water Policy Branch
Water Division
Department of Agriculture, Water and the Environment
18 Marcus Clarke Street
Canberra

s. 22(1)(a)(ii) or s. 22(1)(a)(ii)

Kind regards

s. 22(1)(a)(ii)

Assistant Director
Great Artesian Basin/Lake Eyre Basin
Water Division
Department of Agriculture, Water and the Environment
18 Marcus Clarke Street
Canberra

s. 22(1)(a)(ii) or s. 22(1)(a)(ii)

From: s. 22(1)(a)(ii) @awe.gov.au>
Sent: Thursday, 28 January 2021 6:46 PM
To: 's. 22(1)(a)(ii) @awe.gov.au>
Cc: s. 22(1)(a)(ii) @agriculture.gov.au>; s. 22(1)(a)(ii) @agriculture.gov.au>
Subject: Co-ordinated Response: Invitation to comment on Referral – Resources (EPBC 2020/8856) Gas Supply Security Project, QLD - Due COB Thursday 28 January 2021 [SEC=UNOFFICIAL]

s. 22(1)(a)(ii)

Good afternoon

As requested, we have received the following request from the Minister for the Environment, to provide information, if any, that relates to the proposed action and is relevant to deciding whether or not the proposed action is a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The referral relates to the proposed action from Australia Pacific LNG Pty Limited to construct, operate, decommission and rehabilitate gas field development infrastructure, Surat and Bowen basins, Queensland.

We received the following comments:

Murray Darling Basin Authority – the project must consider the following key concerns:

- CSG extraction may cause groundwater pressure decline in the Condamine Alluvium (MDB aquifer) as the Condamine Alluvium is incised into the underlying Surat basin.
- Previous impact assessment studies related to CSG extraction form Surat and the Office of Groundwater Impact Assessment (OGIA) Underground Water Impact Reports (UWIR) confirmed that there is a low level of connectivity between the Condamine Alluvium and the target coal formations.
- The UWIR predicts that the impact on the Condamine Alluvium from depressurisation of the underlying Walloon Coal Measures will be relatively small. However, the water resources of the alluvium are an essential resource for the irrigation industry and are heavily developed. Therefore, there is a need to continuously increase the predictability of groundwater behaviour and impacts using groundwater models to improve understanding about interconnectivity between the Alluvium and the Walloon Coal Measures.
- There is also a need to monitor the corresponding drawdown in the shallow Condamine Alluvium and to assess leakage from the Condamine Alluvium to the Walloon Coal Measures due to CSG development. In future, if there is any evidence of enhanced drawdown in Condamine Alluvium and hence leakage form the Alluvium to the Walloon Coal Measures, it has to offset by buying groundwater entitlements from the Alluvium. Otherwise, it may compromise the reliability of groundwater users and may also cause Water Resource Plan non-compliance due to enhanced leakage.

National Water Policy Branch – the project raises the following issues/ matters:

- Management of both surface water and groundwater quantity and quality are covered by the Condamine-Balonne Water Resource Plan (WRP) which was accredited by the Commonwealth Water Minister, Keith Pitt and commenced 21 September 2019. The WRP identifies only low risks at current rates of interception by CSG industries but this raises to a medium risk in the Upper Condamine Alluvium. The WRP complements the existing arrangements for water use at a state level set out by the Queensland government in their Water Plan (Condamine and Balonne) 2019 made under the Queensland Water Act 2000. We understand that the proponent may be required to abide by additional conditions from either the Water Minister and/or the Queensland government in order to receive approval for this expansion project and to manage further risks.
- The proponent has identified 13 bores as predicted to experience drawdown greater than the Queensland Water Act 2000 bore trigger thresholds. Cumulative drawdown modelling results show that the project is likely to have an impact on EPBC Act listed springs (Cockatoo, LuckyLast and Yebna2). In addition, cumulative drawdown modelling predicts that 5 spring complexes and 21 watercourse springs will be impacted as to potentially exceed the Queensland Water Act 200 spring trigger of 0.2m.

- The self-assessment of the proponent suggests that the project is unlikely to have a significant impact on the water resource, however, under the precautionary principle, the Minister may seek to set appropriate conditions as part of the project approval to ensure that any significant impacts on a water resource are acceptable, given the size (up to 7,700 wells), scale (maximum water extraction 6.1 GL/year) and duration (50 years) of the project.

Happy to discuss

Kind regards

s. 22(1)(a)(ii)

From: EPBC Referrals [mailto:EPBC.Referrals@environment.gov.au]
Sent: Tuesday, 19 January 2021 6:27 PM
To: epbc@industry.gov.au
Cc: epbc@ga.gov.au; Water Group Coordination <watergroupcoord@agriculture.gov.au>
Subject: RE: Invitation to comment on Referral – Resources (EPBC 2020/8856) Gas Supply Security Project, QLD [SEC=OFFICIAL]

Dear Minister,

Please see the corrected EPBC contact details, below, for this project. All your queries should be directed to s. 22(1)(a)(ii) and s. 22(1)(a)(ii)

by letter s. 22(1)(a)(ii)
Director
Environment Queensland (North)
Environment Assessments Queensland and Sea Dumping
Department of Agriculture, Water and the Environment
GPO Box 858
CANBERRA ACT 2601

by email s. 22(1)(a)(ii)@awe.gov.au; s. 22(1)(a)(ii)@awe.gov.au

Apologies for any confusion.

