

Attachment 1

Amendment Application

**Environmental Authority (EA)
EPPG00407213**

Petroleum Lease (PL) 1087 and PL 80

**Response to Notice of Information
Request**

1. Introduction

Santos Limited (Santos) lodged an application to amend Environmental Authority (EA) EPPG00407213 on the 26 July 2022. Santos received a Notice of Information Request (IR Notice) on the 27 September 2022 (refer to Appendix A of this document) outlining the further information required by DESI to assess the application.

Following receipt of the IR Notice, Santos commissioned Eco Logical Australia Pty Ltd (ELA) to update its third-party desktop and complete an in-field ecological assessment of the Petroleum Leases 1087 and PL 80. A field survey was undertaken by two suitably qualified ecologists on 18 to 20 January 2020.

ELA have extensive experience conducting field based ecological assessment in the Cooper basin and have undertaken many field assessments in the Cooper Creek floodplain. Given their field experience ELA were also commissioned to undertake a Significant Residual Impact (SRI) assessment of the proposed activities in accordance with the '*Queensland Environmental Offsets Policy Significant Residual Impact Guideline*' (DEHP 2014). The results of the third-party SRI assessment are provided in section 4 of the ecology report (Attachment 2) and further details in Appendix F of the ecology report.

Table 1 Santos provides summarised information in response to all of the information requested in the IR Notice. The associated ecology report for this amendment application can be found in Attachment 2 and has included all changes generated from the IR Notice.

Table 1: Santos response to DESI IR on amendment application for EA EPPG00407213

Information Request Reference	Issue raised by DESI	Action Required by DESI and Santos' Response
a)	<p>The existing activities on PL1087 (approved under ATP1189) are 4 operational conventional gas wells and 2 plugged and abandoned wells. Santos have proposed an additional 5 operational gas wells for approval. The proposed conditions conclude that this will require increasing the authorisations on the environmental authority for wells and stimulation activities by 11 wells. It is noted that the final proposed well and stimulation count includes the 2 plugged and abandoned wells.</p>	<p>1. Provide justification as to why the 2 plugged and abandoned wells should be considered in the full well and stimulation count for this approval.</p> <p>Santos has included the 2 plugged and abandoned wells in the full well and stimulation count for accounting purpose and to aid in consistency and allow this amendment application's well count to be aligned with other EAs within SWQ.</p>
b)	<p>As discussed in section 6.1.3 of the Supporting information report, the determined extraction rate for the targeted Cooper Basin of 4.01m³/day/well. With the proposed increase of 11 wells authorised on the EA, it may be expected that water take will increase by approximately 44.11m³/day to 176.33m³/day.</p>	<p>1. Confirm if any water storage infrastructure such as dams are likely to be used for the proposed petroleum activities and provide an assessment of impacts resulting from the storage of produced water onsite during flood events;</p> <p>Santos confirms there is no onsite dams as part of this application. Water produced will be transferred to a centralised authorised water handling facility (e.g. Ballera).</p> <p>2. Confirm the quality of the water expected to be generated in connection with activities as well as the expected flow rate;</p> <p>Quality of produced water is not yet known, however is expected to be indicative of other produced water in the area, with generally elevated salinity.</p> <p>3. Confirm the proposed management of the water including, but not limited to, the use (including beneficial re-use arrangements), treatment, storage or disposal of the water;</p> <p>Proposed management of fluids would include transporting the fluids from the wells back to a centralised location for management. This transport and final treatment / disposal would be completed under the relevant environmental authorities. Where possible beneficial use (e.g. use in construction or for landholder use for stock watering) is preferred and is subject to evaluation and compliance with relevant environmental authority conditions.</p> <p>4. Confirm the quantity of water stored onsite; and</p> <p>5. Confirm how Santos intend to monitor and assess the effectiveness of the management of the water.</p> <p>Santos' answer for both 4 and 5: Water stored onsite would be limited to that stored in onsite tanks/ transfer facilities. The effectiveness of onsite water management is subject to compliance with Santos Management System (SMS) which includes integrity management ensuring all water containing vessel/ infrastructure is maintained in accordance with relevant standards.</p>

