

DEPARTMENT OF AGRICULTURE, WATER AND THE ENVIRONMENT

To: Kylie Calhoun, Assistant Secretary,
Environment Assessments West (WA, SA, NT) Branch (for decision)

**Referral Decision Brief: Leigh Creek Energy Stage 1 Commercial Development, SA
(EPBC 2021/8953)**

Timing: 18 August 2021 (statutory timeframe)

Recommended Decision	NCA <input type="checkbox"/> NCA(pm) <input type="checkbox"/> CA <input checked="" type="checkbox"/>												
Designated Proponent	Leigh Creek Operations Pty Ltd ACN: 146 966 305												
Controlling Provisions triggered or matters protected by particular manner	<table border="0"> <tr> <td>World Heritage (s12 & s15A) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/></td> <td>National Heritage (s15B & s15C) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/></td> </tr> <tr> <td>Ramsar wetland (s16 & s17B) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/></td> <td>Threatened Species & Communities (s18 & s18A) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> No if PM <input type="checkbox"/></td> </tr> <tr> <td>Migratory Species (s20 & s20A) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/></td> <td>C'wealth marine (s23 & 24A) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/></td> </tr> <tr> <td>Nuclear actions (s21 & 22A) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/></td> <td>C'wealth land (s26 & s27A) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/></td> </tr> <tr> <td>C'wealth actions (s28) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/></td> <td>GBRMP (s24B & s24C) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/></td> </tr> <tr> <td>A water resource – large coal mines and CSG (s24D & s24E) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> No if PM <input type="checkbox"/></td> <td>C'wealth heritage o/s (s27B & 27C) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/></td> </tr> </table>	World Heritage (s12 & s15A) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/>	National Heritage (s15B & s15C) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/>	Ramsar wetland (s16 & s17B) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/>	Threatened Species & Communities (s18 & s18A) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> No if PM <input type="checkbox"/>	Migratory Species (s20 & s20A) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/>	C'wealth marine (s23 & 24A) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/>	Nuclear actions (s21 & 22A) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/>	C'wealth land (s26 & s27A) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/>	C'wealth actions (s28) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/>	GBRMP (s24B & s24C) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/>	A water resource – large coal mines and CSG (s24D & s24E) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> No if PM <input type="checkbox"/>	C'wealth heritage o/s (s27B & 27C) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> No if PM <input type="checkbox"/>
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Public Comments	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Number: 1; See Attachment G												
Ministerial Comments	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Who: Minister for Agriculture, Drought and Emergency Management; Minister for Energy and Emissions Reduction; Minister for Indigenous Australians; Minister for Resources, Water and Northern Australia; South Australian Minister for Environment and Water; See Attachment H												
Assessment Approach Decision	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> What: Preliminary Documentation Bilateral Applies <input type="checkbox"/>												
Recommendations:													
1. Consider the information in this brief, the referral (Attachment C) and other attachments.													
Considered / Please discuss													
2. Agree that the proposed action is a component of a larger action.													
Agreed / Not agreed													

3. Agree to accept the referral under section 74A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Agreed / Not agreed

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

Agreed / Not agreed

5. Agree the action be assessed on Preliminary Documentation under Division 4 of Part 8 of the EPBC Act.

Agreed / Not agreed

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

Accepted / Please discuss

7. Agree to the designated proponent.

Agreed / Not agreed

8. Agree to the fee schedule with justifications (Attachment I1) and that the fee schedule without justification (Attachment I2) be sent to the person proposing to take the action.

Agreed / Not agreed

9. 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 assessment fees. A letter requesting further information under section 95A(2) of the EPBC Act will be prepared for your signature within 10 business days of the Stage 1 payment.

Noted / Please discuss

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

Signed / Not signed

11. Sign the letters at Attachment B.

Signed / Not signed

Date: 25 August 2021

Kylie Calhoun
Assistant Secretary
Environment Assessments West (WA, SA, NT) Branch

Comments:

KEY ISSUES:

- Concerns with the proposal in relation to the risk of subsidence and groundwater contamination have been raised by the Department's Office of Water Science, Geoscience Australia and two independent experts who commented on technical aspects of the referral through a public submission made by the Environmental Defenders Office.
- There is a high level of uncertainty and risk associated with underground coal gasification (USG) and based on the precautionary principle, the Department considers that significant impacts on water resources and listed threatened species should be deemed likely until further detailed assessment is undertaken.
- Impacts on water resources are more likely to arise from (i) changes to the integrity of hydrological connections as a result of large-scale subsidence; (ii) degradation of water quality as a result of contamination by harmful substances; (iii) impacts on human and/or animal health from water contamination; and (iv) impacts on habitat or lifecycle of native species that depend on water resources.
- Impacts on listed threatened species are more likely to arise from the contamination of water resources and air pollution (emissions), and impact on (i) the critically endangered Curlew Sandpiper (*Calidris ferruginea*); (ii) the vulnerable Thick-billed Grasswren (*Amytornis modestus*); and (iii) the vulnerable Yellow-footed Rock-wallaby - SA and NSW (*Petrogale xanthopus xanthopus*).

BACKGROUND:**Description of the referral**

A valid referral was received on 1 June 2021 ([Attachment C](#)). The action was referred by Leigh Creek Operations Pty Ltd, hereafter LCK, which has stated its belief that the proposal is not a controlled action for the purposes of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Suspension of referral decision timeframe

On 23 June 2021, you agreed to suspend the statutory referral decision timeframe under section 75(7) of the EPBC Act to seek further information from LCK on various aspects of the proposal ([Attachments D1](#)). The statutory referral decision timeframe was also extended by 15 business days from the day the requested information was received.

On 28 July 2021, LCK provided a satisfactory response to the Department's further information request ([Attachment D2](#)), which triggered a restart of the statutory referral decision clock and, after accounting for the 15 business days extension noted above, resulted in a revised statutory referral decision timeframe of 18 August 2021.

Description of the proposal (including location)

The proposal is to produce synthetic natural gas (syngas)¹ through the establishment of multiple underground coal gasification (UCG)² chambers or 'gasifiers', and to construct and operate a

¹ Syngas (synthetic gas) is a mixture of various hydrocarbon gases (predominantly methane; CH₄), carbon monoxide (CO), carbon dioxide (CO₂) and hydrogen (H₂) produced through the underground coal gasification (UCG) process.

² Underground coal gasification (UCG) is also commonly referred to as in-situ (coal) gasification (ISG).

small-scale (<5 megawatts) syngas-fired power station and supporting infrastructure at the former Leigh Creek coal mine, 550 km north of Adelaide, South Australia.

The 498-ha project area is located within the Petroleum Production Licence (PPL) number 269, entirely inside the footprint of the former Leigh Creek coal mine (see figure 3 at [Attachment C7](#)). Geologically, the coal seam targeted for UCG is part of the Telford Basin (see figures 5-10 to 5-16 at [Attachment D2C](#)).

The proposal is part of a 25-year plan by LCK to use syngas originated from UCG as a starting product for energy generation (Stage 1; this referral), ammonia production (Stage 2; not referred) and urea production (Stage 3; not referred). According to LCK, the gas resource at the site is estimated to be approximately 1,153 petajoules.

The proposal involves the: (i) establishment, initiation and operation of multiple 'gasifiers' for power supply; (ii) establishment and initiation of multiple 'gasifiers' for future commercial developments (i.e. Stages 2 and 3); (iii) establishment of a network of monitoring wells; (iv) construction and operation of a small-scale (< 5 megawatts) syngas-fired power plant; (v) construction of infrastructure such as gas pipelines, underground services and compression lines; and (vi) construction, maintenance and rehabilitation of camp facilities.

According to LCK ([Attachment D3](#)), the exact number of 'gasifiers' will be determined after the results of upcoming 3-dimensional seismic surveys and exploration drilling programs. Although an undetermined number of 'gasifiers' will be constructed during Stage 1, it is planned that only three will be operational at any given time, with one of the 'gasifiers' operated continuously to provide the main stable source of syngas for the power station. The number, location and arrangement of 'gasifiers' for Stages 2 and 3 (not referred) are yet to be defined.

Other State/Commonwealth assessment

The proposal is being assessed by the South Australian Department for Energy and Mining (DEM) under the South Australia's *Petroleum and Geothermal Energy Act 2000*.

In accordance with the State's protocol under the National Partnership Agreement on Coal Seam Gas and Large Coal Mining Development, on 23 July 2021, DEM referred the proposal to the Independent Expert Scientific Committee (IESC) on Coal Seam Gas and Large Coal Mining Development.

In addition to the EPBC Act referral, an application for an emergency declaration over the site of the proposed action, under section 9 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHP Act), is under consideration by the Department. This application does not impact on the EPBC Act assessment process.