Yours sincerely

Referrals Gateway
Governance and Reform Branch

From: EPBC Referrals
Sent: Tuesday, 19 January 2021 3:36 PM
To: epbc@industry.gov.au
Cc: epbc@ga.gov.au; watergroupcoord (agriculture) <watergroupcoord@agriculture.gov.au>
Subject: Invitation to comment on Referral – Resources (EPBC 2020/8856) Gas Supply Security Project, QLD [SEC=OFFICIAL]

Australian Government
Department of Agriculture, Water and the Environment

The Hon Keith Pitt MP
Minister for Resources, Water and Northern Australia
Parliament House
CANBERRA ACT 2600

Date: 19 January 2021
EPBC Ref: 2020/8856
EPBC contact: s. 22(1)(a)(ii)
s. 22(1)(a)(ii)
s. 22(1)(a)(ii)@awe.gov.au

Dear Minister

Invitation to comment on referral
Gas Supply Security Project, Surat and Bowen basins, QLD

The Department of Agriculture, Water and the Environment (the Department) has received a referral of a proposed action from Australia Pacific Lng Pty Limited to construct, operate, decommission and rehabilitate gas field development infrastructure, Surat and Bowen basins, Queensland, for consideration under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Department is currently undertaking an assessment to decide whether this proposed action requires approval under the EPBC Act before it can proceed. The referral may be viewed or copied from the Department's website, www.environment.gov.au/epbc.

I am writing to invite you to provide any relevant information as to whether you consider the proposed action is likely to have a significant impact on any of the matters protected under the EPBC Act.

In accordance with the EPBC Act, we need to receive your response by **3 February 2021** Please quote the title of the action and EPBC reference, as shown at the beginning of this letter, in any correspondence. You can send information to the Department:

by letter s. 22(1)(a)(ii)
A/g Director
Environment Queensland (South) and Sea Dumping
Environment Assessments Queensland and Sea Dumping
Department of Agriculture, Water and the Environment
GPO Box 858
CANBERRA ACT 2601

by email s. 22(1)(a)(ii)@awe.gov.au

If you have any questions about this process, please contact s. 22(1)(a)(ii) and quote EPBC 2020/8856.

For your information, the Department has published an *Environmental Impact Assessment Client Service Charter* (the Charter) which outlines its commitments when undertaking environmental impact assessments under the EPBC Act. A copy of the Charter can be found at:
https://www.awe.gov.au/about/commitment/client-service-charter.

Yours sincerely

s. 22(1)(a)(ii)

A/g Director
Referrals Gateway

Australian Government
Geoscience Australia

Document 12

Cnr Jerrabomberra Avenue
and Hindmarsh Drive,
Symonston ACT 2609
GPO Box 378,
Canberra, ACT 2601 Australia
Phone: +61 2 6249 9111
Facsimile: +61 2 6249 9999
Web: www.ga.gov.au
ABN 80 091 799 039

Resources Stewardship and Environment
Resource Strategy Branch
Resources Division
Department of Industry, Science, Energy and Resources

9 February 2021

Attn: s. 47F(1)

Re: Invitation to comment on referral (EPBC 2020/8856) – Gas Supply Security Project, Bowen and Surat basins, QLD

I refer to the request for comments dated 19 January 2021 on the EPBC referral for the Gas Supply Security Project (the Project), in the Bowen and Surat basins, by Origin Energy (the Proponent), as the upstream operator for Australia Pacific LNG Pty Ltd (APLNG). Geoscience Australia (GA) has reviewed the referral information in the time available, particularly as it relates to sections 24D and 24E (the water trigger) of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), with attention to potential impacts to groundwater resources and other technical geoscience and geotechnical factors.

Background

The Gas Supply Security Project extends over the Bowen and Surat basins in central and southwest Queensland. The Proponent has proposed this Project to further progress the larger Australia Pacific LNG Project (EPBC 2009/4974) by developing gas field infrastructure in petroleum tenures within the Bowen and Surat basins not covered by current APLNG EPBC Act approvals. APLNG is the largest producer of natural gas in eastern Australia and a major exporter of liquefied natural gas (LNG) to Asia. APLNG is currently contracted by Origin Energy to supply about 30 per cent (340 petajoules) of eastern Australia's domestic gas demand. The Project seeks to provide additional gas reserves into the eastern Australia gas market.

The Project incorporates a series of spatially separated coal seam gas development areas with an area of 476,492 hectares within petroleum tenures currently held by APLNG (the Mahalo, Denison, Spring Gully, Peat and Ironbark development areas). The maximum development scenario for the Project is 7700 coal seam gas wells and 6800 km of gas and water pipelines with development occurring incrementally. Origin Energy estimate existing coal seam gas 2P reserves of 453.6 petajoules and 2C contingent resources of 591.7 petajoules within the project area. The project will involve the construction, operation, decommissioning and rehabilitation of gas field infrastructure (wells, gas and water pipelines, gas processing facilities, water management facilities, supporting infrastructure). Individual wells may be subject to well stimulation techniques to improve the gas flow rate and extend the operation life of wells. Construction is likely to commence in 2024 and the Project will produce gas for approximately 50 years.