<p>c)</p>	<p>It is stated in section 1.1.2 of the Queensland Environmental Offsets Policy (version 1.12) (the Offset Policy), that where staging has not been identified in the conditions of the authority, and an amendment application has been made that proposes additional impacts to prescribed environmental matters, the administering agency is to have regard to the cumulative impacts. In this case, the significant residual impact assessment would consider the cumulative impacts of the entire project on each matter, i.e. impacts proposed in the existing authority and any additional impacts proposed in the amendment.</p> <p>The ecology report has been prepared with consideration to the 64 ha of impacts resulting from the proposed activities including 5 additional wells and associated infrastructure. This does not consider the cumulative impacts of the proposed activities along with the existing activities on PL1087 (i.e. the 6 conventional wells and associated infrastructure under ATP1189) and PL80.</p> <p>Currently significant residual impacts to prescribed environmental matters are not authorised under EPPG00407213 (PL80) or the Environmental Offsets Act 2014, however records are required to be kept regarding any impacts to prescribed environmental matters (PEMs) that have occurred.</p>	<ol style="list-style-type: none"> 1. Provide records demonstrating what impacts to prescribed environmental matters have occurred on PL80 and the methodology used to determine these impacts. 2. Reassess the impacts to PEMs across the project area with cumulative impacts considered. Santos answer to both question 1 and 2: Development within PL 80 has been undertaken in accordance with the conditions of EPPG00407213. Development within PL 80 includes operational gas wells and associated infrastructure such as pipelines, powerlines, access tracks and borrow pits. Ecology report updated to include impacts to PEMs within PL80 in impact assessment and a result of no residual significant impact remains (Section 3.6 Existing disturbance [new section added to report]). 3. Provide spatial data (as layer files or individual shapefiles) of the existing infrastructure within PL1087 (approved under ATP1189) and PL80. Santos have provided spatial data of existing infrastructure within PL1087 and PL80 (within Attachment 3). 4. For any proposed infrastructure with determined locations, provide spatial data (as layer files or individual shapefiles) of this proposed infrastructure. Exact locations for proposed infrastructure have not been determined at the time of application but Santos provides all disturbance data and rehabilitation efforts annually via the Annual Environmental Returned (AER) processes required for all QLD operations. Furthermore, avoidance techniques and mitigation measure condition will ensure the mitigation strategy is embraced throughout the lifecycle of development.
<p>d)</p>	<p>The Department of Environment and Science “Terrestrial Vertebrate Fauna Survey Guidelines for Queensland” (Terrestrial Survey guideline) outlines the minimum survey requirements, survey standards and appropriate practice for the survey of terrestrial vertebrate fauna in Queensland. There is no reference made to this guideline in the Ecology Report, or any species-specific target survey requirements.</p> <p>It is understood the survey was undertaken over three days, targeting vegetation and surveys for threatened species were limited to habitat assessments and camera surveys, spotlighting and opportunistic observations. These efforts do not satisfy the minimum survey requirements in accordance with the Terrestrial Survey Guideline.</p> <p>In addition to the abovementioned concerns, without an understanding of the location of proposed activities and due to the abundance of areas that could have potential PEMS across the tenure (including 1,052ha of regulated vegetation intersecting a watercourse and 403.94ha of regulated vegetation within 100m of a vegetation management wetland), it cannot be certain what PEMs are relevant to the proposed amendment and the extent of impacts proposed.</p>	<p>Given the limited scope and duration of field surveys as well as limited certainty in the proposed impacts, the following information is requested to assess significant residual impacts on PEMs:</p> <ul style="list-style-type: none"> ○ Provide a complete fauna survey and assessment consistent with the guideline, ‘Terrestrial Vertebrate Fauna Survey Guidelines for Queensland’ (June 2018, Version 3.0) to determine the presence of protected wildlife habitat on site and the potential for significant residual impacts to occur. Ensure the commentary provided for any species determined as ‘unlikely to occur’ identifies the habitat features relevant to that species and presents conclusions based on the presence or lack of presence of these habitat characteristics. <p>In addition, provide an assessment on the extent of impacts proposed to regulated vegetation PEMs based on their proposed locations.</p> <ul style="list-style-type: none"> ○ In the event option 1 cannot be completed, the application may continue without conducting the fauna survey under the following conditions: Option 2 is the preferred option and will be addressed as follows: ○ a thorough desktop assessment has been completed; A desktop assessment was completed prior to the ecological field survey in 2020 and was updated in September 2021 (Ecology report, Appendix A). The desktop assessment will be updated again to address item g of the RFI (See responses to item g). ○ the assumption that all potential protected wildlife habitats within the project area will be present over the proposed disturbance locations. Please note this may result in the requirement to offset PEMs which may not be present site-specifically; The approach to the impact assessment (Ecology report, Section 4) assumed that all potential protected wildlife habitats within the project area will be present due to Santos not being able to provide an exact disturbance location within the tenures at the time of EA amendment application. However, Santos does know the average disturbance totals for its well development (and for this EA proposed well count it totalled 64ha) – this 64ha assumption resulted in no significant residual impact to PEMs. The impact assessment assumes that the maximum impact of 64 ha (which will occur progressively over a period of 10 – 20 years) will occur entirely within mapped habitat for each species. <p>Once an exact disturbance footprint can be established (again, this will be confirmed throughout a 10-20 year period as development will not be occurring all at once), a further on-ground confirmation of biodiversity values will be completed to determine whether PEM habitat is within the defined proposed construction area prior to disturbance activities occurring.</p> <p>Santos notes that Section 1.1 of the Queensland Environmental Offsets Policy states: The mitigation hierarchy ‘avoid - mitigate - offset’ applies to prescribed activities that impact prescribed environmental matters. This means that in designing or planning the prescribed activity, impacts on prescribed environmental matters should, in the first instance, be reasonably</p>

avoided wherever possible. For impacts that cannot be avoided, the extent of those impacts should be carefully managed and mitigated to the greatest possible extent. These measures can reduce and, in some cases, remove the need for offsets.

