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SUBMISSION: Beach Energy - Onshore Otway Basin Petroleum Production Operations

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To the Department for Energy and Mining

Attention: Jarrod Spencer
Department for Energy and Mining
DEM.Engineering@sa.gov.au

Thank you for the opportunity to comment on the **Onshore Otway Basin Petroleum Production Operations** – Draft October 2018

Please see comments on draft Environmental Impact Report (EIR) and draft Statement of Environmental Objectives (SEO) below.

Comments

As per the previous submission on Drilling, Completion and Well Production Testing in the Otway Basin, South Australia – Draft December 2018, the lack of any reference to microorganisms in the soil, or stygofauna in groundwater, or pollinating insects in either the EIR or SEO was of considerable concern.

According to the Act the impacts of Petroleum activities on microorganisms in the soil, stygofauna in groundwater, and pollinating insects should have been included in the EIR and the SEO.

As per Regulation 10 of the Regulations, for the purposes of an EIR, a licensee must provide:a description of the specific features of the environment that can reasonably be expected to be affected by the activities, with particular reference to the physical and biological aspects of the environment and existing land uses.

Microorganisms, including micro flora, are widely distributed in soil. They contribute to the growth and development of plants, decomposition of organic materials, nutrient cycling, soil nitrification, sustenance of pedological systems and production of bioactive compounds. Soil fungi develop mutualistic associations with plants and increase their surface area for absorption.

In summary microorganisms:

- Collectively, soil microorganisms play an essential role in decomposing organic matter, cycling nutrients and fertilising the soil, essential for supporting the continuation of life on Earth.
- Soil microbes are important for the development of healthy soil structure.
- Soil microorganisms are both components and producers of soil organic carbon, a substance that locks carbon into the soil for long periods.

Biological fertility is under-studied and scientific knowledge incomplete. It is known however that soil microorganisms are essential to soil fertility, and therefore environmental impacts from Petroleum activities should be acknowledged in the EIR and SEO.

Stygofauna are aquatic animals that live in groundwater. Globally, stygofauna are found in many different types of groundwater environments. They are creatures with diverse and unique biodiversity, and are found in aquifers across Australia, including the Limestone Coast.

In summary Stygofauna:

- Comprise an inconspicuous but important component of World biodiversity
- Contribute ecosystem services via nutrient cycling and as indicators of groundwater health
- Represent outstanding examples of adaptation and ongoing evolutionary processes
- Contain many ancient lineages of high scientific value and conservation significance
- Have many species with small distribution ranges, i.e. Short Range Endemics (SRE's)
- Are vulnerable to extinction from environmental changes and human impacts.
- Include species and communities that are protected under state and commonwealth environmental legislation
- Need to be considered as a factor in environmental assessment and approval for development projects in most Australian states and territories.

More than 97% of the world's freshwater reserves are found in aquifers, making groundwater one of the most important resources on the planet. The role of stygofauna in groundwater health should not be underestimated. They are sensitive to changes in water quality that deviate from the natural background conditions, with limited ability to recover, due to low mobility and low reproductive rates.

Further knowledge and subsequent understanding of the susceptibility of diverse and complex subterranean ecosystems is crucial for ensuring groundwater health, and thus, even small amounts of contaminants should not be considered as an insignificant adverse impact by the Petroleum Industry. Consequently stygofauna should be acknowledged in the EIR and SEO.

The adverse impact of Petroleum Activities on native bees and introduced honey bees as well as other native pollinating insects was not discussed in the EIR or addressed in SEO.

SEO Objectives of Onshore Otway Basin Petroleum Production Operations - Draft

3. To minimise disturbance to native vegetation and native fauna (including wetland communities)

The problem with this objective is that in order for any Petroleum Company to undergo its activities it cannot avoid encroaching and impacting upon vulnerable, endangered, and critically endangered flora and fauna.

It is noted in the EIR that there are Critically Endangered, Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains, potentially occurring within PEL 494, which are listed under the EPBC Act as threatened ecological communities.

There are a number of Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains located near PRL 002 (Limestone Ridge), near and within PPL 202 (Katnook Field), and near PRL 13 (Killanoola Field), as indicated by the map on page 32 of the draft EIR. All are within PEL 494.

An extensive list of threatened flora and fauna species was also noted in the EIR for PEL 494, some of which are listed under the EPBC Act as vulnerable, endangered or critically endangered.

A great deal of native vegetation has been lost since Non Indigenous settlement of the region. What remains is essential to the survival of the remaining native flora and fauna living in the region, and any loss or disturbance will have an impact.

There was no mention in the EIR of conservation programmes in The Limestone Coast, including the volunteers and landholders involved, in rehabilitation and restoration of native habitats, or what measures Beach Energy would take to avoid impacting upon such programmes.

3.1 To avoid or minimise clearing of native vegetation as part of production activities

Guide to How Objectives can be Achieved

Appropriately trained and experienced personnel have assessed or scouted proposed routes or locations to identify and flag significant (or rare, vulnerable or endangered) species and communities (including wetland communities)

This guideline, does not take into account the range that native fauna may cover, or when they may visit an area for eg nesting, roosting, foraging, breeding, or drinking.