The Proponent has assessed that the Project is unlikely to have a significant impact on water resources under the EPBC Act Water Trigger. This is based on Queensland Government numerical modelling and desktop assessment of the potential impacts of the Project on its own.

Comment

The assessment of potential impacts to water resources presented in the referral relies on regional-scale groundwater modelling predictions (OGIA 2019a[1]) undertaken by the Queensland Office of Groundwater Impact Assessment (OGIA) in addition to desktop reviews of spring and groundwater dependent ecosystem data. While the Proponent has demonstrated that the contribution of this Project to cumulative impacts is likely to the low, the Proponent should carry out additional local-scale groundwater impact assessments incorporating more recent local data and updated operational planning to better characterise any potential impacts on water resources. This is particularly the case for development areas where there is limited baseline information available.

The proponent's Water Assessment Report notes the limitations highlighted by the OGIA Groundwater Modelling Report – Surat Cumulative Management Area[2], *Section 3.4 Key model construction assumptions and limitations* (p61), which indicates:

"…numerical model cell sizes are relatively large in lateral extent (1.5 km × 1.5 km). One outcome of the large cell size is that additional conceptualisation is required to validate modelling predictions of the interaction between shallow, unconfined groundwater systems and deeper groundwater systems."

The referral documents[3][4] provide conceptualisations and discussion for the development areas, albeit in the regional scale context of how these are represented in the OGIA Underground Water Impact Report (UWIR) modelling. No additional conceptualisation information is considered beyond what was supplied with the OGIA UWIR. Without a review of local scale conceptualisations, it is unclear if the regional scale assessment provided in the UWIR modelling is appropriate to represent the potential local scale groundwater impacts for each area. Given the extent of the Project, GA considers local-scale assessments are warranted.

As an example, Appendix F[5] indicates there is only one bore (assumed Bandana Formation) identified as exceeding trigger limits between the Spring Gully (Figure 8.3, p116) and Denison (Figure 8.4, p117) development areas. It is unclear why other Bandana Formation bores between Spring Gully and Denison are not identified as exceeding limits (Spring Gully - Figure V-89, Appendix F Part 4 of 9 and Denison – Figure VI-61, Appendix F Part 5 of 9) given the maximum drawdowns predicted for those model layers by the UWIR simulation. No discussion is provided to explain why isolated bores, sometimes distant to the development areas, are showing impacts as a result of the Project.

Based on the information provided in the referral, GA considers there is insufficient information and assessment at the Project scale to rule out the potential for direct impacts to water resources to be significant. A more detailed assessment to demonstrate that the regional modelling and desktop studies adequately account for potential local-scale impacts would assist in determining the potential significance of the project.

[1] Office of Groundwater Impact Assessment 2019a, Underground Water Impact Report for the Surat Cumulative Management Area

[2] Office of Groundwater Impact Assessment, 2019b, Groundwater Modelling Report – Surat Cumulative Management Area, October 2019, <https://www.dnrme.qld.gov.au/__data/assets/pdf_file/0008/1460627/groundwater-modelling-report-surat-cma.pdf>

[3] Spring Gully Development Area – Appendix F, Part 4 of 9, Section V-3.2.1 Local Hydrogeology, page V-52

[4] Denison Development Area – Appendix F, Part 5 of 9, Section VI-3.2.1 Local Hydrogeology, page VI-37

[5] Water Assessment Report – Appendix F, Part 1 of 9, Section 8 Impact Assessment, page 111

If you have any queries on this, please contact me on s. 47F(1) or s. 47F(1) @ga.gov.au.

Kind regards,

s. 47F(1)

A/g Director - Groundwater Advice and Data,
Advice, Investment Attraction and Analysis Branch,
Minerals, Energy and Groundwater Division
Geoscience Australia

s. 22(1)(a)(ii)

From: s. 22(1)(a)(ii)
Sent: Wednesday, 10 February 2021 11:17 AM
To: s. 22(1)(a)(ii)
Cc: s. 22(1)(a)(ii)
Subject: FW: Invitation to comment on Referral – Indigenous (EPBC 2020/8856) Gas Supply Security Project, QLD [SEC=OFFICIAL]

From: ILWM Support <ILWMSupport@niaa.gov.au>
Sent: Wednesday, 10 February 2021 8:38 AM
To: s. 22(1)(a)(ii)@awe.gov.au
Cc: s. 47F(1) @niaa.gov.au>
Subject: FW: Invitation to comment on Referral – Indigenous (EPBC 2020/8856) Gas Supply Security Project, QLD [SEC=OFFICIAL]

OFFICIAL
OFFICIAL

Dear s. 22(1)(a)(ii)

Thank you for your correspondence of 19 and 29 January 2021 regarding the Gas Supply Security Project in the Surat and Bowen Basins, Queensland (EPBC 2020/8856). Land holds great economic, cultural and spiritual value to Indigenous Australians and it is important their voices are heard regarding proposed projects on their country.

We understand that the project proponent, Australia Pacific LNG Pty Limited, has developed a Cultural Heritage Management Plan with the Iman people. However, we also understand that other traditional groups affected by the proposed project, including the Gaangalu Nation people, Bidjara people and Kanolu people, may have been excluded from the process.