Applying a requirement to offset PEMs before that exact location can be provided conflicts with the purpose of the Queensland Environmental Offset Policy and will result in the first two steps (avoid / mitigate) in the mitigation hierarchy being skipped, and providing no incentive to avoid or mitigate impacts. This would be a disproportionate requirement and pre-emptive if applied without a specific footprint being known by Santos or DESI.

Santos would like to embrace the opportunity to provide exact disturbances, avoid PEMs when exact locations are determined over the 10-20 year period of its progressive development, and have the ability to enforce its avoidance and /or mitigation measures with evidence being available or supplied to the DESI. This would allow Santos to continuously and accurately assess its cumulative impact within the tenures under this EA amendment and give oversight to DESI on Santos' development processes..

Alternatively, Santos is open to a negotiated condition set that would also ensure the correct outcomes are achieved and the application of the mitigation hierarchy can be maintained and reinforced through the Environmental Authority.

- **conditions may be set restricting activities in prescribed regional ecosystems within a defined distance from the defining banks of a watercourse and in prescribed regional ecosystems that intersects with an area shown as a wetland, as these are considered PEMs and the extent of impacts to these have not been described;**

A maximum disturbance limit of 64 ha (which will occur progressively over a period of 10 – 20 years) could apply to activities within the 1,052 ha of regulated vegetation intersecting a watercourse within the tenures and 403.94ha of regulated vegetation within 100m of a vegetation management wetland of the tenures. Exact locations for proposed infrastructure have not been determined yet but once confirmed, avoidance to PEMs is the first option to be utilised prior to each well development, with mitigation measures to aid in further lowering any impacts – all of which can be provided to DESI either through a condition set in the EA or the Annual Environmental Return (AER) (**no changes to report were required**). Santos already has EA condition sets throughout the Cooper Basin which define requirements of constructions near wetlands and believe similar should be applied to this amendment application.

- **reasons are provided why option 1 could not be achieved, including a description of the constraints that limit the abilities to undertake minimum survey requirements;**

Constraints related to the fauna survey method and why Option 1 wasn't selected include (**please see Section 2.4.8 Limitations**):

- Logistical challenges. The remote location means a large amount of planning is required to conduct surveys and rapid mobilisation to capture suitable conditions (i.e. a particular month of the year or following rainfall) is not always possible.
- Seasonality. The environment in the Channel Country bioregion can include multiple years of drought condition and project timeframes cannot always accommodate surveys across multiple years to capture the full range of environmental conditions.
- Ethical concerns on having to trap fauna. The Cooper Basin can be a very hostile environment and trapped fauna can be put at unnecessary risk in this arid environment.

The value of additional fauna surveys is also limited, as the precautionary principle has been built into impact assessments so additional field surveys will not change the outcome of the assessment (as impact assessments already assume habitat present).

Ecology report includes additional information about the assessment methods and assumptions (e.g. conservative approach used for likelihood of occurrence assessment given field survey limitations) and an assessment of how risks will be managed. The limitations section of the Ecology report (**Section 2.3.8**) will be updated to include discussion of any potential gaps in the assessment due to the method undertaken (**Section 2.1 Approach [new section added to report] and Section 2.4.8 Limitations**).

- **justification is provided how option 2 demonstrates the full scope of impacts to PEMs, and provide an assessment of how risks will be managed and any potential gaps that may not be covered in this option (2); and**

Ecology report updated to demonstrate that the mitigation hierarchy 'avoid-mitigate-offset' has been considered and is reflected in the project approach (**Section 4.2 Avoidance and mitigation measures [new section added to report]; mitigation measures also discussed in Section 4.7, Section 5 and Appendix F**). The principles of avoiding and mitigating impacts to PEMs to the greatest extent possible are a

key part of the Santos approach to development in the Cooper Basin. Measures that will be employed to avoid impacts to prescribed environmental matters as far as practicable include:

- Micro-site infrastructure to minimise impacts to higher value habitat or vegetation when exact disturbance areas are determined.
- Preferentially locate infrastructure adjacent to areas of pre-existing disturbance to minimise impacts to undisturbed areas.
- In areas of high environmental value (such as wetland habitats) boundaries to be pegged during construction to delineate the approved maximum extent of disturbance.
- Once a well pad disturbance location is known, completing an on-the-ground verification of biodiversity values of native vegetation communities at the known location are logged and any MSES avoided in the first instance.

- **the mitigation hierarchy ‘avoid-mitigate-offset’ is considered and demonstrated as per the requirements of the Offsets Policy. The administering authority must be satisfied that offsets is the final option.**

In summary to the IR Notice response and capturing the topics of recent discussions between DESI and Santos, we would like to take the opportunity to communicate that the oil and gas operations in southwest Queensland (SWQ) are unique compared to other areas of Australia and resources within the industry (such as Coal Seam Gas). The nature of finding viable reservoirs in SWQ through conventional approaches can be metaphorically compared to a ‘casino’ scope of staging. Multiple rounds of seismic, testing and subsurface enquiry need to occur before Santos can determine where to undertake surface drilling works to yield the best production rate from its wells.