Description of the environment

Vegetation in the project area occurs exclusively within the pre-existing Leigh Creek coal mine and shows signs of extensive anthropogenic disturbance. It comprises open shrubland and woodland formed by the genera *Atriplex*, *Casuarina*, *Maireana*, *Nitraria* and *Eucalyptus*.

Soils in the project area are gravels and clays. Rocks are exposed in the existing mine pits which comprise mudstones, siltstones, sandstones, carbonates and coal measures of the Telford Basin.

Key surface water features in the project area are dams and permanent water bodies that have collected in existing mine pits. The northwest-flowing Leigh Creek is bisected by the existing

mine area, but otherwise surface water flow directions around the project area have been preserved. The Great Artesian Basin is, at its closest, about 50 km north of the project area.

SECTION 74A – REFERRAL OF A LARGER ACTION

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 proposed action is the first stage of a 25-year commercial plan by LCK to use syngas originated from UCG for power generation (Stage 1; this referral), ammonia production (Stage 2) and urea production (Stage 3). Therefore, the Department considers that the referred action (Stage 1) and the activities described as Stage 2 and Stage 3 comprise a larger action proposed to be undertaken by the same person.

While part of a larger action, the Department considers that Stage 1 (this referral) stands alone as it is not dependent on subsequent actions which have not yet been referred (Stages 2 and 3) to progress. Further, in making its recommendation for a controlled action decision, the Department has taken into consideration all reasonably foreseeable direct, indirect, and cumulative impacts of the larger action into consideration. This means that the risk of important impacts arising from the actions not referred as part of this staged development being overlooked or unable to be controlled through approval conditions is small.

For these reasons, the Department considers that while the referred action is clearly part of the larger action, consistent with the *Policy Statement Staged Development – Split referrals: Section 74A of the EPBC Act*, it is recommended that the referral be accepted.

The Department notes that subsection 74A(4) requires you to notify the person who referred the proposal in writing of your decision under subsection 74A(1) and publish in accordance with the regulations (if any), a copy of your decision. The Department has included written notice of the decision to accept the referral in the letter to the proponent ([Attachment B1](#)).

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:

- A water resource, in relation to coal seam gas development and large coal mining development (section 24D & section 24E)

- Listed threatened species and communities (section 18 & section 18A)

These impacts are discussed respectively below.

A water resource, in relation to a large coal mining development or coal seam gas development (s24D & 24E)

Context

Underground coal gasification (UCG) and syngas

The proposed action involves the production (as well as usage) of synthetic natural gas (syngas) through underground coal gasification (UCG) or in-situ (coal) gasification (ISG). UCG is a process by which coal (from coal seams) is converted from its solid state into a gaseous form via controlled combustion that takes place in-situ underground.

Syngas is a mixture of various hydrocarbon gases (predominantly methane; CH₄), carbon monoxide (CO), carbon dioxide (CO₂) and hydrogen (H₂), with the exact composition depending on the coal type, operating pressure, combustion temperature, water concentration and the oxidant used in the controlled combustion reaction (air or oxygen)³.

The Department has sought legal advice on whether UCG could be considered a form of coal seam gas (CSG) or coal mining development for the purposes of sections 24D and 24E of the EPBC Act. The advice has been forwarded to you in confidence.

Is the action a coal seam gas development?

Broadly, the proposed action can be characterised as a development to extract gas from coal seams. However, the term coal seam gas (CSG) is traditionally used in a more restricted manner to define naturally occurring methane (CH₄) that is attached by adsorption to the coal matrix and held in coal seams by the pressure of formation water in coal cleats and fractures⁴. Therefore, there are important distinctions in the composition and formation of CSG and UCG-derived syngas.

Under section 528 of the EPBC Act, *coal seam gas development* is described as an activity involving “coal seam gas extraction...” rather than an activity to extract gas from coal seams. Given that, the Department is of the view that the proposed action **should not** be considered a *coal seam gas development* for the purposes of sections 24D and 24E of the EPBC Act.

Is the action a large coal mining development?

As noted by the GasFields Commission of Queensland², UCG provides a way to extract energy from coal deposits that are uneconomical to mine using conventional mechanical methods and as such, in a broader purposive interpretation, it could be considered a form of unconventional coal mining.

Under section 528 of the EPBC Act, *large coal mining development* is described as “any coal mining activity that has, or is likely to have, a significant impact on water resources...”. Given

³ References: South Australia Department of Energy and Mining (<https://www.petroleum.sa.gov.au/geology-and-prospectivity/resource-and-coal-plays/in-situ-gasification-and-coal-conversion>); GasFields Commission Queensland (<https://gasfieldscommissionqld.org.au/how-can-we-help/faqs>).

⁴ References: Geoscience Australia (<http://www.ga.gov.au/scientific-topics/energy/resources/petroleum-resources/coal-seam-gas>); CSIRO Gas Industry and Environmental Research Alliance (<https://gisera.csiro.au/more-information/frequently-asked-questions/what-is-coal-seam-gas/>); Australian Parliamentary Library (https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/%20pubs/BriefingBook44p/GasDebate).

that and considering the overarching purpose of the 'water trigger', the Department is of the view that the proposed action **could** be considered a *large coal mining development* for the purposes of sections 24D and 24E of the EPBC Act, if it is likely to result in significant impacts on water resources.

Impacts on water resources

Referral

According to the referral:

1. The location of the Telford Basin within the Adelaidean fractured rock basement indicates that the groundwater at the project area is sourced from local rainfall runoff and infiltration and not through the connection with other regional groundwater systems such as the Great Artesian Basin.
2. Recharge to the geological formations within and in the vicinity of the project area is limited to rainfall infiltration to the Telford Gravels, with limited to negligible vertical groundwater migration from the Telford Gravels to the underlying formation.
3. With the exception of the Telford Gravels, the geological formations present within the Telford Basin can be considered aquitards, with limited primary porosity. There is also limited hydraulic connectivity between the Telford Gravels and underlying formations.
4. No beneficial water uses have been identified within the existing coal mine footprint. The mine has ceased operations and groundwater is not believed to be extracted for any activities associated with the mine closure.
5. Groundwater outside the project area to the west (Myrtle Springs Station), east (Leigh Creek Station) and south (Copley area) are at higher elevations and, therefore, likely to be extracting groundwater from shallow water table groundwater systems.
6. There are no groundwater dependent ecosystems (GDEs) within or near the project area. Several areas of vegetation adjacent to the project area, however, would be classified as GDEs. None of these areas have any hydrogeological connectivity to the geological units present at the project area.
7. While the Telford Gravels may be considered a 'water resource', as defined by the *Water Act 2007 (Cth)*, groundwater within the Telford Gravels is likely to be discontinuous, have limited volumes and no environmental value.

Advice from the Office of Water Science

On 1 June 2021, advice on the potential impacts of the proposed action on water resources was sought from the Department's Office of Water Science (OWS).

On 17 June 2021, OWS responded to the request and indicated that further information was required from LCK before any advice could be provided ([Attachment F1](#)).

On 23 June 2021, further information was requested from LCK to address the matters raised by OWS in their response of 17 June 2021 ([Attachment D1](#)).

On 28 July 2021, LCK provided additional information to the Department ([Attachment D2](#)), which was complemented on 6 August 2021 ([Attachment D3](#)).

On 9 August 2021, OWS provided their advice ([Attachment F2](#)), noting that:

1. The advice should be considered provisional only because of the lack of detailed information for Stage 2 and 3 developments, particularly in relation to the exact location, number and arrangement of 'gasifiers' (i.e., the proposed underground workings) which are required to better assess the risk of subsidence.
2. There is insufficient information in the referral to confirm the hydraulic separation of the Telford Basin from the surrounding basement rocks and overlying Quaternary sediments that support groundwater and surface water dependent ecosystems.
3. Based on the information available, there is a realistic possibility that the Telford Basin and surrounding basement rocks are hydraulically connected which, considering the fractured and faulted nature of Precambrian basement rocks in the area, would allow groundwater movement out of the Telford Basin.
4. If groundwater that flows through the 'gasifier' chamber is mobilised, either through existing or newly formed structure pathways (fractures or faults), it could transport contaminants typically found in UCG developments such as the potentially carcinogenic benzene derivatives (BTEX), polycyclic aromatic hydrocarbons (PAH) as well as cadmium, cobalt, copper, lead, selenium and arsenic, into the surrounding water resources and the atmosphere.
5. The groundwater flow directions are to the north/northwest of the project area and towards identified aquatic and terrestrial GDEs, which means that any contaminant leaked from the operation and mobilised in the groundwater system could impact on these ecosystems.
6. The source of the 129 megalitres/year of water required for the proposal is unclear, but if they were to be taken from the Retention Basin, the reduction of the overflow could impact on downstream vegetation and fauna.
7. The previous coal mining had disrupted the limited amount of surface water that would have moved across the Telford Basin after heavy rainfall and, therefore, the proposal is unlikely to impact directly on any surface water flows.