We suggest you to take the opportunity to encourage Australia Pacific LNG Pty Limited to engage in a thorough and genuine manner with all traditional owners in the Surat and Bowen Basins to ensure that all potentially affected Indigenous parties are provided the opportunity to engage.

Should the project proceed, to help realise its economic potential for local Indigenous people, we also suggest that Australia Pacific LNG Pty Limited is encouraged to work with the National Indigenous Australians Agency (NIAA) and traditional owner groups to create sustainable Indigenous enterprise and employment opportunities. The Commonwealth has support mechanisms and frameworks such as employment and training facilitators which could be applied.

Regards

s. 47F(1) | Senior Advisor
Environment Policy Section | Land Policy & Environment Branch | Economic Policy & Programs Group
National Indigenous Australians Agency
m. s. 47F(1)
Charles Perkins House 16 Bowes Place Phillip ACT 2606| PO Box 2191 CANBERRA ACT 2601
w. niaa.gov.au w. indigenous.gov.au

The National Indigenous Australians Agency acknowledges the traditional owners and custodians of country throughout Australia and acknowledges their continuing connection to land, waters and community. We pay our respects to the people, the cultures and the elders past, present and emerging.

From: EPBC Referrals <EPBC.Referrals@awe.gov.au>
Sent: Friday, 29 January 2021 3:41 PM
To: Minister Wyatt <Minister.Wyatt@ia.pm.gov.au>
Cc: ILWM Support <ILWMSupport@niaa.gov.au>; s. 47F(1) @niaa.gov.au>
Subject: RE: Invitation to comment on Referral – Indigenous (EPBC 2020/8856) Gas Supply Security Project, QLD [SEC=OFFICIAL]

Dear Minister

We wish to advise that the Ministerial comment period for EPBC 2020/8856 Gas Supply Security Project, has been extended from 2 Feb to 10 Feb. An incorrect attachment had been uploaded when the referral was originally published. The correct attachment was published yesterday and to ensure you have all the information for a full 10 days, the comment period has been extended until **10 February 2021**, as has the public comment period.

Details of correction

Appendix I, Part 1 of 2, incorrectly had the document for Attachment 1, part 1 of 2 uploaded. This has now been replaced with the document Appendix I, Part 1 of 2.

Regards

s. 22(1)(a)(ii)
Acting Director
Referrals Gateway | Governance and Reform Branch
Environment Approvals Division | Department of Agriculture, Water and the Environment
Phone: Ph: s. 22(1)(a)(ii)

From: EPBC Referrals
Sent: Tuesday, 19 January 2021 6:25 PM
To: Minister.Wyatt@ia.pm.gov.au
Cc: ILWMsupport@niaa.gov.au; s. 47F(1) @niaa.gov.au
Subject: RE: Invitation to comment on Referral – Indigenous (EPBC 2020/8856) Gas Supply Security Project, QLD [SEC=OFFICIAL]

Dear Minister

Please see the corrected EPBC contact details, below, for this project. All your queries should be directed to s. 22(1)(a)(ii)

by letter s. 22(1)(a)(ii)
Director
Environment Queensland (North)
Environment Assessments Queensland and Sea Dumping
Department of Agriculture, Water and the Environment
GPO Box 858
CANBERRA ACT 2601

by email s. 22(1)(a)(ii)@awe.gov.au

Apologies for any confusion.

Yours sincerely

Referrals Gateway
Governance and Reform Branch

From: EPBC Referrals
Sent: Tuesday, 19 January 2021 3:32 PM
To: Minister.Wyatt@ia.pm.gov.au
Cc: ILWMsupport@niaa.gov.au; s. 47F(1) @niaa.gov.au
Subject: Invitation to comment on Referral – Indigenous (EPBC 2020/8856) Gas Supply Security Project, QLD [SEC=OFFICIAL]

Australian Government
Department of Agriculture, Water and the Environment

The Hon Ken Wyatt AM MP
Minister for Indigenous Australians
Parliament House
CANBERRA ACT 2600

Date: 19 January 2021
EPBC Ref: 2020/8856
EPBC contact: s. 22(1)(a)(ii)
s. 22(1)(a)(ii)
s. 22(1)(a)(ii)@awe.gov.au

Dear Minister

Invitation to comment on referral
Gas Supply Security Project, Surat and Bowen basins, QLD

The Department of Agriculture, Water and the Environment (the Department) has received a referral of a proposed action from Australia Pacific Lng Pty Limited to construct, operate, decommission and rehabilitate gas field development infrastructure, Surat and Bowen basins, Queensland, for consideration under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Department is currently undertaking an assessment to decide whether this proposed action requires approval under the EPBC Act before it can proceed. The referral may be viewed or copied from the Department's website, www.environment.gov.au/epbc.

I am writing to invite you to provide any relevant information as to whether you consider the proposed action is likely to have a significant impact on any of the matters protected under the EPBC Act.

In accordance with the EPBC Act, we need to receive your response by **3 February 2021** Please quote the title of the action and EPBC reference, as shown at the beginning of this letter, in any correspondence. You can send information to the Department:

by letter s. 22(1)(a)(ii)
A/g Director
Environment Queensland (South) and Sea Dumping
Environment Assessments Queensland and Sea Dumping
Department of Agriculture, Water and the Environment
GPO Box 858
CANBERRA ACT 2601

by email s. 22(1)(a)(ii)@awe.gov.au

If you have any questions about this process, please contact s. 22(1)(a)(ii) and quote EPBC 2020/8856.