Therefore, at the time of EA application Santos SWQ operations are unable to provide an exact footprint of the proposed well count that require new disturbance. It’s an incremental process with ongoing data collection and evaluation that Santos can determine where a reservoir can be best reached, and then the location of its associated surface disturbance footprint can be confirmed. In the essence of time and administration for its EA applications, Santos can provide a total well count it would like to have approval from DESI but not the exact locations of disturbance.

During the preparation of this IR notice response and keeping in mind DESI’s queries, Santos has adopted, to best extent practicable, the mitigation hierarchy. It is Santos’ belief that the ‘avoid, mitigate, offset’ approach underpins state assessment decision-making processes in relation to environmental matters.

By Santos utilising this approach and taking onboard DESI’s feedback during the assessment of this amendment application, Santos will avoid significant disturbance to Matters of State Environmental Significance (MSES) when a specific disturbance area is finally determined and invites conditioning that helps demonstrates confidence that where possible, Santos is completing this avoidance stage.

By DESI applying an environmental offset prior to embracing avoidance or mitigation options, it is pre-emptive as both Santos and DESI are unaware of exact disturbance locations. Conditioning related to offsets at this stage will erode the chance for Santos to follow the mitigation hierarchy.

Additionally, Santos has implemented new mitigation measures into how Santos can conduct its activities before, during, and after works and would like the opportunity to provide this to DESI’s compliance branch to ensure PEMs continue to be avoided and mitigated throughout the development lifecycle.

In addition to avoidance techniques to be applied when a disturbance area is known, measures that will be employed to mitigate impacts to prescribed environmental matters as far as practicable include:

- Utilising the condition implemented on other SWQ EAs for when disturbance areas is confirmed: *prior to undertaking activities that result in significant disturbance to land in areas of native vegetation, confirmation of on-ground biodiversity values of the native vegetation communities at that location must be undertaken by a suitably qualified person.*
- Fauna spotter / catcher to be present prior to activities occurring to ensure no fauna habitat such as protected fauna nests are within the disturbance zone.
- Fuels, chemicals and wastes to be stored, handled and transported in accordance with applicable company and regulatory requirements. This includes storing fuels, chemicals and waste in bunded areas outside of the floodplain. An appropriately sized spill kit should be available and stored in close proximity to fuel, chemical and waste storage areas.