Advice from Geoscience Australia

On 3 June 2021, advice on the geotechnical aspects of the proposed action was sought from Geoscience Australia.

On 18 June 2021, Geoscience Australia provided comments, as part of the Ministerial consultation process ([Attachment H4](#)), noting that:

1. The UCG methodology relies on groundwater pressure to contain gas and contaminants within the 'gasifier' chamber and, if overpressure is inadvertently applied or the hydrological regime changes, contaminants could be released into the surrounding geology and groundwater.
2. The syngas production process will leave an underground void in the coal seam that will likely collapse due to overburden pressure. Such collapse may fracture or deform adjacent rock formations and, therefore, reduce the ability of the formation to act as an aquitard.
3. The development of a 'gasifier' chamber underground can present geomechanical challenges, and an advanced geomechanical model that accounts for locally specific mechanical rock properties and the in-situ stress field is recommended to assess the potential for ground subsidence.

Environmental Defenders Office's public submission

On 15 June 2021, the Department received a public submission on the referral from the Environmental Defenders Office ([Attachment G1](#)). The submission included three independent technical expert reports, two of which addressed matters relevant to water resources.

Professor [s. 47F\(1\)](#) (The University of Adelaide) noted that:

1. The proposal has the potential for high impact to groundwater and the subsurface environment, and that contamination of groundwater by influx of fluids or gas from the subsurface combustion chamber is a major risk.
2. Decommissioning and remediation of the combustion chamber sites would be needed to ensure the long-term safety of the subsurface environment after the life of the UCG operation.

Associate Professor [s. 47F\(1\)](#) (RMIT University, Melbourne) noted that:

1. There are potential groundwater contamination risks associated with the proposal, which the documentation provided with the referral fails to adequately characterise and fully consider.
2. There are no detailed studies of the groundwater flow system at the site and the level of heterogeneity, fracturing and faulting in the vicinity of the proposed gasification chamber, leaving an unacceptable uncertainty regarding possible pathways for fluid and gas migration during operation and long-term management.
3. The details about how the wells will be designed, pressures controlled, and other aspects of the operation appear to be mostly conceptual, with little site-specific information going into the design. In addition, the monitoring plan for groundwater, soil gas and ambient air quality is poorly designed.

Significance of impacts

According to the *Significant Impact Guidelines 1.3* ([Attachment E1](#)), 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 and/or 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.

Taking into account the information provided in the referral and the advice noted above, the Department considers that there is significant uncertainty with the proposed action and future developments. There is a real chance or possibility that the proposed action will result in changes to the hydrology and water quality of the water resources of the Telford basin as a result of:

- changes to the integrity of hydrological connections due to large scale subsidence;
- degradation of water quality as a result of contamination by harmful substances;
- risks to human and/or animal health from water contamination; and
- impacts on habitat or lifecycle of native species that depend on water resources.

Further, there is a real risk that changes to the hydrology and water quality discussed above would be of sufficient scale and intensity to impact the ability of third party users (including the environment) to utilise the affected water resources.

Conclusion

Given what is noted above and on the basis of the precautionary principle, the Department considers significant impacts on water resources as a result of the proposed action **likely**.

Listed threatened species and communities (s18 & 18A)

The Department's Environment Reporting Tool (ERT) dated 11 August 2021 (Attachment E2) identified 7 threatened species (and no ecological communities) that are likely or know to occur within 15 km of the proposed action area, including four birds, one mammal and two plants.

The EPBC Species and Ecological Communities Update (Species Update) dated 13 August 2021 (Attachment E3) has been consulted and there are no recent or upcoming decisions relating to listing species and communities, approved conservation advices, recovery plans or threat abatement plans that may be of relevance to this proposed action.

Based on the nature, scale and location of the proposed action as well as likely habitat present in the area or nearby, the Department considers that impacts potentially arise in relation to the following matters.

- Thick-billed Grasswren (*Amytornis modestus*) – Vulnerable

Information on the Thick-billed Grasswren can be found in the conservation advice for the species at Attachment E4.

The Department's ERT identified the species as 'known to occur' within 15 km of the project area. The fauna assessment (Attachment C12) confirmed both the presence of suitable habitat and records of the species within the PEL 650 area (the 8794-ha area immediately surrounding the 498 ha project area; Attachment C4). Suitable habitat for the species in the PEL 650 area occurs mainly along major drainage lines and broad alluvial plains, both of which support dense stands of spiny shrubs, in locations not previously disturbed by mining activities. The individuals that occur in the area are part of the Flinders Ranges subspecies (*A. m. raglessi*) as illustrated in figure 15 of Attachment C7 and described in the species conservation advice (Attachment E4). The Department considers this an important population as it is necessary to maintain the species' genetic diversity.

- Curlew Sandpiper (*Calidris ferruginea*) – Critically endangered

Information on the Curlew Sandpiper can be found in the conservation advice for the species at Attachment E5.

The Department's ERT identified the species as 'known to occur' within 15 km of the project area. The fauna assessment (Attachment C12) indicates that no suitable habitat is present with the project footprint, however, there are previous records of the species associated with the former Leigh Creek mine Retention Dam, approximately 3 km south of the project area. The Department notes further records of this migratory bird at the Aroona Dam, approximately 10 km south-southwest of the project area.

- Yellow-footed Rock-wallaby (SA and NSW) (*Petrogale xanthopus xanthopus*) – Vulnerable

Information on the Yellow-footed Rock-wallaby (SA and NSW) can be found in the conservation advice for the species at Attachment E6.

The Department's ERT identified the species as 'known to occur' within 15 km of the project area. The fauna assessment ([Attachment C12](#)) indicates that no suitable habitat is present with the project footprint. However, the Department notes that the closest records of the species is at the Aroona Sanctuary, approximately 10 km south-southwest of the project area. The population at the Aroona Sanctuary was reintroduced in 1996 from approximately 12 zoos SA-bred wallabies and is now estimated to be around 40 individuals. The Department considers this an important population to maintain the species' genetic diversity and because of its location near the limit of the species range. The main population of the species occurs along the Flinders Ranges, approximately 30 km east of the project area.

The Department notes that preferred habitat for neither of the species above occurs within the project area, which is highly disturbed by previous mining activity. Therefore, direct significant impacts as a result of habitat loss are very unlikely. However, the referral has not addressed the potential for indirect impacts to any of these species that may arise from the degradation of habitat as a result of ground and/or surface water contamination, air pollution from routine and fugitive gas emissions, poisoning and bioaccumulation.

Considering the *Significant Impact Guidelines 1.1* ([Attachment E7](#)) and taking a precautionary approach, the Department believes that there is a real chance or possibility that the proposed action will result in significant impacts on these three species listed above. Should you agree with a controlled action decision, the Department will request from LCK an assessment of indirect impacts of the proposed action on these species as well as measures to avoid and mitigate potential impacts.

In summary, based on the information currently available to the Department, significant impacts on the Thick-billed Grasswren, Curlew Sandpiper and Yellow-footed Rock-wallaby (SA and NSW) are considered *likely*.

Other species unlikely to be significantly impacted

According to the Department's ERT ([Attachment E2](#)), in addition to the species discussed above, four other listed threatened species or their habitat are considered likely or known to occur within 15 km of the proposed action area.

The Department has considered the following factors when assessing the potential impacts to these species: (i) location, size and nature of the proposed action, (ii) current land use, (iii) location of nearby records and/or identified important populations of the species, (iv) habitat and species ecology, (v) soils, landforms (i.e., topography, hydrology) and existing vegetation communities, and (vi) listing status of the species (i.e., vulnerable, endangered, critically endangered).

On the basis of these considerations and the information available in the SPRAT database and referral documentation, the Department considers significant impacts on these other listed threatened species *unlikely*.

PROTECTED MATTERS THAT ARE NOT CONTROLLING PROVISIONS:

Listed migratory species (s20 & 20A)

The Department's ERT dated 11 August 2021 ([Attachment E2](#)) identified four listed migratory species, one marine bird and three wetland birds, that are likely or know to occur within 15 km of the proposed action area.

The fauna assessment (Attachment C12) noted the occurrence of six waterbirds in the former Leigh Creek mine Retention Dam, approximately 3 km south of the project area, including the following listed migratory species: Fork-tailed Swift (*Apus pacificus*), Common Sandpiper (*Actitis hypoleucos*), Sharp-tailed Sandpiper (*Calidris acuminata*) and Curlew Sandpiper (*Calidris ferruginea*).

The Department notes that these migratory bird species are widely distributed and most likely occur as transients throughout the project area. Given the information available in the SPRAT profile of these species and the referral documentation, the Department considers that there is no evidence to suggest that the former Leigh Creek mine Retention supports an 'ecologically significant' proportion of an important population of these migratory birds.