For your information, the Department has published an *Environmental Impact Assessment Client Service Charter* (the Charter) which outlines its commitments when undertaking environmental impact assessments under the EPBC Act. A copy of the Charter can be found at:
https://www.awe.gov.au/about/commitment/client-service-charter.

Yours sincerely

s. 22(1)(a)(ii)
A/g Director
Referrals Gateway

---

message from your computer system.

_____

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Cost Recovery - Fee Schedule

EPBC No: 2020/8856
Date of Fee Schedule: Feb. 15, 2021
Project title: Gas Supply Security Project, Surat and Bowen basins, Qld
Assessment method: Public Environmental Report

Fee Schedule

STAGE FEES	Base fee	PART A Complexity costs (A-L, P)	PART B Complexity costs (MNO)	Total
Stage 1	$4,715	$12,552	$0	$17,267
Stage 2	$5,394	$19,874	$0	$25,268
Stage 3	$7,119	$20,920	$52,423 (Estimate)	$80,463 (Estimate)
Stage 4	$8,355	$51,255	$52,423 (Estimate)	$112,034 (Estimate)
TOTAL PROJECT COST	$25,583	$104,604	$104,847 (Estimate)	$235,034 (Estimate)

Notes:

- For assessments by environmental impact statement - If standard guidelines are used under Section 101A(2)(a) of the EPBC Act, the Stage 1 fee will not be applicable.
- For assessments by public environmental report - If standard guidelines are used under Section 96B of the EPBC Act, the Stage 1 fee will not be applicable.
- If no further information is requested under section 95A of the EPBC Act, the Stage 1 and 2 fees will not be applicable.
- The Department advises applicants of the maximum liability for Part B complexity fees at the time of the assessment approach decision, based on the information provided in the referral documentation. Applicants have the opportunity to reduce the Part B complexity fees during the assessment process by improving the quality of information provided to the Department during Stage 2 of the assessment. These Part B complexity fees are confirmed when all the assessment documentation is provided in Stage 2, and are not payable until Stages 3 and 4 of the assessment.

Fee Breakdown

			COMPLEXITY	FEE
	CONTROLLING PROVISIONS			
Part A Fees	A	Listed threatened species and ecological communities The referral states the proposed action will have a significant impact on 30 listed threatened species and communities (with 51 species identified in the department's ERT Report).	Very High	$48,931
	B	Listed migratory species The department's ERT Report identified 11 migratory species that may occur within the project area. The department considers the proposed action is likely to have a significant impact on several listed migratory species, with the nature of impacts and potential mitigation measures being relatively well understood.	Moderate	$6,742
	C	Wetlands of international importance Not applicable.	None	$0
	D	Environment of the Commonwealth marine area Not applicable.	None	$0
	E	World heritage properties Not applicable.	None	$0
	F	National heritage places Not applicable.	None	$0
	G	Nuclear actions Not applicable.	None	$0
	H	Great Barrier Reef Marine Park Not applicable.	None	$0
	I	Water Resources The proposed action is likely to have a significant impact on water resources due to drawdown impacts on springs, groundwater dependent ecosystems and landowner bores. The department considers further information will be required during the assessment process to fully elucidate the extent of impacts from the proposed action, with further modelling required to capture the full extent of the proposed action and further consideration required to adequately mitigate impacts to, in particular, springs reliant on the great artesian basin.	Very High	$48,931
	J	Commonwealth Land/Commonwealth Agency/Commonwealth Heritage Places Overseas Not applicable.	None	$0

			COMPLEXITY	FEE
	NUMBER OF PROJECT COMPONENTS			
	K	Number of project components N/A	Low	$0
	COORDINATION WITH OTHER LEGISLATION			
	L	Coordination with other legislation	Low	$0
Part B Fees: estimate (to be confirmed prior to Stage 3)	**ADEQUACY OF INFORMATION AND CLARITY OF PROJECT SCOPE**			
	M	Site surveys/Knowledge of environment The proponent has relied on theoretical ecological modelling to determine the amount of habitat present within the project area. The department considers further assessment will be required to ensure modelling constraints align with the SPRAT database and other relevant statutory documents with regards to the definitions of habitat for each species and community etc. Surveys may also be required to ground-truth the predictions of the model.	High	$34,949
	N	Management measures (including mitigation and offsets) The referral included a Constraints Planning Protocol, which is proposed to be used to guide the layout of the project for the purpose of avoiding impacts to MNES form habitat clearance. However, the department notes that the protocol will need further consideration with regards to impacts to migratory species. Further, adequate mitigation measures for impacts to MNES from groundwater drawdown will need to be devised during the assessment process.	High	$34,949
	O	Project scope The proposed action consists of clearly demarcated development areas, but the final disturbance footprint within each development area is not defined. Further clarification will be required during the assessment process with regards to the application of the Constraints Planning Protocol.	High	$34,949
Exceptional circumstances	**EXCEPTIONAL CIRCUMSTANCES**			
	P	Exceptional circumstances N/A	False	$0
TOTAL COMPLEXITY FEES (Estimate)				$209,451
BASE FEE				$25,583
TOTAL FEE (Estimate)				$235,034

Potential fees for contingent and post-approval activities (if required)

The Department will notify you if a contingent activity fee is applicable due to an additional statutory step being required under the *Environment Protection and Biodiversity Conservation Act 1999*.