		<ul style="list-style-type: none"> ○ Hygiene protocols to be implemented as appropriate to minimise the introduction, spread and persistence of weeds, pest plants, animals and pathogens from plant and vehicle movement. ○ Linear infrastructure to be constructed at or near grade so as to minimise the potential for interference in surface water flows. ○ Infrastructure to be located, prepared and constructed to maintain pre-existing surface water flows. ○ At the end of life of the Project, all disturbed land should undergo final rehabilitation, aimed at returning the land to its pre-disturbed land use in accordance with relevant Environmental Authority conditions. ○ Progressive rehabilitation will be undertaken where possible to ensure habitat is returned quickly to a natural state.
<p>e)</p>	<p>The application identifies the following <i>Nature Conservation Act 1992</i> listed species with potential to occur within the tenure that are considered PEMs under the Environmental Offsets Regulation 2014:</p> <ul style="list-style-type: none"> ○ <i>Indigofera oxyrachis</i> - Vulnerable ○ <i>Lophochroa leadbeateri</i> – Major Mitchell’s Cockatoo – Vulnerable ○ <i>Falco hypoleucos</i> – Grey Falcon – Vulnerable ○ <i>Grantiella picta</i> – Painted Honeyeater - Vulnerable <p>Section 2.1.1. of the Ecology report states that database searches were performed using the EPBC Act protected matters search tool and wildlife online databases, based on a central coordinate. It is noted the coordinate location is in the southern part of the tenure. Justification for choosing this location is not provided.</p> <p>Despite this, a search of the protected matters data within the tenure polygon identified the following matter that has not been considered in the Ecology report:</p> <ul style="list-style-type: none"> ○ <i>Amytornis barbatus</i> - Bulloo Grey Grasswren, Grey Grasswren (Bulloo) – Endangered 	<ol style="list-style-type: none"> 1. Confirm why the desktop search was undertaken using a central coordinate location in the southern area of the tenure; The coordinate was located in the southern part of PL1087 in error. However, a 100km buffer was used for the PMST and wildlife online searches and the 100km buffer fully encompasses both PL80 and PL1087 and a large area surrounding both tenures. For reference, the distance from the coordinate to the northern boundary of PL1087 is 8.4 km. Therefore, the use of this coordinate has not limited the effectiveness of the desktop assessment in any way (Section 2.2.1 provides coordinates used in updated desktop assessment). 2. Confirm why the Bulloo Grey Grasswren was not identified in the desktop assessment stage of the ecology report; The Bulloo Grey Grasswren appears in the updated PMST and wildlife online searches (both dated 30/09/2021) and is included in the likelihood of occurrence assessment in the Ecology report (Appendix A). The species is assessed as unlikely to occur within the study area due to the absence of suitable habitat (Lignum) (Additional information added to Bulloo Grey Grasswren likelihood of occurrence assessment in Appendix A). 3. Provide a desktop assessment on the potential presence of the Bulloo Grey Grasswren; and See Appendix A of the ecology report (Additional information added to Bulloo Grey Grasswren likelihood of occurrence assessment). 4. Review and confirm the list of species with potential to occur within the entire project site. This task is considered unnecessary given the extent and accuracy of the desktop searches undertaken (updated desktop assessment completed including review of likelihood of occurrence assessment for all species, see Appendix A).
<p>f)</p>	<p>The <i>Notomys fuscus</i> (Dusky Hopping Mouse) is identified as having pre-clear potential habitat within the tenure area, according to the Queensland Herbarium Wildmap data. This is not consistent with the justification provided for the species in the Ecology report which simply states that the tenure does not contain suitable dune habitat.</p>	<ol style="list-style-type: none"> 1. Provide further information relevant to the soil and vegetation types on site to demonstrate why the dusky hopping mouse is not likely to occur on site. Ecology report has been updated with additional information on the soil and vegetation types within the tenure, with specific discussion of habitat suitability for Dusky Hopping Mouse, i.e. presence / absence of species associations such as sandhill Canegrass (<i>Zygochloa paradoxa</i>), Sandhill Wattle (<i>Acacia ligulata</i>), Nitre Bush (<i>Nitraria billardieri</i>) and Sticky Hopbush (<i>Dodonaea viscosa</i>) (please see further details within Appendix A).
<p>g)</p>	<p>Section 4.4 of the Supporting information report identifies that while good remnant structural and refuge habitat was present in areas, drought and very hot summer conditions experienced during the survey, combined with the lack of flowering and seeding plants as well as permanent water sources, is likely to have restricted the diversity and abundance of fauna observed.</p> <p>It is noted that the conditions at the time of survey have influenced conclusions that some species are unlikely to occur in the Ecology report results.</p> <p>The Terrestrial Survey guideline states that single season terrestrial fauna surveys will not provide an adequate sample for either simple inventories or impact studies. To increase precision in the data collected, at least two surveys undertaken in different seasons will be a</p>	<ol style="list-style-type: none"> 1. For all species identified as having potential to occur within the project area, such as the Plains wanderer, review the likelihood of occurrence assessment for the study area and amend justifications, particularly where conclusions are reliant on survey results that are not consistent with the Terrestrial survey guideline (e.g. based on the conditions at the time of surveying). Justifications should be based on habitat characteristics in the area with reference to the federal Species Profile and Threats Database; and Likelihood of occurrence assessment for all species identified as having potential to occur within the project area have been reviewed and justifications updated based on habitat characteristics and with reference to the Species Profile and Threats Database (updated desktop assessment completed including review of likelihood of occurrence assessment for all species, see Appendix A). 2. Re-evaluate the Likelihood classification for these species and provide a revised list of species with ‘potential’ to occur within the project area.

	<p><i>minimum requirement, particularly if one survey is conducted during drought conditions.</i></p> <p><i>As an example, the Pedionomus torquatus (Plains-wanderer) is a critically endangered listed species (QLD), identified as having potential to occur within the tenure area according to the federal protected matters search and the Queensland Herbarium Wildmap data. The justification in the Ecology report for this species identifies that there is potential habitat in the area but considering the dry conditions and field survey observations, the study area was not considered to contain preferred habitat. This species was labelled as unlikely to occur.</i></p> <p><i>The conditions at the time of the field survey is not representative of the potential habitat characteristics of the landscape at varying times of the year and under varying climatic conditions and is not consistent with the minimum requirements set in the Terrestrial Survey Guideline.</i></p>	<p>Ecology report has been updated to reflect new likelihood of occurrence assessment results (updated desktop assessment completed including review of likelihood of occurrence assessment for all species, see Appendix A; additional species added to Section 3.4.1, Section 3.4.4 and throughout Section 4).</p>
<p>h)</p>	<p><i>The Department of Environment and Science “Queensland Environmental Offsets Policy, Significant Residual Impact Guideline” (SRI Guideline) dated December 2014 includes the following criterion with respect to assessing significant residual impact to protected wildlife habitat: “result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species’ habitat”. The application only refers to weed hygiene procedures and does not address invasive fauna species.</i></p>	<p>1. Describe how pests will be managed to minimise potential impacts on prescribed environmental matters in relation to the above criterion.</p> <p>The significant impact assessments for each species (Ecology report, Appendix F) include the following statement: ‘Pest species that are harmful to the species (e.g. feral cats and foxes) are already known from the region and the proposed development is unlikely to increase the risk of harm from pest species’. The Ecology report has been updated to include additional pest fauna management actions such as appropriate waste and bin management (Appendix F, Section 5).</p>
<p>j)</p>	<p><i>The definition of local scale and regional scale is prescribed in section 3.4 of the SRI guideline (i.e local scale meaning the area within a 5km buffer of the impact area and regional scale meaning within 20km buffer of the impact area).</i></p> <p><i>Section 3.2 of the SRI guideline confirms this is considered post impact. Section 6.2 of the application supporting information report states, “100% of the study area is covered by remnant vegetation (regional scale extent of core remnant ecosystem >90%), therefore change threshold for local core scale remnant ecosystem is 50%. The proposed amendment will not result in the clearance of greater than 50% of the remnant vegetation across the study area”.</i></p>	<p>1. Please review the test 1 results considering the definition of regional and local scale prescribed in section 3.4 of the Significant Residual Impact Guideline and advise of the outcome.</p> <p>Test 1 states ‘the change in the core remnant ecosystem extent at the local scale (post impact) is greater than a threshold determined by the level of fragmentation at the regional scale’.</p> <p>Test 1 has been assessed theoretically, as the location of the disturbance footprint has not been finalised and therefore calculations (e.g. spatial analysis of disturbance footprint and buffer areas etc.) are not possible but once an exact area of disturbance is confirmed, Santos can reassess.</p> <p>The Ecology report (Section 4.7) has been updated to include a more detailed description of the assessment of Test 1, including specific reference to regional and local scale (Section 4.8).</p>