Based on the above and the *Significant Impact Guidelines 1.1* (Attachment E7), the Department considers significant impacts on listed migratory species **unlikely**.

<p>Ramsar Wetlands (s16 & 17B)</p>	<p>The Department's ERT did not identify any Ramsar listed wetland of international importance within or adjacent to the proposed action area.</p> <p>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 Ramsar listed wetlands of international importance, the proposed action is unlikely to have a significant impact on Ramsar listed wetlands of international importance.</p> <p>For these reasons the Department considers that sections 16 and 17B are not controlling provisions for the proposed action.</p>
<p>World Heritage properties (s12 & 15A)</p>	<p>The Department's ERT did not identify any World Heritage properties located within or adjacent to the proposed action area.</p> <p>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.</p> <p>For these reasons the Department considers that sections 12 and 15A are not controlling provisions for the proposed action.</p>
<p>National Heritage places (s15B & 15C)</p>	<p>The Department's ERT did not identify any National Heritage places located within or adjacent to the proposed action area.</p> <p>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.</p> <p>For these reasons the Department considers that sections 15B and 15C are not controlling provisions for the proposed action.</p>
<p>Commonwealth marine environment (s23 & 24A)</p>	<p>The proposed action does not occur in a Commonwealth marine area.</p> <p>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</p>

	<p>to have a significant impact on the environment in a Commonwealth marine area.</p> <p>For these reasons the Department considers that sections 23 and 24A are not controlling provisions for the proposed action.</p>
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 & 27A)	<p>The proposed action is not being undertaken on Commonwealth land.</p> <p>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.</p> <p>For these reasons the Department considers that sections 26 and 27A are not controlling provisions for the proposed action.</p>
Nuclear action (s21 & 22A)	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 & 24C)	<p>The proposed action is not being undertaken in the Great Barrier Reef Marine Park.</p> <p>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 the Great Barrier Reef Marine Park, the proposed action is unlikely to have a significant impact on the Great Barrier Reef Marine Park.</p> <p>For these reasons the Department considers that sections 24B and 24C are not controlling provisions for the proposed action.</p>
Commonwealth Heritage places overseas (s27B & 27C)	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 1 June 2021 and public comments were invited until 16 June 2021.

One public submission from the Environmental Defenders Office (on behalf of the Adnyamathanha Traditional Lands Association) was received on the referral ([Attachment G1](#)). The submission, which included three independent expert assessment reports, recommended a controlled action decision because of potential significant impacts on water resources (s24D &

24E), listed threatened species and communities (s18 & 18A), Great Barrier Reef Marine Park (s24B & 24C) and World heritage properties (s12 & 15A). The main issues raised by the submission were:

1. Risk of subsidence and contamination of water resources and its impact on listed threatened species.
2. Greenhouse gas emissions as a result of the proposed action, their contribution to anthropogenic climate change, and their impacts on the Great Barrier Reef Marine Park and World Heritage properties.
3. The Minister's duty to take reasonable care to avoid causing personal injury to Australian children, under sections 130 and 133 of the EPBC Act, when deciding to approve or not approve proposals under the EPBC Act.

The Department has taken the submission into consideration when discussing potential impacts to water resources and listed threatened species and communities in the sections above. The matters will be further considered during the assessment of this proposal, should you agree with the controlled action recommendation.

The Department notes that the EPBC Act does not regulate greenhouse gas emissions as a matter of national environmental significance (MNES). However, greenhouse gas emissions from the taking of an action may be considered where those emissions are likely to result in a 'significant impact' on a protected matter (on their own or in combination with other adverse environmental effects), having regard to the Department's *Significant Impact Guidelines 1.1*. In the Department's view, it is not possible to establish that the greenhouse gas emissions associated with the proposed action will be a substantial cause of any adverse climate change related effects on relevant MNES.

The Department notes that the Minister's duty of care under section 130 and 133 of the EPBC Act applies to the approval stage and the matter will be further considered during the assessment of this proposal, should you agree with the controlled action recommendation.

Comments from Commonwealth Ministers

By letter dated 1 June 2021, the following ministers were invited to comment on the referral:

- The Hon David Littleproud MP, Minister for Agriculture, Drought and Emergency Management

A delegate of the minister responded on 8 June 2021 ([Attachment H1](#)) noting the nature of the proposed action and indicating that the minister had no comments on the proposal from an agricultural perspective.

- The Hon Angus Taylor MP, Minister for Energy and Emissions Reduction

A delegate of the minister responded on 15 June 2021 ([Attachment H2](#)) noting that the minister had no comment on the proposal.

- The Hon Ken Wyatt MP, Minister for Indigenous Australians

The National Indigenous Australians Agency (NIAA) responded on 16 June 2021 on behalf of the minister ([Attachment H3](#)) noting that:

1. A Work Area Clearance Agreement (WACA) was signed by the proponent and the Adnyamathanha Traditional Lands Association (ATLA) in September 2016, and that issues with honouring the WACA have since arisen with the proponent lodging a s23

application under South Australia's *Aboriginal Heritage Act 1998* in December 2020 which, if granted, would authorise the proponent to damage, disturb or interfere with Aboriginal heritage within the project area.

2. ATLA went into administration in March 2020 and it is unclear whether it has been consulted on the s23 application, and that the proponent should, as a matter of urgency, contact Mr Peter McQuoid, special administrator, via the Office of the Registrar of Indigenous Corporations to identify alternative representation of traditional owners in the area.
3. The principles agreed to under the WACA to ensure Aboriginal heritage sites, objects and remains are protected should they be discovered during the project's construction and operation phases should be honoured, and all staff and contractors involved in the project should undertake cultural heritage awareness training.
4. The project area is within the Adnyamathanha People Number 1 native title claim (SAD6001/1998) and that the South Australian Government may wish to seek legal advice on whether the future acts regime of the *Native Title Act 1993* apply and what steps it may need to take to meet the requirements of the regime.
5. In order to help realise the economic value of the project to local Indigenous people, should it proceed, the proponent should engage Indigenous employees and businesses.

The Department notes that the matters raised by the NIAA are not relevant to the determination of whether or not the proposed action is a controlled action, however, they are relevant to the progress of the project. For this reason, the Department has included the advice in the letters at [Attachment B1](#) and [B2](#) and, as appropriate, will request that the matters be considered during the assessment stage should you agree with the controlled action recommendation.

- The Hon Keith Pitt MP, Minister for Resources, Water and Northern Australia

A delegate for the minister responded on 18 June 2021 providing comments from Geoscience Australia on the proposal ([Attachment H4](#)) which, in summary, raised issues with the proposed action in relation to the:

1. Potential for ground instability or collapse.
2. Potential for hydrogeochemical impacts on local/regional hydrology and water chemistry.

The Department has taken the comments provided by Geoscience Australia into consideration when discussing potential impacts to water resources and listed threatened species and communities in the sections above.

Comments from State/Territory Ministers

By letter dated 1 June 2021, the following South Australia state ministers were invited to comment on the referral:

- [s. 47F\(1\)](#) Coordinator Assessments, Strategic and Impact Assessments Branch, Department for Environment and Water, as delegated contact for the Hon David Speirs MP, South Australian Minister for Environment and Water.

[s. 47F\(1\)](#) responded on 16 June 2021 ([Attachment H5](#)), providing comments on the State assessment process of the proposal, and indicating that DEM would be best positioned to

regulate and assess this proposal in an eventual controlled action through mechanisms under the PGE Act.

The Department has considered the advice in recommending the assessment approach decision (below).

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 matters for consideration in making a decision on assessment approach are outlined in section 87(3) of the EPBC Act (see 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 <u>Attachment C</u> .
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 this 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) for this proposal (<u>Attachment H5</u>).
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.

While acknowledging the advice from the South Australian Government indicating that an accredited assessment would be possible (Attachment H5), the Department notes that the *Petroleum and Geothermal Energy Act 2000* (PGE Act) was not part of the 2014 bilateral agreement with South Australia under s45 of the EPBC Act. Furthermore, there are no previous examples of accredited assessments under the PGE Act, and no administrative arrangements in place to guide such an assessment. For these reasons, the Department does not recommend an accredited assessment.

Given the small number of matters likely to be impacted as well as the scale and complexity of the proposal, an assessment on Preliminary Documentation, under Division 4 of Part 8 of the EPBC Act, is recommended. Under section 87(5) of the EPBC Act, you may decide on an assessment on Preliminary Documentation only if you are satisfied that the approach will enable an informed decision to be made about whether or not to approve the taking of the action.

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* (2013) and *1.3 Significant Impact Guidelines – Coal seam gas and large coal mining developments: Impacts on water resources* (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. However, 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. However, 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 I1](#). The fee schedule (without justifications) at [Attachment I2](#) will be sent to the person proposing to take the action, including an invoice for Stage 1 seeking fees prior to the commencement of any further activity.