Post-approval fees

Evaluation of new Action Management Plan (per management plan) ($2,690)

Contingent Fees

Request additional information for referral or assessment approach decision ($1,701)
Variation to the proposed action ($1,353)
Reconsideration of the controlled action or assessment approach decision at the applicant's request ($6,577)
Request additional information for approval decision (assessment on referral information, preliminary documentation or bilateral/accredited assessment) ($1,701)
Request additional information for approval decision (assessment by environmental impact statement or public environment report) ($7,476)
Variation of conditions ($2,690)
Variation of an action management plan under conditions of approval ($2,690)
Administrative variation of an action management plan under conditions of approval ($710)
Transfer of approval to new approval holder ($1,967)
Extension to approval expiry date ($2,690)

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Cost Recovery - Fee Schedule

EPBC No: 2020/8856
Date of Fee Schedule: Feb. 15, 2021
Project title: Gas Supply Security Project, Surat and Bowen basins, Qld
Assessment method: Public Environmental Report

Fee Schedule

STAGE FEES	Base fee	PART A Complexity costs (A-L, P)	PART B Complexity costs (MNO)	Total
Stage 1	$4,715	$12,552	$0	$17,267
Stage 2	$5,394	$19,874	$0	$25,268
Stage 3	$7,119	$20,920	$52,423 (Estimate)	$80,463 (Estimate)
Stage 4	$8,355	$51,255	$52,423 (Estimate)	$112,034 (Estimate)
TOTAL PROJECT COST	$25,583	$104,604	$104,847 (Estimate)	$235,034 (Estimate)

Notes:

- For assessments by environmental impact statement - If standard guidelines are used under Section 101A(2)(a) of the EPBC Act, the Stage 1 fee will not be applicable.
- For assessments by public environmental report - If standard guidelines are used under Section 96B of the EPBC Act, the Stage 1 fee will not be applicable.
- If no further information is requested under section 95A of the EPBC Act, the Stage 1 and 2 fees will not be applicable.
- The Department advises applicants of the maximum liability for Part B complexity fees at the time of the assessment approach decision, based on the information provided in the referral documentation. Applicants have the opportunity to reduce the Part B complexity fees during the assessment process by improving the quality of information provided to the Department during Stage 2 of the assessment. These Part B complexity fees are confirmed when all the assessment documentation is provided in Stage 2, and are not payable until Stages 3 and 4 of the assessment.

Fee Breakdown

		COMPLEXITY	FEE
	CONTROLLING PROVISIONS		
Part A Fees	A Listed threatened species and ecological communities	Very High	$48,931
	B Listed migratory species	Moderate	$6,742
	C Wetlands of international importance	None	$0
	D Environment of the Commonwealth marine area	None	$0
	E World heritage properties	None	$0
	F National heritage places	None	$0
	G Nuclear actions	None	$0
	H Great Barrier Reef Marine Park	None	$0
	I Water Resources	Very High	$48,931
	J Commonwealth Land/Commonwealth Agency/Commonwealth Heritage Places Overseas	None	$0
	NUMBER OF PROJECT COMPONENTS		
	K Number of project components	Low	$0
	COORDINATION WITH OTHER LEGISLATION		
	L Coordination with other legislation	Low	$0
Part B Fees: estimate (to be confirmed prior to Stage 3)	**ADEQUACY OF INFORMATION AND CLARITY OF PROJECT SCOPE**		
	M Site surveys/Knowledge of environment	High	$34,949
	N Management measures (including mitigation and offsets)	High	$34,949
	O Project scope	High	$34,949
Exceptional circumstances	**EXCEPTIONAL CIRCUMSTANCES**		
	P Exceptional circumstances	False	$0
TOTAL COMPLEXITY FEES (Estimate)			$209,451
BASE FEE			$25,583
TOTAL FEE (Estimate)			$235,034

Potential fees for contingent and post-approval activities (if required)

The Department will notify you if a contingent activity fee is applicable due to an additional statutory step being required under the *Environment Protection and Biodiversity Conservation Act 1999*.

Post-approval fees

Evaluation of new Action Management Plan (per management plan) ($2,690)

Contingent Fees

Request additional information for referral or assessment approach decision ($1,701)
Variation to the proposed action ($1,353)
Reconsideration of the controlled action or assessment approach decision at the applicant's request ($6,577)
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Australian Government
Department of Agriculture, Water and the Environment

Notification of
REFERRAL DECISION AND DESIGNATED PROPONENT – controlled action
DECISION ON ASSESSMENT APPROACH

Gas Supply Security Project, Surat and Bowen Basins, Qld (EPBC 2020/8856)