The habitat (of large and various aged red gums, dead or alive) possible nesting and roosting sites for Red Tailed Black Cockatoos, exist in PEL 494. There are also Seasonal Herbaceous Wetlands, and other threatened flora and fauna species listed under the EPBC Act as vulnerable, endangered or critically endangered, documented for PEL 494.

Removal of large trees (including dead trees with hollows) is avoided

Dead hollow trees are protected, and hence they should not be felled. That should be acknowledged in the SEO and EIR.

Checking for and the preservation of bee hives was not mentioned in the EIR or SEO.

Assessment Criteria

No unauthorised clearing of native vegetation

Strengthen the assessment criteria with additional statements:

No disruption of habitat corridors.

No disturbance of Seasonal Herbaceous Wetlands.

No disturbance or disruption of habitat rehabilitation programmes.

This assessment criteria also needs strengthening with documented evidence needed to ensure compliance with Commonwealth (eg EPBA Act) and State Legislation prior to any approval given to clear native vegetation.

Any sites of rare, vulnerable or endangered species or threatened communities have been identified, flagged and subsequently avoided

The assessment criteria does not ensure that State and Commonwealth legislation has been complied with. To ensure additional oversight and compliance a separate statement needs to be included in the Assessment Criteria to cover that requirement.

No rare, vulnerable or endangered flora removed without appropriate permits. Documented evidence needed to ensure compliance with Commonwealth (eg EPBA Act) and State Legislation prior to any approval given to clear native vegetation.

High quality or significant remnant vegetation has not been cleared. All remnant vegetation should be regarded as high quality, with respect to native habitat needed to support native fauna and for bees to obtain food. Starvation of native bees and introduced honey bees is an extremely serious issue not addressed in the EIR or SEO. Bees were introduced in this area to support, for example, honey production and pollination of orchards, lucerne, and various seed crops including clover seed.

3.2 To achieve a significant environmental benefit for native vegetation clearance

Assessment Criteria

Significant environmental benefit for native vegetation clearance approved by DEM (where delegated authority applies) or Native Vegetation Council

Significant environmental benefit obligation satisfied / implemented

Documented evidence needed to ensure compliance with Commonwealth (eg EPBA Act) and State Legislation prior to any approval given to clear native vegetation.

3.3 To ensure production activities are planned and conducted in a manner that minimises impacts on native fauna

Guide to How Objectives can be Achieved

Regularly check excavations to detect and release trapped fauna and provide measures (e.g. fauna ladders and trench plugs) where appropriate to facilitate movement of fauna out of or across excavations . This is a positive statement. It would be strengthened, however, if preventative measures such as fauna ladders and trench plugs were evaluated for effectiveness, and improvements implemented.

If threatened species (e.g. Red-tailed Black-Cockatoos) are detected or likely to occur near the site, seek specialist advice regarding measures to mitigate potential impacts. This statement needs to include: undertake an EPBC Act referral.

Facilities and ponds are fenced as appropriate to exclude larger fauna. How preventing access by fauna to toxic water sources, (other than fencing, which may prevent some larger animals, but not smaller animals, nor birds or bees or other pollinating insects), has not been adequately address in the EIR or SEO. There should not be any trapped animals in ponds. There should be no access to ponds by native fauna or bees (native and non-native).

Routine surveillance monitoring undertaken to detect fauna incursions into facilities or ponds. Fauna mortality (if it occurs) to be captured by incident reporting system and advice from an ecologist sought if required. How will injured fauna be managed? How will surveillance be managed if Katnook site remotely monitored? Incursion should be also be captured by incident reporting. How long is an animal likely to be stranded/trapped/injured before detection?

Assessment Criteria

No significant adverse impacts on native fauna as a result of production activities. Petroleum activities are enabling potential harm to the threatened fauna and their habitat. There will be impacts from lighting, noise, affected local air quality, and habitat loss, and possibly incursions into facilities and ponds. How no significant adverse impacts would be evaluated is not stated in the EIR or SEO. Given that the fauna may be a threatened species, any loss of population would be adverse.

4. Avoid the introduction or spread of weeds, pest animals and pathogens as a consequence of regulated activities Change *avoid* to prevent.

4.1 To ensure that the presence of weeds, pest animals or pathogens is consistent with or better than pre-disturbance conditions and adjacent land

Does weed management involve glyphosate or other substances toxic to bees, and other pollinating insects, if so is the use of it avoided while weed plant in flower so as not to kill

bees and other pollinating insects? Other alternatives of removal such as digging out of weeds by roots or hand pulling of weeds should be used in such circumstances.

Research on bees has found that Glyphosate impacts upon the microbiomes of bees, rendering them susceptible to disease and death, and it disrupts their navigational abilities.

5. To minimise the impact of production activities on water resources

5.1 To maintain current surface drainage patterns and avoid or minimise impact to surface water features

Assessment Criteria

All regulated activities are located and constructed to maintain pre-existing water flows as far as practicable. This assessment criteria does not include surface water features.