Appendix A – DESI EPPG00407213 Information Request Notice

Notice

Environmental Protection Act 1994

Information request

This information request is issued by the administering authority under section 140 of the Environmental Protection Act 1994 to request further information needed to assess an amendment application for a site-specific environmental authority.

To: Santos Limited; Vamgas Pty Ltd;
Delhi Petroleum Pty Ltd, Santos
Australian Hydrocarbons Pty Ltd
c/- Santos Limited
60 Flinders Street
ADELAIDE SA 5000

Email: Liz.Dunlop@santos.com

ATTN: Liz Dunlop

Our reference: EPPG00407213 | C-EA-100295368

Further information is required to assess an amendment application for environmental authority

1. Application details

The amendment application for a site-specific environmental authority was received by the administering authority on 27 July 2022.

The application reference number is: **A-EA-AMD-100295356**

Land description: Petroleum Lease (PL) 80 and PL1087

2. Information request

The administering authority has considered the abovementioned application and is writing to inform you that further information is required to assess the application (an information request).

The information requested is provided below:

Proposed activities:

- a) Issue: The existing activities on PL1087 (approved under ATP1189) are 4 operational conventional gas wells and 2 plugged and abandoned wells. Santos have proposed an additional 5 operational gas wells

for approval. The proposed conditions conclude that this will require increasing the authorisations on the environmental authority for wells and stimulation activities by 11 wells. It is noted that the final proposed well and stimulation count includes the 2 plugged and abandoned wells.

Action required:

- Provide justification as to why the 2 plugged and abandoned wells should be considered in the full well and stimulation count for this approval.
- b) Issue: As discussed in section 6.1.3 of the Supporting information report, the determined extraction rate for the targeted Cooper Basin of 4.01m³/day/well. With the proposed increase of 11 wells authorised on the EA, it may be expected that water take will increase by approximately 44.11m³/day to 176.33m³/day.

Action required:

- Confirm if any water storage infrastructure such as dams are likely to be used for the proposed petroleum activities and provide an assessment of impacts resulting from the storage of produced water onsite during flood events;
- Confirm the quality of the water expected to be generated in connection with activities as well as the expected flow rate;
- Confirm the proposed management of the water including, but not limited to, the use (including beneficial re-use arrangements), treatment, storage or disposal of the water;
- Confirm the quantity of water stored onsite; and
- Confirm how Santos intend to monitor and assess the effectiveness of the management of the water.

Prescribed environmental matters:

- c) Issue: It is stated in section 1.1.2 of the Queensland Environmental Offsets Policy (version 1.12) (the Offset Policy), that *where staging has not been identified in the conditions of the authority, and an amendment application has been made that proposes additional impacts to prescribed environmental matters, the administering agency is to have regard to the cumulative impacts. In this case, the significant residual impact assessment would consider the cumulative impacts of the entire project on each matter, i.e. impacts proposed in the existing authority and any additional impacts proposed in the amendment.*

The ecology report has been prepared with consideration to the 64ha of impacts resulting from the proposed activities including 5 additional wells and associated infrastructure. This does not consider the cumulative impacts of the proposed activities along with the existing activities on PL1087 (i.e. the 6 conventional wells and associated infrastructure under ATP1189) and PL80.

Currently significant residual impacts to prescribed environmental matters are not authorised under EPPG00407213 (PL80) or the *Environmental Offsets Act 2014*, however records are required to be kept regarding any impacts to prescribed environmental matters (PEMs) that have occurred.

Action required:

- provide records demonstrating what impacts to prescribed environmental matters have occurred on PL80 and the methodology used to determine these impacts.