This decision is made under section 75 and section 87 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

proposed action	To construct, operate, decommission and rehabilitate gas field infrastructure within the Surat and Bowen Basins, Queensland [See EPBC Act referral 2020/8856].
decision on proposed action	The proposed action is a controlled action. The project will require assessment and approval under the EPBC Act before it can proceed.
relevant controlling provisions	• Listed threatened species and communities (sections 18 & 18A) • Listed migratory species (sections 20 & 20A) • A water resource, in relation to coal seam gas development and large coal mining development (section 24D & 24E)
designated proponent	Australia Pacific LNG Pty Ltd ABN: 68 001 646 331
assessment approach	The project will be assessed by public environment report.
Decision-maker	
Name and position	Mike Smith Acting Assistant Secretary Environment Assessments Queensland and Sea Dumping Branch
Signature	s. 47F(1)
date of decision	17/02/2021

Australian Government
Department of Agriculture, Water and the Environment

EPBC Ref: 2020/8856

s. 11C(1)(a)
Strategic Approvals Manager
Australia Pacific LNG Pty Ltd
GPO Box 148
BRISBANE QLD 4001

Dear s. 11C(1)(a)

Decision on referral
Gas Supply Security Project, Surat and Bowen Basins, Qld

Thank you for submitting a referral under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This is to advise you of my decision about the referral of the proposed action, to construct, operate, decommission and rehabilitate gas field infrastructure within the Surat and Bowen Basins, Queensland.

As a delegate of the Minister for the Environment, I have decided under section 75 of the EPBC Act that the proposed action is a controlled action and, as such, it requires assessment and a decision about whether approval for it should be given under the EPBC Act.

The information that I have considered indicates that the proposed action is likely to have a significant impact on the following matters protected by the EPBC Act:

- Listed threatened species and communities (sections 18 & 18A);
- Listed migratory species (sections 20 & 20A); and
- A water resource, in relation to coal seam gas development and large coal mining development (sections 24D & 24E).

Please note that this decision only relates to the potential for significant impacts on matters protected by the Australian Government under Chapter 2 of the EPBC Act.

I have also decided that the project will need to be assessed by public environment report (PER). A copy of the document recording these decisions is enclosed. I have also written to the Minister for Agriculture, Drought and Emergency Management and the Queensland Department of Environment and Science advising them of my decisions.

Each assessment approach requires different levels of information and involves different steps. All levels of assessment include a public consultation phase, *in which any third parties can comment on the proposed action.* Indigenous communities may also need to be consulted during the assessment process. For more information on how and when indigenous engagement should occur during environmental assessments, please refer to the indigenous engagement guidelines at http://www.environment.gov.au/epbc/publications/engage-early.

Details on the assessment process for the project and the responsibilities of the proponent is available from the department's website at http://www.environment.gov.au/topics/environment-protection/environment-assessments.

The department has recently published an *Environmental Impact Assessment Client Service Charter* (the Charter), which outlines the department's commitments when undertaking environmental impact assessments under the EPBC Act. A copy of the Charter can be found at: http://www.environment.gov.au/epbc/publications/index.html.

Please note, under subsection 520(4A) of the EPBC Act and the *Environment Protection and Biodiversity Conservation Regulations 2000*, your assessment is subject to cost recovery. Please find attached a copy of the fee schedule for your proposal and an invoice for Stage 1. Fees will be payable prior to each stage of the assessment proceeding. Further details on cost recovery are available on the department's website at: http://www.environment.gov.au/epbc/cost-recovery.

If you disagree with the fee schedule provided, you may apply under section 514Y of the EPBC Act for reconsideration of the method used to work out the fee. The application for reconsideration must be made within 30 business days of the date of this letter and can only be made once for a fee. Further details regarding the reconsideration process can be found on the department's website at: http://www.environment.gov.au/protection/environment-assessments/assessment-and-approval-process/refer-proposed-action.

You may elect under section 132B of the EPBC Act to submit a management plan for approval at any time before the Minister makes an approval decision of the proposed action under section 133 of the EPBC Act. If an election is made under section 132B of the EPBC Act, cost recovery will apply to the approval of any action management plans you submit. Where you vary an approval condition and it results in you being required to submit an action management plan for approval, cost recovery will apply to the approval of the action management plan.

Cost recovery does not apply to the approval of action management plans where you do not elect to submit an action management plan for approval under section 132B of the EPBC Act and the approval of the action management plan does not arise from a variation to the approval conditions that you have requested.

Please also note that once a proposal to take an action has been referred under the EPBC Act, it is an offence under section 74AA to take the action while the decision making process is on-going (unless that action is specifically excluded from the referral or other exemptions apply). Persons convicted of an offence under this provision of the EPBC Act may be liable for a penalty of up to 500 penalty units. The EPBC Act is available on line at: http://www.environment.gov.au/epbc/about/index.html.

If you have any questions about the referral process or these decisions, please contact the project manager, s. 22(1)(a)(ii) , by email to s. 22(1)(a)(ii) @awe.gov.au, or telephone s. 22(1)(a)(ii) and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

s. 47F(1)

Mike Smith
Acting Assistant Secretary
Environment Assessments Queensland and
Sea Dumping Branch

17 February 2021

Australian Government
Department of Agriculture, Water and the Environment

EPBC Ref: 2020/8856

s. 47F(1)
Director
Impact Assessment and Operational Support
Department of Environment and Science
GPO Box 2454
BRISBANE QLD 4001

Dear s. 47F(1)

Decision on referral
Gas Supply Security Project, Surat and Bowen Basins, Qld

This is to advise you of my decision on the referral of the proposed action, to construct, operate, decommission and rehabilitate gas field infrastructure within the Surat and Bowen Basins, Queensland.