Nor does it ensure that surface water features eg Creeks, Swamps, Seasonal Herbaceous Wetlands, and Rehabilitated Wetlands will not be disturbed, for example from pipe line construction.

5.2 To minimise impact to aquifers / groundwater volumes and flow patterns.

Change *minimise* to prevent.

Assessment Criteria

Water Allocation Plan and water licence conditions are complied with

No uncontrolled flow to the surface (i.e. no free flowing bores)

Landholder complaints regarding impact on groundwater users are documented and reasonable steps taken to resolve them can be demonstrated

Add in:

No alteration to water quality due to water extraction.

No loss of aquifer pressure.

6. To minimise land and water contamination

Change objective to state: To prevent land and water contamination.

Community expectation is that there is no soil, surface, or groundwater contamination as a result of Petroleum activities.

6.1 To prevent spills occurring and if they occur minimise their impact

Change wording to include leaks : To prevent spills and leaks occurring and if they occur minimise their impact.

Guide to How Objectives can be Achieved

Any contaminated soil either be treated in-situ or removed for treatment / disposal at an EPA approved facility What is the soil treated with?

Assessment and remediation of uncontained spills with larger scale impact (e.g. release of fluid to land outside fenced areas, or any volume to water) is consistent with the National Environment Protection (Assessment of Site Contamination) Measure and relevant SA EPA guidelines. What are the criteria developed with the principles of the National Environment Protection Measure for contaminated sites? Include that criteria in the EIR and SEO.

Assessment Criteria

No adverse impact to land use or native vegetation and native fauna outside operational sites due to an escape of petroleum, processed substance, chemical or fuel. The assessment criteria does not include potential harm to native fauna or bees within the operation site.

No unauthorised discharge or escape of petroleum, processed substance, chemical, fuel or solid wastes to surface water and/or groundwater

This should state: No discharge or escape of petroleum, processed substance, chemical, fuel or solid wastes to surface water and/or groundwater. Otherwise it is condoning contamination of surface and ground water.

Any escape of petroleum, processed substance, chemical or fuel to land is either immediately contained and removed or assessed in accordance with NEPM guidelines and remediated in a timely manner. This refers to land, what about escape of petroleum, processed substance, chemical or fuel to surface or groundwater? Objective 6 also includes water contamination. (6. To minimise land and water contamination.)

6.2 To remediate and monitor any areas of contamination arising from production activities

Guide to How Objectives can be Achieved

Areas of potential contamination (e.g. from spills or leaks, including serious or reportable incidents as outlined in Section 4) assessed to determine level of contamination, and appropriate remediation measures developed in accordance with criteria developed with the principles of the National Environment Protection Measure for contaminated sites, and in consultation with DEM and EPA

What are the criteria developed with the principles of the National Environment Protection Measure for contaminated sites?

Use of groundwater monitoring bores where there is an identified risk to groundwater. Number and positioning of monitoring bores will be in accordance with relevant industry practice to ensure adequate coverage of any potential underground water contamination and movement. This suggests that it may not be possible to clean up groundwater contamination.

Assessment Criteria

Contaminated sites are assessed and rehabilitated (where required) using a risk-based approach, consistent with the principles of the NEPM

This statement does not specifically address groundwater contamination or what would happen if it could not be resolved.

Overall the EIR and SEO are bereft of information concerning remedial action if groundwater contamination occurred. Are there situations whereby it may not be possible to clean up contaminated groundwater?

6.4 To prevent impacts as a result of hydrotest water and washdown water disposal

Guide to How Objectives can be Achieved

Assessment of hydrotest water prior to disposal to land is undertaken to ensure that its quality is consistent with relevant guidelines (e.g. *Environment Protection (Water Quality) Policy 2015* requirements and ANZECC guidelines) for the disposal site. Discharged water not allowed to flow beyond the intended receiving area or into any watercourses or areas where it may enter surface water.

Use of biocides and toxic chemicals are kept to a minimum. If biocides are necessary UV-degradable or biodegradable biocides used where practicable.

Assessment Criteria

No unauthorised discharge of hydrotest water and washdown water to a watercourse or an area reasonably likely to enter surface water.

With respect to disposal of hydrotest water, the Limestone Coast is an Agricultural Region with a strong emphasis upon an environment free of contaminants. It would be respectful, regardless whether or not the hydrotest water meets water quality criteria for disposal, (which is based on guidelines), that it not be disposed of to land. Approval by DEM or EPA would not meet community standards if approval were given. Scientific research has highlighted the importance of identifying and recognizing the value of organisms in the soil and in the subterranean necessary for a healthy environment. Therefore, hydrotest water should be sent to an approved EPA licensed waste disposal facility.

As noted in the EIR , Wash-down water may contain weed seeds.

The environment would be better protected if the assessment Criteria stated: Hydrotest water and washdown disposed of to an approved EPA waste disposal facility.