- Reassess the impacts to PEMs across the project area with cumulative impacts considered;
 - Provide spatial data (as layer files or individual shapefiles) of the existing infrastructure within PL1087 (approved under ATP1189) and PL80; and
 - For any proposed infrastructure with determined locations, provide spatial data (as layer files or individual shapefiles) of this proposed infrastructure.
- d) *Issue:* The Department of Environment and Science “Terrestrial Vertebrate Fauna Survey Guidelines for Queensland” (Terrestrial Survey guideline) outlines the minimum survey requirements, survey standards and appropriate practice for the survey of terrestrial vertebrate fauna in Queensland. There is no reference made to this guideline in the Ecology Report, or any species-specific target survey requirements.

It is understood the survey was undertaken over three days, targeting vegetation and surveys for threatened species were limited to habitat assessments and camera surveys, spotlighting and opportunistic observations. These efforts do not satisfy the minimum survey requirements in accordance with the Terrestrial Survey Guideline.

In addition to the abovementioned concerns, without an understanding of the location of proposed activities and due to the abundance of areas that could have potential PEMS across the tenure (including 1,052ha of regulated vegetation intersecting a watercourse and 403.94ha of regulated vegetation within 100m of a vegetation management wetland), it cannot be certain what PEMs are relevant to the proposed amendment and the extent of impacts proposed.

Action required:

Given the limited scope and duration of field surveys as well as limited certainty in the proposed impacts, the following information is requested to assess significant residual impacts on PEMs:

- i. Provide a complete fauna survey and assessment consistent with the guideline, ‘Terrestrial Vertebrate Fauna Survey Guidelines for Queensland’ (June 2018, Version 3.0) to determine the presence of protected wildlife habitat on site and the potential for significant residual impacts to occur. Ensure the commentary provided for any species determined as ‘unlikely to occur’ identifies the habitat features relevant to that species and presents conclusions based on the presence or lack of presence of these habitat characteristics.

In addition, provide an assessment on the extent of impacts proposed to regulated vegetation PEMs based on their proposed locations.
- ii. In the event option 1 cannot be completed, the application may continue without conducting the fauna survey under the following conditions:
 - o a thorough desktop assessment has been completed;
 - o the assumption that all potential protected wildlife habitats within the project area will be present over the proposed disturbance locations. Please note this may result in the requirement to offset PEMs which may not be present site-specifically;
 - o conditions may be set restricting activities in prescribed regional ecosystems within a defined distance from the defining banks of a watercourse and in prescribed regional ecosystems that intersects with an area shown as a wetland, as these are considered PEMs and the extent of impacts to these have not been described;

- reasons are provided why option (i) could not be achieved, including a description of the constraints that limit the abilities to undertake minimum survey requirements;
- justification is provided how option (ii) demonstrates the full scope of impacts to PEMs, and provide an assessment of how risks will be managed and any potential gaps that may not be covered in this option (ii); and
- the mitigation hierarchy 'avoid-mitigate-offset' is considered and demonstrated as per the requirements of the Offsets Policy. The administering authority must be satisfied that offsets is the final option.

e) Issue: The application identifies the following *Nature Conservation Act 1992* listed species with potential to occur within the tenure that are considered PEMs under the Environmental Offsets Regulation 2014:

- *Indigofera oxyrachis* - Vulnerable
- *Lophochroa leadbeateri* – Major Mitchell's Cockatoo – Vulnerable
- *Falco hypoleucos* – Grey Falcon – Vulnerable
- *Grantiella picta* – Painted Honeyeater - Vulnerable

Section 2.1.1. of the Ecology report states that database searches were performed using the EPBC Act protected matters search tool and wildlife online databases, based on a central coordinate. It is noted the coordinate location is in the southern part of the tenure. Justification for choosing this location is not provided.

Despite this, a search of the protected matters data within the tenure polygon identified the following matter that has not been considered in the Ecology report:

- *Amytornis barbatus* - Bulloo Grey Grasswren, Grey Grasswren (Bulloo) – Endangered

Action required:

- Confirm why the desktop search was undertaken using a central coordinate location in the southern area of the tenure;
- Confirm why the Bulloo Grey Grasswren was not identified in the desktop assessment stage of the ecology report;
- Provide a desktop assessment on the potential presence of the Bulloo Grey Grasswren; and
- Review and confirm the list of species with potential to occur within the entire project site.

f) Issue: The *Notomys fuscus* (Dusky Hopping Mouse) is identified as having pre-clear potential habitat within the tenure area, according to the Queensland Herbarium Wildmap data. This is not consistent with the justification provided for the species in the Ecology report which simply states that the tenure does not contain suitable dune habitat.

Action required:

- Provide further information relevant to the soil and vegetation types on site to demonstrate why the dusky hopping mouse is not likely to occur on site.

- g) ***Issue:*** Section 4.4 of the Supporting information report identifies that while good remnant structural and refuge habitat was present in areas, drought and very hot summer conditions experienced during the survey, combined with the lack of flowering and seeding plants as well as permanent water sources, is likely to have restricted the diversity and abundance of fauna observed.