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

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

Director
SA/NT Assessments Section
Environment Assessments West (WA, SA, NT) Branch

SA/NT Assessments Section
s. 22(1)(a)(ii)

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

23 August 2021

ATTACHMENTS[QA checklist](#)

A: [Referral decision notice FOR SIGNATURE](#)

B: Letters

B01: [To the proponent FOR SIGNATURE](#)

B02: [To the SA Government FOR SIGNATURE](#)

C: Referral documentation

C01: [Referral form](#)

C02: [Project location figure](#)

C03: [Leigh Creek coalfield figure](#)

C04: [PPL location figure](#)

C05: [Gasification process figure](#)

C06: [Tables 1 and 2](#)

C07: [Figures 1 to 15](#)

C08: [Environmental impact report](#)

C09: [Mine closure plan](#)

C10: [Flora and fauna report PEL650 2018](#)

C11: [Flora and fauna assessment 2018](#)

C12: [Thick-billed Grasswren survey](#)

C13: [Public consultation notice](#)

C14: [SA Petroleum and Geothermal regulatory guidelines](#)

C15: [Leigh Creek Energy environmental policy](#)

C16: [Hydrogeological conceptual model for Stage 1](#)

D: Suspension of referral decision timeframe and additional information

D01: [Further information request letter under s75\(7\) 23 June 2021](#)

D02: [Proponent response 28 July 2021](#)

D02A: [Response table](#)

D02A1: [Appx. A - Map and cross section](#)

D02A2: [Appx. B - Uniaxial compressive strength and deformation test](#)

D02B: [Hydrogeological conceptual site model \(Rev. 2 – 22/07/2021\)](#)

D02B1: [Appx. A - Telford Gravels cross section](#)

D02B2: [Appx. B - AWE well logs](#)

D02B3: [Appx. C - PCD Telford Gravels and Soil Vapour well logs](#)

D02B4: [Appx. D - Water connect download](#)

D02B5: [Appx. E-a - LCK well logs part 1](#)

D02B6: [Appx. E-b - LCK well logs part 2](#)

D02B7: [Appx. E-c - LCK well logs part 3](#)

- D02B8: [Appx. E-d - LCK well logs part 4](#)
- D02B9: [Appx. F - Groundwater monitoring procedure](#)
- D02B10: [Appx. G - Groundwater field water quality parameters](#)
- D02B11: [Appx. H - Major ion chemistry and Piper and Durov diagrams](#)
- D02B12: [Appx. I - Detailed groundwater analytical results](#)
- D02B13: [Appx. J - Chemistry time series Telford Gravels local wells](#)
- D02B14: [Appx. K - Chemistry time series Telford gravels PCD wells](#)
- D02B15: [Appx. L - Chemistry time series Main Series overburden](#)
- D02B16: [Appx. M - Chemistry time series Main Series coal](#)
- D02C: [Environmental Impact Report – Stage 1 Commercial Development](#)
 - D02C1: [Appx. E - Subsidence modelling](#)
 - D02C2: [Appx. F - Gasifier production rate modelling](#)
- D02D: [Heat and mass balance](#)
- D03: [Proponent response 6 August 2021](#)
- E: Supporting documents
 - E01: [Significant impact guidelines 1.3](#)
 - E02: [ERT report 15 km buffer 11 August 2021](#)
 - E03: [EPBC Act Species Update 13 August 2021](#)
 - E04: [Conservation Advice *Amytornis modestus* \(Thick-billed Grasswren\)](#)
 - E05: [Conservation Advice *Calidris ferruginea* \(Curlew Sandpiper\)](#)
 - E06: [Conservation Advice *Petrogale xanthopus xanthopus* \(Yellow-footed Rock-wallaby\)](#)
 - E07: [Significant impact guidelines 1.1](#)
- F: Line area advice
 - F01: [Office of Water Science 17 June 2021](#)
 - F02: [Office of Water Science 9 August 2021](#)
- G: Public comments
 - G01: [Environmental Defenders Office](#)
- H: Ministerial comments
 - H01: [Delegate of Minister Littleproud](#)
 - H02: [Delegate of Minister Taylor \(nil comment\)](#)
 - H03: [National Indigenous Australians Agency \(NIAA\) on behalf of Minister Wyatt](#)
 - H04: [Geoscience Australia on behalf of Minister Pitt](#)
 - H05: [Delegate of State Minister Speirs \(SA Government\)](#)
- I: Fee schedule
 - I01: [With justifications](#)
 - I02: [Without justification](#)

From: s. 22(1)(a)(ii)
To:
Subject: 2021 8953 Leigh Creek Energy Stage 1 Commercial Development, Leigh Creek Coalfield, The Outback Highway, Flinders Ranges, Copley, SA [SEC=UNOFFICIAL]
Date: Tuesday, 8 June 2021 10:45:37 AM
Attachments: [signed response 8953.pdf](#)

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

Please find attached comments on behalf of Minister Littleproud for referral 2021 8953 Leigh Creek Energy Stage 1 Commercial Development, Leigh Creek Coalfield, The Outback Highway, Flinders Ranges, Copley, SA

Regards

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

Agriculture Stewardship | Natural Capital and Markets Branch | Climate Adaptation & Resilience Division |

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

Department of Agriculture, Water and the Environment
18 Marcus Clarke Street, Canberra ACT 2601 Australia
GPO Box 858 Canberra ACT 2601 Australia



Australian Government
**Department of Agriculture,
Water and the Environment**

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

Director
SA/NT Section
Environment Assessments (WA, SA, and NT) Branch
Department of Agriculture, Water and the Environment
GPO Box 858
CANBERRA ACT 2601

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

I refer to the letter of 1 June 2021 from s. 22(1)(a)(ii) (A/g Director, Referrals Gateway, Department of Agriculture, Water and the Environment) to the Hon. David Littleproud MP, Minister for Agriculture, Drought and Emergency Management, inviting comment on referral 2021/8953 Leigh Creek Energy Stage 1 Commercial Development, South Australia, under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Minister has asked me to reply on his behalf.

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.

It is noted that this referral relates to Leigh Creek Energy Operations Pty Ltd.'s proposal to develop an in-situ gasification project to generate electricity from syngas, and the development of two plants, one to produce ammonia and the other urea. The project will be developed in the former Leigh Creek mine located 10 kilometres (km) north east of the Leigh Creek Township within the northern Flinders Ranges, 550 km north of Adelaide.

Thank you for the opportunity to comment on referral EPBC 2021/8953.

Yours sincerely

s. 47F(1)

Anthony Bennie
Assistant Secretary
Climate Adaptation & Resilience Division

 June 2021

From: [EPBC Referrals](#)
To: **s. 22(1)(a)(ii)**
Cc:
Subject: FW: Invitation to comment on Referral – Energy (EPBC 2021/8953) Leigh Creek Energy Stage 1 Commercial Development, SA [SEC=OFFICIAL]
Date: Tuesday, 15 June 2021 10:30:55 AM
Attachments: [image002.jpg](#)
[image001.jpg](#)

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

Please see below **NIL** comment from **Minister of Energy and Emissions Reduction** with regards to **EPBC 2021/8953 Leigh Creek Energy Stage 1 Commercial Development, SA**.

Kind regards,

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

Referrals Gateway & Business Systems | Governance and Reform Branch
Environment Approvals Division | Department of Agriculture, Water and the Environment
Email: EPBC.Referrals@environment.gov.au | Web: www.environment.gov.au | Phone **s. 22(1)(a)(ii)**



From: energystrategicpolicy <energystrategicpolicy@industry.gov.au>
Sent: Tuesday, 15 June 2021 10:26 AM
To: EPBC Referrals <EPBC.Referrals@awe.gov.au>
Cc: DLO Taylor <DLOTaylor@industry.gov.au>; energystrategicpolicy <energystrategicpolicy@industry.gov.au>
Subject: RE: Invitation to comment on Referral – Energy (EPBC 2021/8953) Leigh Creek Energy Stage 1 Commercial Development, SA [SEC=OFFICIAL]

Good Morning

Thank you for providing the opportunity to provide comment on the below proposed decision.

Please be advised of a nil response from Minister Taylor.