6.6 To prevent impacts as a result of produced formation water treatment and disposal

Assessment Criteria

No evidence of overflow or leakage of produced formation water from PFW ponds Refer to Assessment Criteria under Objective 6.1.

What evidence would be used to determine if assessment criteria met?

How will remote monitoring impact on leak or spill detection and early intervention?

6.8 To maintain well integrity to minimise loss of aquifer pressure and prevent aquifer contamination.

Thank you for replacing the word *minimise* with prevent aquifer contamination. This objective could be strengthened if aquifer was changed to groundwater, and *minimise loss* changed to prevent loss of aquifer pressure. The term groundwater would cover all types of aquifers, and aquitards.

So the objective would be strengthened if it stated: To maintain well integrity to prevent loss of aquifer pressure and prevent groundwater contamination.

Assessment Criteria

No aquifer contamination as a result of production activities. Change aquifer to groundwater. Groundwater would cover all types of aquifers and aquitards.

Production activities does not include suspended or decommissioned wells, which are no longer in production. The assessment criteria does not include loss of aquifer pressure. Change assessment criteria to No groundwater contamination or loss of aquifer pressure, as a result of production activities, suspended or decommissioned wells.

Appropriate barriers exist to protect separate aquifer systems and / or hydrocarbon reservoirs that are typically in natural hydraulic isolation from each other, is ambiguous. It suggests that a barrier, including a cement sheath, may not be necessary if aquifers and/ or hydrocarbon reservoirs are not typically in natural isolation from each other.

The reference in the EIR p39..... *Low permeability aquitards separate the two aquifers. Leakage through the aquitard has been assumed to be generally very low, except in areas where the aquitard is very thin, absent or fractured, such as around Tarpeena-Nangwarry (South East NRM Board 2010). However, recent work has revealed moderate to good hydraulic connection between the two aquifers and indicated that they are more highly connected than previously assumed (South East NRM Board 2013),* does not give permission to any Petroleum Company to fail in its duty of care with respect to protecting the aquifers from artificial cross flow or contamination of groundwater from any substance, (that would not otherwise occur), as a result of well operations etc , suspended wells or decommissioned wells. The barriers should exist regardless of whether or not the reservoirs are typically in natural isolation or not. The well is an introduced hole through aquifers and other zones, creating an artificial pathway between zones that would not otherwise be there.

Given that the Petroleum Industry relies upon cement barriers, as a means of protecting aquifers from its activities, the statement in the Assessment Criteria, *Appropriate barriers exist to protect separate aquifer systems and / or hydrocarbon reservoirs that are typically in natural hydraulic isolation from each other,* is ambiguous and should be changed to read, appropriate barriers exist to protect groundwater systems and / or hydrocarbon reservoirs from each other.

As per comments submitted for **Drilling, Completion and Well Production Testing in the Otway Basin, South Australia – Draft December 2018:** This would be in keeping with the [Figure 3.2: Indicative well design showing various casing strings](#) on p16 of the “Drilling” EIR illustrating cement sheaths. And it would also be in keeping with the statement in the “Drilling” EIR on p2*Aquifers will be protected by casing and cementing of wells. Well integrity will be maintained via appropriate design, installation and monitoring of wells during drilling and throughout the well’s life.* Although it is understood that the “well life” does not refer to the life of the well once it is decommissioned, or how long the barriers in place will be effective, once decommissioned.

With regard to Cement Integrity and the Petroleum Industry’s reliance upon it as an effective barrier (to prevent groundwater contamination, cross flow between aquifers, and loss of aquifer pressure), it was of concern that the EIR did not include information about potential leakage pathways for gas, or other substances, as a result of well operations and cement failure, nor the added risks of deep, deviated well drilling on cement integrity. The EIR also did not discuss the long term integrity issues of decommissioned wells, or knowledge gaps yet to be resolved with cement integrity.

Whilst the EIR and SEO refers to a number of measures regarding well/cement integrity, neither specifically address issues with failed cement integrity, which may not be possible to resolve, or what measures could be put in place to detect and prevent contamination, in particular with suspended or decommissioned wells.

In the EIR with regard to well integrity and life span in the response section it said, *Beach use the best quality material for well casing that is engineered to withstand pressure much higher than the pressures experienced during our operations. After all possible gas is extracted and produced from a well it is filled with cement plugs using cement that is much stronger than the surrounding rock. In addition to the steel casing and cement well design, this step provides an additional barrier to isolate the content of the well bore from aquifers and the surrounding environment. But this does not*

include the outer well bore and the rock formation barrier. With respect to gas migration, a depleted well does not mean gas won't migrate from non-commercial zones or non-target zones. This statement also does not acknowledge the gaps in knowledge concerning cement integrity yet to be resolved.

Given that the SEO states *Appropriate barriers exist to protect separate aquifer systems and/ or hydrocarbon reservoirs that are typically in natural hydraulic isolation from each other*, are there issues with cementing across aquifers between the outer casing and the natural formation? Does the cement breakdown across wet areas? Are there chemical interactions between the cement, cement additives and the water? Is breakdown of cement and/ or cement additives a potential source of groundwater contamination?