It is noted that the conditions at the time of survey have influenced conclusions that some species are unlikely to occur in the Ecology report results.

The Terrestrial Survey guideline states that *single season terrestrial fauna surveys will not provide an adequate sample for either simple inventories or impact studies. To increase precision in the data collected, at least two surveys undertaken in different seasons will be a minimum requirement, particularly if one survey is conducted during drought conditions.*

As an example, the *Pedionomus torquatus* (Plains-wanderer) is a critically endangered listed species (QLD), identified as having potential to occur within the tenure area according to the federal protected matters search and the Queensland Herbarium Wildmap data. The justification in the Ecology report for this species identifies that there is potential habitat in the area but *considering the dry conditions and field survey observations, the study area was not considered to contain preferred habitat.* This species was labelled as unlikely to occur.

The conditions at the time of the field survey is not representative of the potential habitat characteristics of the landscape at varying times of the year and under varying climatic conditions and is not consistent with the minimum requirements set in the Terrestrial Survey Guideline.

Action required:

- For all species identified as having potential to occur within the project area, such as the Plains-wanderer, review the likelihood of occurrence assessment for the study area and amend justifications, particularly where conclusions are reliant on survey results that are not consistent with the Terrestrial survey guideline (e.g. based on the conditions at the time of surveying). Justifications should be based on habitat characteristics in the area with reference to the federal Species Profile and Threats Database; and
- Re-evaluate the Likelihood classification for these species and provide a revised list of species with 'potential' to occur within the project area.

- h) ***Issue:*** The Department of Environment and Science "Queensland Environmental Offsets Policy, Significant Residual Impact Guideline" (SRI Guideline) dated December 2014 includes the following criterion with respect to assessing significant residual impact to protected wildlife habitat: "*result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat*". The application only refers to weed hygiene procedures and does not address invasive fauna species.

Action required:

- Describe how pests will be managed to minimise potential impacts on prescribed environmental matters in relation to the above criterion.

- i) ***Issue:*** The definition of local scale and regional scale is prescribed in section 3.4 of the SRI guideline (i.e local scale meaning the area within a 5km buffer of the impact area and regional scale meaning within 20km buffer of the impact area).

Section 3.2 of the SRI guideline confirms this is considered post impact. Section 6.2 of the application supporting information report states, “100% of the study area is covered by remnant vegetation (regional scale extent of core remnant ecosystem >90%), therefore change threshold for local core scale remnant ecosystem is 50%. The proposed amendment will not result in the clearance of greater than 50% of the remnant vegetation across the study area”.

It is not clear how the definitions of local and regional scale have been considered in this justification, including how the impact area and relevant buffers have been determined and accounted for.

Action required:

- Please review the test 1 results considering the definition of regional and local scale prescribed in section 3.4 of the Significant Residual Impact Guideline and advise of the outcome.

- j) Issue: It is expected some ground studies may differ from departmental mapping found via Queensland Globe.

Action required:

Provide spatial information of on-ground study results in layer files or individual shapefiles. This may include:

- Individual PEMs
- Ground-verified regional ecosystem mapping
- Watercourse buffer zones
- ESAs and protection zones (primary protection zones (PPZs) and secondary protection zones (SPZs))

Provide supporting information which further describes and quantifies the proposed impact on PEMs and ESAs for each project and activity.

3. Actions

The abovementioned application will lapse unless you respond by giving the administering authority -

- (a) all of the information requested; or
- (b) part of the information requested together with a written notice asking the authority to proceed with the assessment of the application; or
- (c) a written notice –
 - i. stating that you do not intend to supply any of the information requested; and
 - ii. asking the administering authority to proceed with the assessment of the application.

Should the information request require an EIS process or applicant to submit a progressive rehabilitation and closure (PRC) plan then it must be completed and submitted.

A response to the information requested must be provided by 29 March 2023 (the information response period). If you wish to extend the information response period, a request to extend the period must be made at least 10 business days before the last day of the information response period.

The response to this information request or a request to extend the information response period can be submitted to the administering authority by email to EnergyandExtractive@des.qld.gov.au.

If the information provided in response to this information request is still not adequate for the administering authority to make a decision, your application may be refused as a result of section 176 of the *Environmental Protection Act 1994*, where the administering authority must have regard to any response given for an information request.

4. Human rights

A human rights assessment was carried out in relation to this decision/action and it was determined that no human rights are engaged by the decision.

5. Review and appeal rights

You may apply to the administering authority for a review of this decision within 10 business days after receiving this notice. Information about your review rights is attached to this notice or search 'DES Internal review and appeals' at business.qld.gov.au. This information is guidance only and you may have other legal rights and obligations.

If you require more information, please contact Hannah Stevens on the telephone number listed below.



Signature

27 September 2022

Date

Tristan Roberts
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Energy and Extractive Resources Business
Centre
GPO Box 2454, Brisbane QLD 4001
Phone: 07 3330 5715
Email: EnergyandExtractive@des.qld.gov.au

Attachments

Information sheet: Internal review and appeals (ESR/2015/1742)