Kind regards

s. 47F(1)

Assistant Manager
Governance and Secretariat
Energy Governance Branch
Energy Division

s. 47F(1) [@industry.gov.au](mailto:industry.gov.au)

Department of Industry, Science, Energy and Resources | www.industry.gov.au

-
Supporting economic growth and job creation for all Australians

OFFICIAL

From: EPBC Referrals [<mailto:EPBC.Referrals@awe.gov.au>]
Sent: Tuesday, 1 June 2021 12:12 PM
To: angus.taylor.mp@aph.gov.au
Cc: DLO Taylor <DLOTaylor@industry.gov.au>; energystategicpolicy <energystategicpolicy@industry.gov.au>
Subject: Invitation to comment on Referral – Energy (EPBC 2021/8953) Leigh Creek Energy Stage 1 Commercial Development, SA [SEC=OFFICIAL]



The Hon Angus Taylor MP
 Minister for Energy and Emissions Reduction
 Parliament House
 CANBERRA ACT 2600

Date: 1 June 2021
 EPBC Ref: 2021/8953
 EPBC contact: **s. 22(1)(a)(ii)**
s. 22(1)(a)(ii) @awe.gov.au

Dear Minister

**Invitation to comment on referral
 Leigh Creek Energy Stage 1 Commercial Development, Leigh Creek Coalfield, The Outback Highway, Flinders Ranges, Copley, SA**

The Department of Agriculture, Water and the Environment (the Department) has received a referral of a proposed action from Leigh Creek Energy Operations Pty Ltd to complete a 3 stage commercial development - A small scale power production facility powered from syngas produced from the initiation of multiple gasifiers; Expansion, Design and construction of an ammonia plant to combine hydrogen in syngas and nitrogen to produce ammonia; and Design and construction of a urea plant to convert the ammonia, Leigh Creek Coalfield, The Outback Highway, Flinders Ranges, Copley, South Australia, 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 **16 June 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)**
 Director
 SA/NT Section
 ENVIRONMENT ASSESSMENTS WEST (WA, SA and NT) BRANCH
 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

2021/8953.

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)

Director
Referrals Gateway

From: [Nitschke, Lisa](#)
To: [s. 22\(1\)\(a\)\(ii\)](#) [@awe.gov.au](#)
Cc: [Environment Policy](#); [s. 47F\(1\)](#)
Subject: Leigh Creek Energy Project (EPBC 2021/8953) [SEC=OFFICIAL]
Date: Wednesday, 16 June 2021 9:55:48 PM

OFFICIAL

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

Director
SA/NT Section
Environment Assessments West (WA, SA and NT) Branch
Department of Agriculture, Water and the Environment

s. 22(1)(a)(ii) [@awe.gov.au](#)

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

Thank you for the email of 1 June 2021 inviting comments on the referral of the proposed stage one commercial development of a long-term in-situ gasification facility, the Leigh Creek Energy Project, in the Leigh Creek Coalfield, Flinders Ranges, South Australia (EPBC 2021/8953).

We recognise that the proponent, Leigh Creek Energy Operations Pty Ltd, has consulted with the Adnyamathanha Traditional Lands Association (ATLA). ATLA was represented by the Environmental Defenders Office as part of the public consultation process. We understand a Work Area Clearance Agreement (WACA) between the proponent and ATLA was signed in September 2016. Issues with honouring the WACA have since arisen with the proponent subsequently lodging a Section 23 application under South Australia's *Aboriginal Heritage Act 1998* in December 2020. If granted, this would authorise the proponent to damage, disturb or interfere with Aboriginal heritage within the project area.

We understand ATLA went into administration in March 2020 and it is unclear whether ATLA has been consulted on the Section 23 application. As a matter of urgency, we recommend the proponent contacts **s. 47F(1)**, special administrator, via the [Office of the Registrar of Indigenous Corporations](#).

We recommend the proponent honours the principles agreed to under the WACA to ensure Aboriginal heritage sites, objects and remains are protected should they be discovered during the project's construction and operation phases. We also encourage all staff and contractors involved in the project to undertake cultural heritage awareness training.

We note the proponent's intent to develop a cultural heritage management plan (CHMP) with ATLA. We urge the proponent to work with **s. 47F(1)** to identify alternative representation of traditional owners in the area. We recommend the CHMP include protocols for managing and protecting tangible and intangible cultural heritage values throughout the project lifespan, and consider impacts to species and ecological communities that may be of cultural significance.

We also note the project is within the Adnyamathanha People Number 1 native title claim (SAD6001/1998). The South Australian Government may wish to seek legal advice on whether the future acts regime of the *Native Title Act 1993* applies and what steps it may need to take to meet the requirements of the regime.

To help realise the economic value of the project to local Indigenous people should it proceed, the National Indigenous Australians Agency encourages the engagement of Indigenous employees and businesses. Leigh Creek Energy Operations Pty Ltd should consider engaging with Supply Nation, which maintains a free online directory that can be used to identify suitable Indigenous business to support project implementation. Likewise, it may be useful to connect with Complete Employment Services with Dunjiba Community Council and Yarawarli AC Resource Agency, Community Development Program providers, to connect to Indigenous jobseekers as part of this project.

Yours sincerely

Lisa Nitschke

Branch Manager

Land Policy and Environment

National Indigenous Australians Agency

16 June 2021

From: s. 22(1)(a)(ii)
To:
Subject: FW: Invitation to comment on Referral – Resources (EPBC 2021/8953) Leigh Creek Energy Stage 1 Commercial Development, SA [SEC=OFFICIAL:Sensitive]
Date: Monday, 21 June 2021 10:51:05 AM
Attachments: [image001.png](#)
[GA comments on EPBC Referral for the Leigh Creek Energy Stage 1 Commercial Development SA \(EPBC 2021_8953\).pdf](#)

From: EPBC <EPBC@industry.gov.au>
Sent: Monday, June 21, 2021 10:47 AM
To: s. 22(1)(a)(ii) @agriculture.gov.au
Cc: s. 22(1)(a)(ii) @awe.gov.au; EPBC <EPBC@industry.gov.au>; EPBC <epbc@ga.gov.au>
Subject: FW: Invitation to comment on Referral – Resources (EPBC 2021/8953) Leigh Creek Energy Stage 1 Commercial Development, SA [SEC=OFFICIAL:Sensitive]

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

It has been brought to our attention that the below email may not have reached you.

Please see the attached GA advice for your reference.

Kind regards,

s. 47F(1)

Policy Officer, Resources Stewardship and Environment
Resources Strategy | Resources Division
Department of Industry, Science, Energy and Resources
51 Allara Street, Canberra City ACT 2601
GPO Box 2013, Canberra ACT 2601 Australia

s. 47F(1)

Supporting economic growth and job creation for all Australians

The department acknowledges the traditional owners of the country throughout Australia and their continuing connection to the land, sea and community. We pay our respect to them and their cultures and to the elders past and present.

OFFICIAL: Sensitive

From s. 47F(1)
Sent: Friday, 18 June 2021 10:32 AM
To: s. 22(1)(a)(ii) @awe.gov.au
Cc: EPBC <EPBC@industry.gov.au>
Subject: Invitation to comment on Referral – Resources (EPBC 2021/8953) Leigh Creek Energy Stage 1 Commercial Development, SA [SEC=OFFICIAL:Sensitive]

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

Thank you for the opportunity to comment on EPBC 2021/8953 - Leigh Creek Energy Stage 1 Commercial Development, SA.

Please see the attached comments from Geoscience Australia – noting that DAWE granted GA an extension of time to comment until 18 June.

Kind regards,

s. 47F(1)

Policy Officer, Resources Stewardship and Environment
Resources Strategy | Resources Division
Department of Industry, Science, Energy and Resources
51 Allara Street, Canberra City ACT 2601
GPO Box 2013, Canberra ACT 2601 Australia

s. 47F(1)

Supporting economic growth and job creation for all Australians

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OFFICIAL: Sensitive



Australian Government
Geoscience Australia



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

101 Jerrabomberra Ave,
Symonston ACT 2609
GPO Box 378,
Canberra, ACT 2601 Australia
Phone: **s. 47F(1)**
Facsimile: **s. 47F(1)**
Web: www.ga.gov.au
ABN 80 091 799 039

16 June 2021

Attn: s. 47F(1)

Re: Invitation to comment on referral (EPBC 2021/8953) – Leigh Creek Energy Project Stage 1, South Australia

I refer to your request for comments dated 1 June 2021 and subsequent communication on 3 June, on an EPBC referral for the Leigh Creek Energy Stage 1 Development (the Project), Copley, South Australia, by Leigh Creek Energy Operations Pty Ltd (the Proponent). Geoscience Australia (GA) has reviewed the referral information regarding matters identified by the Department of Agriculture, Water and the Environment that have a bearing on the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Potential ground instability or collapse and potential hydrogeochemical impacts from the Project on local and regional hydrology and water chemistry are the focus of Geoscience Australia's comments.

Summary

The Project proposes to develop a small-scale power production facility utilising syngas produced from in-situ coal gasification. The Project is the first stage of a planned 25-year development seeking to use syngas for power generation, ammonia production and fertiliser and urea production. The Project will occur within petroleum leases that overly the existing Leigh Creek Coalfield in the Telford Basin. The Leigh Creek Coalfield hosts the closed Leigh Creek coal mine, which ceased operations in 2015. The Project site within the former Leigh Creek coal mine.