How susceptible are the steel casings to corrosion?

What impact do earthquakes or earth tremors have on cement integrity, particularly between outer casing and natural formations?

In the SEO it states for decommissioned wells under Guide How Objectives Can Be Achieved, *Downhole decommissioning carried out to meet worst case expected loads and downhole environmental conditions*. Given that it is a dynamic environment not a static one, what well design standards are used? What are their limitations?

What is inhibited fluid?

What are the issues with cementing across aquifers/aquitards?

Monitoring for groundwater contamination

While the SEO referred to (Objective 6.2): *Use of groundwater monitoring bores where there is an identified risk to groundwater*. There was no mention of groundwater monitoring as a precaution, with regard to suspended and decommissioned wells.

As per comments submitted for **Drilling, Completion and Well Production Testing in the Otway Basin, South Australia – Draft December 2018**: There are limitations with respect to detecting groundwater contamination from decommissioned wells. Water well bores for monitoring are limited to the Tertiary Limestone Aquifer (TLA). How monitoring of or detection of contaminants in the confined Tertiary Confined Sand Aquifer (TCSA), could be determined in a timely manner with respect to decommissioned wells is not discussed in the EIR, and subsequently not addressed in the SEO.

Awareness of contamination of groundwater may not occur until there is a public complaint or public health issue or livestock issue and subsequent investigation. Awareness of saline contamination from deeper aquifers, or cross aquifer contamination, or gas migration, may not be noticed until many years hence.

There was no mention of any pre testing of groundwater before drilling commences to obtain base line data.

With regard to decommissioning of wells, the EIR and SEO refer to the use of *Inhibited fluid placed between barriers where applicable*, but there is no description of what that is, or what environmental impact it may have if it leaked into an aquifer. Is *Inhibited fluid* a reference to corrosive inhibitors?

Community expectation is that there is no contamination of groundwater, regardless of the source.

7. To minimise the risk to public health and safety

Any risk to the health and safety of the public is unacceptable

7.1 To protect public health and safety during production operations

Reducing the local air quality is not consistent with protecting public health and safety.

The prevailing wind direction is south easterly according to Mt Gambier Airport data, which would mean emissions from the Katnook Gas Plant would blow over Penola.

7.2 To avoid uncontrolled fires associated with production activities

Will Beach Energy have their own fire crew on standby so that there is no extra demand placed on our local CFS fire crews. Will Beach be paying for any fire response service needed?

8. Air pollution and greenhouse gas emissions reduced to as low as reasonably practical

8.1 To minimise atmospheric emissions

Assessment Criteria

Reasonable practical measures implemented in design and operation to minimise emissions

This assessment criteria does not acknowledge the accumulative impacts of greenhouse gas emissions. GHG emission should be regarded as of critical consequence.

In the EIR it states: [The National Pollutant Inventory \(NPI\) is an internet based database on emissions and transfer of substances. Several of Beach's production facilities exceed NPI reporting thresholds and the resultant emissions are reported at http://www.npi.gov.au/.](http://www.npi.gov.au/)

Gas is a fossil fuel contributing to global warming and consequently climate change. The criteria used by Beach Energy to define a critical consequence, fails to acknowledge that accumulative greenhouse gas emissions are having critical ecological and cultural impacts due to climate change.

How does Beach Energy comply with the general principles of measuring emissions with regard to transparency, comparability, accuracy, and completeness?

8.2 To minimise the generation of dust

Assessment Criteria

Any stakeholder complaints related to dust nuisance are documented and reasonable steps taken to resolve them can be demonstrated.

This does not specify source of the water used for dust suppression.

Dust suppression for roads. The source of water should not be wastewater.

Water can pool in puddles on metal roads and be a source of drinking water for native fauna. If wastewater was used, any contaminants could also be present in the runoff to side

of the road (ditches, depressions), also a potential source of drinking water for native fauna and bees.

10. Rehabilitate operational areas to agreed standards

What about environmental damage? There's nothing in the EIR or SEO to cover how environmental damage would be resolved eg contamination of groundwater, or increased salinity of groundwater.

Further comment

More detailed information needed in EIR on the following:

A comprehensive list of the contents of ponds/tanks in the EIR needed. Will proposed tanks open or enclosed?

What is the quality and type of cement used?

What are the additives used in cement and its composition?

Which EPA facilities are used for disposal of solids and wastewater?

How is contaminated soil treated in situ and what is it treated with?

What are inhibited fluids?

How is corrosion monitored in suspended and decommissioned wells?

How is cement integrity monitored in suspended and decommissioned wells?

What are the Petroleum industry accepted standards used for well design/well construction/installation; well integrity/well barrier management; decommissioning of wells; and well integrity/well barrier management of suspended and decommissioned wells? The standards and guidelines used should be listed in the EIR, and appropriately referenced in the SEO. Are the Petroleum industry accepted standards Australian Standards? Australian Acts and Regulations are usually backed up with Australian Standards and Guidelines. Eg are there Australian Standards that state what the requirements for steel casings and couplings should be, including quality of the steel used?