As a delegate of the Minister for the Environment, I have decided under section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) that the proposed action is a controlled action and, as such, it requires assessment and a decision about whether approval for it should be given under the EPBC Act.

The information that I have considered indicates that the proposed action is likely to have a significant impact on:

- Listed threatened species and communities (sections 18 & 18A);
- Listed migratory species (sections 20 & 20A); and
- A water resource, in relation to coal seam gas development and large coal mining development (sections 24D & 24E).

I have also decided that the project will need to be assessed by public environment report (PER). A copy of the document recording these decisions is enclosed.

If you have any questions about the referral process or this decision, please contact the project manager, s. 22(1)(a)(ii) by email to s. 22(1)(a)(ii) @awe.gov.au, or telephone s. 22(1)(a)(ii) and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

s. 47F(1)

Mike Smith
Acting Assistant Secretary
Environment Assessments Queensland and
Sea Dumping Branch

17 February 2021

Australian Government
Department of Agriculture, Water and the Environment

EPBC Ref: 2020/8856

The Hon David Littleproud
Minister for Agriculture, Drought and
Emergency Management
Parliament House
CANBERRA ACT 2600

Dear Minister

Decision on referral
Gas Supply Security Project, Surat and Bowen Basins, Qld

Thank you for your letter dated 4 February 2021 in response to an invitation to comment on the referral of the proposed action, to construct, operate, decommission and rehabilitate gas field infrastructure within the Surat and Bowen Basins, Queensland. This is to advise you of my decision.

As a delegate of the Minister for the Environment, I have decided under section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) that the proposed action is a controlled action and, as such, it requires assessment and a decision about whether approval for it should be given under the EPBC Act.

The information that I have considered indicates that the proposed action is likely to have a significant impact on:

- Listed threatened species and communities (sections 18 & 18A);
- Listed migratory species (sections 20 & 20A); and
- A water resource, in relation to coal seam gas development and large coal mining development (sections 24D & 24E).

I have also decided that the project will need to be assessed by public environment report (PER). A copy of the document recording this decision is enclosed.

If you have any questions about the referral process or this decision, please contact the project manager, s. 22(1)(a)(ii) by email to s. 22(1)(a)(ii) @awe.gov.au, or telephone s. 22(1)(a)(ii) and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

s. 47F(1)

Mike Smith
Acting Assistant Secretary
Environment Assessments Queensland and
Sea Dumping Branch

17 February 2021

Australian Government
Department of Agriculture, Water and the Environment

EPBC Ref: 2020/8856

The Hon Keith Pitt
Minister for Resources, Water and Northern Australia
Parliament House
CANBERRA ACT 2600

Dear Minister

Decision on referral
Gas Supply Security Project, Surat and Bowen Basins, Qld

This is to advise you of my decision on the referral of the proposed action to construct, operate, decommission and rehabilitate gas field infrastructure within the Surat and Bowen Basins, Queensland.

As a delegate of the Minister for the Environment, I have decided under section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) that the proposed action is a controlled action and, as such, it requires assessment and a decision about whether approval for it should be given under the EPBC Act.

The information that I have considered indicates that the proposed action is likely to have a significant impact on:

- Listed threatened species and communities (sections 18 & 18A);
- Listed migratory species (sections 20 & 20A); and
- A water resource, in relation to coal seam gas development and large coal mining development (sections 24D & 24E).

I have also decided that the project will need to be assessed by public environment report (PER). A copy of the document recording this decision is enclosed.

If you have any questions about the referral process or this decision, please contact the project manager, s. 22(1)(a)(ii) by email to s. 22(1)(a)(ii) @awe.gov.au, or telephone s. 22(1)(a)(ii) and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

s. 47F(1)

Mike Smith
Acting Assistant Secretary
Environment Assessments Queensland and Sea Dumping Branch

17 February 2021

Australian Government
Department of Agriculture, Water and the Environment

EPBC Ref: 2020/8856

The Hon Ken Wyatt AM MP
Minister for Indigenous Australians
Parliament House
CANBERRA ACT 2600

Dear Minister

Decision on referral
Gas Supply Security Project, Surat and Bowen Basins, Qld

This is to advise you of my decision on the referral of the proposed action to construct, operate, decommission and rehabilitate gas field infrastructure within the Surat and Bowen Basins, Queensland.

As a delegate of the Minister for the Environment, I have decided under section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) that the proposed action is a controlled action and, as such, it requires assessment and a decision about whether approval for it should be given under the EPBC Act.

The information that I have considered indicates that the proposed action is likely to have a significant impact on:

- Listed threatened species and communities (sections 18 & 18A);
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I have also decided that the project will need to be assessed by public environment report (PER). A copy of the document recording this decision is enclosed.

If you have any questions about the referral process or this decision, please contact the project manager, s. 22(1)(a)(ii) , by email to s. 22(1)(a)(ii) @awe.gov.au, or telephone s. 22(1)(a)(ii) and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

s. 47F(1)

Mike Smith
Acting Assistant Secretary
Environment Assessments Queensland and
Sea Dumping Branch

17 February 2021