The Proponent indicates potential environmental impacts associated with the Project but that these impacts are not significant or relate to national environmental significance matters. The Proponent has determined that any impacts to groundwater resources are unlikely to affect regional water resources or other users. The minimal impact assessment is due to the small size and localised nature of groundwater systems associated with the Telford Basin. The Proposal does not relate to the development of a coal seam gas or large coal mining development as defined by the EPBC Act or associated guidance documentation. How the EPBC Act applies to the Project is unclear at this stage.

Background

The Project will produce syngas by in-situ gasification (ISG) of the Leigh Creek Coal Measures. ISG converts coal from a solid into a gas, generating synthetic natural gas (syngas) containing methane, carbon monoxide, carbon dioxide and hydrogen. The process reacts coal at high temperatures in a

low oxygen environment, thus avoiding full combustion. The process limits combustion, but produces heat and volatile gases. The process involves key stages including drilling a production (or outlet) well in to a coal seam, drilling an inlet well to intersect the production well, initiating gasification via addition of air and water via the inlet well. The chemical process is adjusted using inlet and outlet wells to control the flow of air and water. Syngas flows up the outlet well and gasifiers at the surface process it.

The Project comprises both subsurface and surface infrastructure. Subsurface infrastructure includes developing an unspecified number of inlet and outlet wells and a network of observation wells. Surface infrastructure includes gasifier construction and commissioning, construction and operation of a small-scale power plant, which will export excess generated power to the grid, use it for hydrogen production or battery storage. The Project will require water for site preparation, construction and domestic use during operations.

The Project is subject to the South Australian *Petroleum and Geothermal Energy Act 2000* and *Petroleum and Geothermal Energy Regulations 2013*. The Proponent has developed a Statement of Environmental Objectives and an Environmental Impact Review (EIR) as part of the state regulatory process. The EIR included a hydrogeological conceptual site model (CSM), attached to the referral documentation. The Proponent will incorporate new data from exploration activities planned for 2021 and 2022 into the CSM as part of continuous improvement practices.

The CSM sets out that the Telford Basin is unlikely to play a significant role in regional groundwater systems due to the Leigh Creek Coal Measures acting as a basal aquitard. This serves to isolate the overlying hydrostratigraphy from the underlying regional basement hydrogeological system. The only aquifer identified in the overlying stratigraphy is the Telford Gravels. Other groundwater users extract water for stock and domestic purposes from shallow water table groundwater systems up gradient from the Project. There are no identified groundwater dependent ecosystems (GDEs) within the Project area or adjacent to it. Several GDEs are located in the broader petroleum exploration licence area, although these are not considered to be hydrogeologically connected to the Project.

The Project will have a maximum footprint of 498 ha within the Leigh Creek coal mine. However, the disturbance footprint is likely to be much less than 498 ha due to inaccessible areas on-site and the small footprint of Stage 1 infrastructure.

Coal and Gas Resources

The total 2P reported syngas reserves for the Leigh Creek Energy Project in the Telford Basin are 1,153 PJ. The proponent has also reported Contingent (2C and 3C), syngas resources and equivalent coal resources (Table 1).

Table 1 Leigh Creek Energy Project Coal Resources and equivalent Syngas Resources

Tenement	Coal Resource Category	Coal Resources (Mt)	Syngas Resource Classification	Syngas Energy (PJ)
Petroleum Exploration Licence 650 and Petroleum Retention Licence 247	Indicated	186.6	1P Reserves	-
	Inferred	114.6	2P Reserves	1,153.2
			3P Reserves	1,608.3
			1C Resources	-
			2C Resources	1,469.0

Tenement	Coal Resource Category	Coal Resources (Mt)	Syngas Resource Classification	Syngas Energy (PJ)
			3C Resources	2, 126.6

Source

Leigh Creek Energy Limited, Annual Report 2020.

Abbreviations

1P = Proved Reserves; 2P = the sum of Proved plus Probable Reserves; 3P = the sum of Proved plus Probable plus Possible Reserves; Mt = million tonnes; PJ = petajoules.

Comments

In-situ gasification (ISG) for syngas production is not an activity with widespread uptake in Australia. There is, therefore, not the same level of maturity in methodology for managing the risks from either regulator or operational perspectives.

Geoscience Australia is aware that Linc Energy operated the last major ISG project in Australia, in the Chinchilla area in Queensland. A key difference is that the Project is in a post-mining landscape, which has already experienced a level of environmental impact. The Project is physically removed from sensitive receivers such as high-value farming or agricultural land. The Project is targeting coal beds at greater depths than those exploited by the Chinchilla project. The CSM suggests that the Project is not connected to other groundwater systems in the region. The Project's geology and location would limit environmental impacts from the Project.

Groundwater Contamination

The CSM provides comprehensive background information and data summaries, including groundwater chemistry. The CSM sets out background chemistry, and recommends sampling and monitoring strategies. Geoscience Australia notes the following areas where the Project has the potential for impact:

Contamination:

Partial combustion of coal and the release of syngas can produce several potential contaminants of concern, including potentially carcinogenic contaminants such as poly-aromatic hydrocarbons (PAH) and BTEX. The proposal states that the methodology of ISG relies on groundwater pressure to contain gas and contaminants. If overpressure is inadvertently applied or the hydrogeological regime changes, a lower hydrostatic pressure (for example, through fracturing, void space creation or land slumping) would mean that the current hydrogeology may not contain gas and contaminants. Altered hydrogeological regimes may result in contaminant release into the surrounding geology and groundwater.

Groundwater system alteration:

The syngas production process will leave an underground void in the coal seam that will likely collapse due to overburden pressure. Such a collapse may fracture or deform adjacent rock formations and therefore reduce the ability of the formation to act as an aquitard. Consequently, geologic layers considered aquitards may in the future allow more groundwater to pass and could potentially contribute to a wider-than-anticipated spread of contamination.

Subsidence and other Geomechanical Impacts

The development of an underground gasification chamber can present geomechanical challenges, as acknowledged by the Proponent. Developing such a void underground can result in degradation and enlargement of the chamber due to mechanical instabilities, especially in the overlying rock. Furthermore, creating a low-pressure void in the subsurface can also result in a sagging of the overlying rocks into the void. It can potentially express at the surface as ground subsidence, which might affect drainage or migration patterns of surface water in extreme cases.

The Proponent acknowledges the importance of geomechanical concerns for the Project and has conducted some mechanical measurements to constrain the mechanical response of the lithologies at the site. Characterising the in-situ stress field generally forms part of a geomechanics workflow, as it determines when and how a rock will fracture and when faults might reactivate. The Proponent has measured the magnitudes of the two principal horizontal stresses using the overcoring technique and state that vertical stress is approximately twice the horizontal value which represents a normal faulting (extensional) setting. This stress regime is different from most of the Australian continent, which is in a strike-slip or compressional regime, especially at shallow depths. Adequately characterising vertical stress is essential, as this has implications for fracture propagation and fluid flow. Vertical stress closer to the horizontal stresses would stabilise the system and make uncontrolled fracturing less likely.

The Proponent conducted formation integrity testing in two different locations to determine the maximum sustained operating pressures. These are critical data for such a project involving the injection of fluids.

The Proponent has examined potential ground subsidence and compared the Project to other operations for which ground subsidence has been characterised. According to their analysis, the risk of ground subsidence is minimal. While this assessment may be valid, comparing one site to another is not always straightforward. The depths and sizes of the chamber may be significantly different, and notably, rock properties are likely to differ between locations. The extent to which subsurface deformation propagates to the surface depends mainly on mechanical rock properties such as Young's modulus and Poisson's ratio, which define a material's stiffness and deformability. The Proponent does not provide specific tests characterising the mechanical properties of the rock at the gasifier level, other than inferences of these properties from fracture testing. The company indicates it will install near-surface settlement markers to determine whether any subsidence occurs. Geoscience Australia recommends that the Proponent undertake appropriate locally specific mechanical rock property testing and advanced geomechanical modelling to supplement the information presented in the referral documentation.

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, Groundwater Branch,
Environmental Geoscience Division
Geoscience Australia

Document 6

From: [EPBC Referrals](#)
To: [EPBC comments](#)
Subject: FW: Invitation to comment on Referral – State (EPBC 2021/8953) Leigh Creek Energy Stage 1 Commercial Development, SA [SEC=OFFICIAL]
Date: Monday, 28 June 2021 2:57:38 PM
Attachments: [image001.png](#)
[image004.jpg](#)
[EPBC 2021-8953 SA Government Response.pdf](#)

From: s. 47F(1) @sa.gov.au
Sent: Wednesday, 16 June 2021 12:23 PM
To: s. 22(1)(a)(ii) @agriculture.gov.au
Cc: EPBC Referrals <EPBC.Referrals@awe.gov.au>
Subject: RE: Invitation to comment on Referral – State (EPBC 2021/8953) Leigh Creek Energy Stage 1 Commercial Development, SA [DLM=For-Official-Use-Only]

For Official Use Only

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

The South Australian Government's response to the invitation to comment on Referral – State (EPBC 2021/8953) Leigh Creek Energy Stage 1 Commercial Development, is attached for your consideration.