Gathering pipelines questions : The EIR talks about [Pipelines are typically constructed of steel and installed below ground, however could also be constructed using buried stick glass reinforced epoxy \(GRE\) or spoolable composite pipe](#). The EIR doesn't discuss the environmental benefits of the alternative options if any, including environmental impacts from leaving the pipelines in situ when decommissioned.

Ponds vs Tanks: The EIR doesn't discuss the pros and cons of using plastic lined ponds verses tanks at the Katnook Plant, or if tanks open or enclosed.

Well Operations and Well Integrity Management : The SEO has included [6.7 To minimise impacts of gas well deliquification](#) and [6.8 To maintain well integrity to minimise loss of aquifer pressure and prevent aquifer contamination](#). It's not clear whether the SEO also includes Completions and Workovers and Wellhead Production Equipment, which was also listed under Well Operations and Well Integrity Management in the EIR.

For 6.7 To minimise impacts of gas well deliquification The assessment Criteria Gas well deliquification does not result in contamination of surface water and / or shallow groundwater resources, does not include soil contamination.

Thank you again for the opportunity to comment on the **Onshore Otway Basin Petroleum Production Operations** – Draft October 2018

Yours sincerely,

Sophie Henke
on behalf of the Limestone Coast Protection Alliance

cc secretary@protectlimestonecoast.org.au

SUBMISSION: Beach Energy - Onshore Otway Basin Petroleum Production Operations

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**SUBMISSION REGARDING BEACH ENERGY DRAFT EIS - ONSHORE OTWAY BASIN
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30th January, 2019

The Energy Resources Division – Department for Energy and Mining.

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Dear Sir,

Beach Energy Draft Environmental Impact Statement - Onshore Otway Basin Petroleum Production.

I raise the following matters in relation to this document.

1.2 Beach Energy Company Profile

In my opinion, the following needs to be disclosed. Beach Energy also holds a gas storage retention licence GSRL 27, that expires on 14th September, 2020. In my opinion, this licence forms part of the production operations. It is also not excluded in section 1.3.1. "Scope". Storage is also mentioned in Section 2.2, Table 1, under EPA.

1.3.1 Scope

This EIR appears to be, in my opinion, NOT generic, but specific to the Katnook Gas Plant and Beach Energy's petroleum licence areas. The EIR has been made to develop an "SEO that will address reasonably foreseeable future activities over the lifetime of the facilities", except that nowhere in the document is the "lifetime of the facilities" discussed.

What a reasonable reader can deduce from commentary in 3.1.1 and 3.1.2 and Appendix 2 is that the existing Katnook facility has reached the end of its productive lifetime. In my opinion, a more definitive statement on the life of the existing facility should be addressed in the document.

3. Production Operations

Table 2 "status" uses the terminology "shut-in". This term is not used by DEM and is not defined in Section 9 "Abbreviations and Glossary". One definition obtained for "shut-in" was "no longer economic or capable of producing but not presently producing". Note Appendix 4 refers to Haselgrove 002 being a "suspended well".

In my opinion, Table 2 should disclose the following;

Licence	Well	Date Drilled	Status
PEL 255	Hollick 001	2010	Plugged and Suspended
PEL 255	Jacaranda Ridge 002	2007	Suspended
PEL 255	Patrick 001	2010	Single Completion
PPL 62	Haselgrove 001	1994	Suspended
PPL 62	Haselgrove 002	1994	Suspended
PPL 62	Haselgrove 003 ST1	2017	Suspended
PPL 62	Haselgrove South 001 DW 1	1996	Suspended
PPL 202	Haselgrove South 002	1998	Suspended
PPL 62	Katnook 001	1987	Suspended
PPL 62	Katnook 002	1988	Suspended
PPL 62	Katnook 003	1989/90	Suspended
PPL 62	Katnook 004	1994	Abandoned
PPL 62	Ladbroke Grove 001	1989	Suspended
PPL 62	Ladbroke Grove 002	1998	Suspended
PPL 62	Ladbroke Grove 003	1999	Suspended
PPL 168	Redman 001	1998	Suspended
PRL 1	Wynn 002	2005	Suspended
PRL 2	Limestone Ridge 001	2001	Suspended
PEL 494	Bungaloo 001	2014	Suspended
PRL 13	Kilanoola 001	1998	Suspended
PRL 13	Kilanoola Southeast 001	2011	Suspended

PRODUCTION SUMMARY BY FIELD

Field	Formation	Last Prod'n	Oil (M³)	Gas (M³E6)	Water (M³)
Haselgrove	Pretty Hill	30/10/2011	26,534	307	10,752
Haselgrove	Sawpit Shale	28/2/2018		4	
Hollick	Sawpit Shale	31/8/2011	2		7
Jacaranda Ridge	Sawpit Shale	31/10/2011	1,970	4	209
Katnook	Eumeralla	31/5/1992	101	6	1,802
Katnook	Pretty Hill	31/10/2011	16,081	477	17,046
Ladbroke Grove	Pretty Hill	31/12/2006	7,405	1,377	18,593
Limestone Ridge	Pretty Hill	31/7/2011	573	10	361
Patrick	Sawpit Shale	31/5/2011	60		67
Redman	Pretty Hill	30/9/2011	17,647	163	6,370

3.1.3 Produced Formation Water Disposal

In my opinion, this section does not discuss disposal to an EPA facility, what the acceptable limits of total production hydrocarbons in the PFW are, what chemical analysis is carried out on the PFW and by whom and what happens to the PFW during periods of high rainfall. I believe these issues should be addressed in this document to allow proper analysis of any potential environmental impacts.

3.2.1 Completions and Workovers

Nearly all oil and gas production is reliant on efficient artificial lift operations. Restoring the flow also produces substantial methane emissions released to the atmosphere. Air quality risks should be noted in this section, some of which are addressed in Section 5.6.

3.8.2 Downhole Decommissioning following Production

Apart from Haselgrove 003 ST1 and Bungaroo 001, a reasonable reader would ask why after many years, in some cases 30 years, some of the wells listed in Table 2 still remain “suspended” and have not been decommissioned. In my opinion, it is not clear whether the 19 old wells will be subject to “workovers” if the Katnook plant is replaced in the future or whether the pressure has built up after these wells have been suspended for many years. In my opinion, an appropriate comment could be made to clarify future recommissioning of the wells and if this is not intended, whether some of these wells will be decommissioned.

6.9 Reporting

Environmental Protection Act

I do not understand why this comment of reporting to the Environmental Protection Agency regarding Petroleum Exploration is in the Production SEO. Clearly, in my opinion, petroleum production is not “exploration activity” and all production operations should comply with the Environment Protection Act 1993.

Yours faithfully,
Anne Daw

**SUBMISSION – BEACH ENERGY DRAFT STATEMENT OF ENVIRONMENTAL OBJECTIVES –
ONSHORE OTWAY BASIN PETROLEUM PRODUCTION.**

ANNE DAW

16 A KITCHENER STREET, NETHERBY 5062

annedaw@bigpond.com

30th January, 2019

The Energy Resources Division – Department for Energy and Mining.

DEM.Engineering@sa.gov.au

Dear Sir,

**Beach Energy Draft Statement of Environmental Objectives - Onshore Otway Basin
Petroleum Production.**

I raise the following matters in relation to this document.

1.1 Purpose

to establish appropriate consultative processes involving people directly affected by regulated activities and the public generally.

Quite simply, there is nothing in this document that does this.

But I do strongly agree that this is needed and it should be developed in conjunction with DEM after appropriate public consultation. Whether this fits under the scope of an SEO is doubtful.

There are no objectives in appendix A that addresses the establishment of appropriate consultative processes,

An offer to comment on the SEO is not technically stakeholder consultation; it is a third party review of a document supposedly written to comply with the Petroleum and Geothermal Energy Act 2000 [PGE Act].

4. Reporting

Of particular concern is that there is no indication or appendix in the document that the applicant has complied with the PGE Act reporting requirements in the preceding year or years. Indeed, ERD-DEM have yet to release the annual reports for some of the applicants licence areas for 2018. The reader of the SEO has no idea whether the applicant has complied with the Act in previous years or whether there have been serious or reportable incidents.

4.2 Reporting to the Environmental Protection Agency

I do not understand why this comment of reporting to the Environmental Protection Agency regarding Petroleum Exploration is in the Production SEO. Clearly, in my opinion, petroleum production is not “exploration activity” and all production operations should comply with the Environment Protection Act 1993.