Regards,

s. 47F(1)

Coordinator Assessments

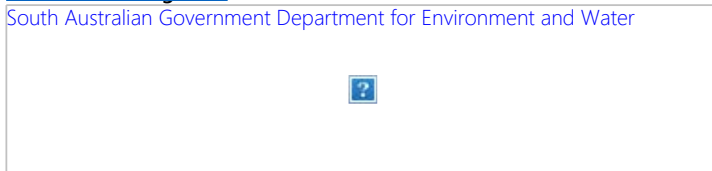
Planning & Assessment | Environment, Heritage & Sustainability
 Department for Environment and Water

s. 47F(1)

81-95 Waymouth St, Adelaide SA
 PO Box 1047, Adelaide SA 5001

environment.sa.gov.au

[South Australian Government Department for Environment and Water](#)



The information in this e-mail may be confidential and/or legally privileged. Use or disclosure of the information to anyone other than the intended recipient is prohibited and may be unlawful. If you have received this email in error please advise by return email.

From: EPBC Referrals <EPBC.Referrals@awe.gov.au>
Sent: Tuesday, 1 June, 2021 11:41 AM
To: DEW:Planning and Assessment <DEWPlanningandAssessment@sa.gov.au>
Subject: Invitation to comment on Referral – State (EPBC 2021/8953) Leigh Creek Energy Stage 1 Commercial Development, SA [SEC=OFFICIAL]



s. 47F(1)

Date: 1 June 2021

Coordinator Assessments – Strategic Policy
and Impact Assessment Branch
Department for Environment and Water
PO Box 1047
ADELAIDE SA 5001

EPBC Ref: 2021/8953
EPBC contact: **s. 22(1)(a)(ii)**
s. 22(1)(a)(ii) @awe.gov.au

Dear **s. 47F(1)**

Invitation to comment on referral

Leigh Creek Energy Stage 1 Commercial Development, Leigh Creek Coalfield, The Outback Highway, Flinders Ranges, Copley, SA

I am writing to you, as the delegated contact for the South Australian Minister for Environment and Water, the Hon David Speirs MP, in relation to consultation on actions being assessed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Department of Agriculture, Water and the Environment (the Department) has received a referral of a proposed action from Leigh Creek Energy Operations Pty Ltd to complete a 3 stage commercial development - A small scale power production facility powered from syngas produced from the initiation of multiple gasifiers; Expansion, Design and construction of an ammonia plant to combine hydrogen in syngas and nitrogen to produce ammonia; and Design and construction of a urea plant to convert the ammonia, Leigh Creek Coalfield, The Outback Highway, Flinders Ranges, Copley, South Australia, for consideration under the 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 addition, I would be grateful if you could provide the Department with your views on the assessment approach you believe is appropriate to assess the impacts of the project, in the event that it is determined to be a 'controlled action'.

In accordance with the EPBC Act, we need to receive your response by **16 June 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)**
Director
SA/NT Section
ENVIRONMENT ASSESSMENTS WEST (WA, SA and NT) BRANCH
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 2021/8953.

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: <http://www.environment.gov.au/about-us/publications/service-charter>.

Yours sincerely

s. 22(1)(a)(ii)
Director
Referrals Gateway

81-95 Waymouth St
Adelaide SA 5000GPO Box 1047
Adelaide SA 5001
Australia

16/6/2021

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

Director
Environment Assessments West Branch
Department of Agriculture, Water and the Environment
GPO Box 858
CANBERRA ACT 2601

s. 47F(1)by email **s. 22(1)(a)(ii)**[@awe.gov.au](mailto:s.22(1)(a)(ii)@awe.gov.au)Dear **s. 22(1)(a)(ii)**

**Re: EPBC 2020/8953 - Leigh Creek Energy Stage 1 Commercial Development,
Leigh Creek Coalfield, The Outback Highway, Flinders Ranges, Copley, SA**

I write on behalf of the South Australian Government regarding your invitation to comment on the above referral received by the Australian Government Department of Agriculture, Water and the Environment (DAWE) under the *Environment Protection and Biodiversity Conservation Act 1999*.

Thank you for the opportunity to comment on the referral. The South Australian Government advises the following in regard to the proposed action:

The South Australian Department for Energy and Mining, Energy Resource Divisions (DEM-ERD) received formal submission of Leigh Creek Energy's (LCE) Environmental Impact Report (EIR) and Statement of Environmental Objectives (SEO) for LCE's Stage 1 Commercial Development on 6 May 2021 and subsequently commenced its assessment in accordance with the *Petroleum and Geothermal Energy Act 2000* (PGE Act). It is important to note that the current submission only considers Stage 1 of Leigh Creek Energy's proposed 3 stage project. Future stages, whilst regulated under the PGE Act with regards to the underground coal gasification processes, will likely require other approvals under the *Planning, Development and Infrastructure Act 2016* for activities such as Ammonia and Urea production.

DEM-ERD confirmed with the DAWE Office of Water Science that they considered Underground Coal Gasification to be a form of Coal Seam Gas that would require referral to the Independent Expert Scientific Committee (IESC) in accordance with the [SA protocol](#) under the [National Partnership Agreement on Coal Seam Gas and Large Coal Mining Development](#). This referral is subject to the acceptance of the Hydrogeological conceptual

site model with co-regulators at the South Australian Department for Environment and Water.

Separately to the project's assessment under the PGE Act, on 16 July 2020, LCE applied to the Honourable Steven Marshall MP, Premier of South Australia, under the *Aboriginal Heritage Act 1988 (SA)* (AH Act) for an authorisation under s23 of the AH Act to damage, disturb or interfere with an asserted Aboriginal heritage site within the Leigh Creek coalfield.

This action was initiated by LCE following a cultural heritage dispute with Adnyamathanha Traditional Lands Association (Aboriginal Corporation) RNTBC (ATLA), Traditional Owners of, and native title body holder for, the project area.

The South Australian Department of the Premier and Cabinet – Aboriginal Affairs and Reconciliation (DPC-AAR) confirms that the project area is in an area of well-known Aboriginal cultural significance, important to both Aboriginal tradition and anthropology. DPC-AAR undertook detailed consultation about the project in accordance with the Act with Traditional Owners and other Aboriginal parties in late 2020 and early 2021. The State Aboriginal Heritage Committee has given advice to the Premier about LCE's application.

The Premier is likely to consider the LCE's application in July 2021.

Given the complexities and importance of the decision surrounding the section 23 application under the AH Act and the impending advice from the IESC, DEM-ERD will not finalise its impact classification assessment and subsequent consultation on the EIR and SEO documentation until such time that the external parties advice/decisions have been clarified.

DEM-ERD's initial assessment of the Stage 1 Commercial Development and the previous UCG Trial suggests that these activities would be unlikely to significantly impact on any matters protected under the EPBC Act. However, this is subject to DEM-ERD finalising its assessment of the Stage 1 Commercial Development EIR and SEO and the receipt of advice sought from the IESC. This position is based upon:

- DEM's knowledge of the site, in particular the former coal mine geology and the data gathered through the UCG Trial process. The heavily disturbed nature of the site, particularly with reference to the location of Petroleum Production Licence 269 which is located in close proximity and in between the coal mines main series and upper series pits.
- DEM-ERD's previous assessment of the UCG Trial SEO and EIR - https://energymining.sa.gov.au/_data/assets/pdf_file/0010/313687/20180418_-_Summary_of_Leigh_Creek_Energy_Information.pdf
- Ongoing monitoring at the UCG Trial site that currently demonstrates that gasification was fully contained within the coal seam, with no unexpected deviations from baseline monitoring.
- DEM-ERD's considerable regulatory oversight of the gasification process, particularly with regards to live pressure monitoring to ensure no divergence outside of agreed operational specifications and ensuring the gasifier is operated below hydrostatic pressure at all times.

In the event that DAWE consider any aspects of this project would trigger a controlled action, DEM-ERD would be best positioned to regulate and assess this controlled action through mechanisms under the PGE Act, in particular the Statement of Environmental Objectives, whereby the controlled action could be incorporated into the relevant assessment criteria requirements.

For further information please contact **s. 47F(1)** on **s. 47F(1)** or e-mail:
s. 47F(1) [@sa.gov.au](mailto:s.47F(1)@sa.gov.au)

Yours sincerely

s. 47F(1)

Director, Heritage and Native Vegetation