Yours faithfully,
Anne Daw

SUBMISSION: Beach Energy - Onshore Otway Basin Petroleum Production Operations

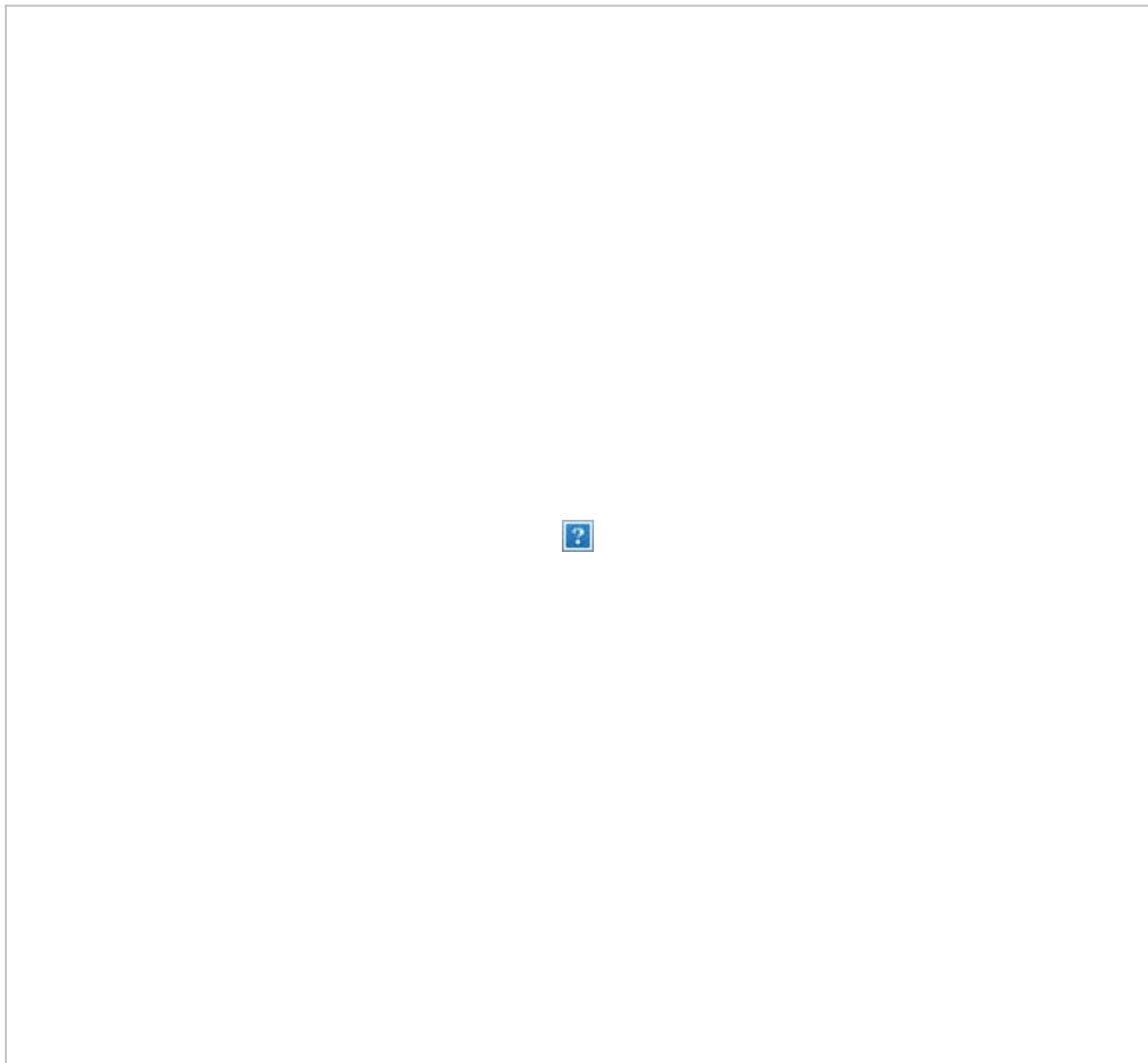
AUTHOR: APA Group

From: [Ramachandran, Sajna](#)
To: [Malavazos, Michael \(DEM\)](#)
Cc: [Karambelas, Chris](#); [Tucci, Daniel](#); [Chen, Shounan](#); [APA Third Party Works VIC](#); [Newton, Jacqui](#); [Spencer, Jarrod \(DEM\)](#); [Ogilvie, Glenn](#)
Subject: Request for Public Comment - Beach Onshore Otway Basin Production Operations EIR/SEO-Queries
Date: Tuesday, 29 January 2019 12:56:47 PM
Attachments: [image001.png](#)
[image003.png](#)

Dear Michael,

This is in response DEM-ERD's call for public comment on the Beach Energy review of its Production and Processing Statement of Environmental Objectives (SEO) for the Onshore Otway Basin.

Snap shot of the APA pipeline/Katnook gas Plant interface as shown below



From the EIR following info is obtained.

Gas production from the Katnook Gas Plant declined in recent years until the plant's suspension. The gas into South East South Australia (SESA) pipeline owned by the APA Group, is fed from the SEA gas Pipeline System which runs from Poolaijelo in Victoria to Ladbroke Grove station.

The current scope provided is high level, hence it is difficult to assess the exact impact at this stage.

Following queries are listed with regard to the new development in terms of production operations and associated activities that are currently being or likely to be carried out by Beach Energy for the Onshore Otway Basin.

1. Please advise to which pipeline will Beach energy tie-in to distribute the processed gas after the facility development.
2. Advise the proximity of the drilling program to APA pipeline and method of drilling.
3. Advise of any Vibration/Seismic /ignition / explosion/fire sources analysis from the construction and operation of the wells that has or will be performed in the vicinity of APA pipeline.
4. Advise of any construction/operation activities within APA measurement length 195m as determined from AS/NZS 2885.1 2018 .This will then be used to determine if a safety management study is required as per AS/NZS 2885.6 2018.
5. Advise of any crossings and details on APA pipeline and confirm it is aligned with APA standard requirements.
6. APA will provide APA owned pipeline technical parameters for further assessment after our initial consultation meeting with Beach Energy.

For further clarification we highly recommend a consultation meeting between APA and Beach Energy at the earliest.

Kind Regards
Sajna Ramachandran
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APA Group
Asset Engineering
Level 13, IBM Building
60 City Road, Southbank VIC 3006

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e Sajna.Ramachandran@apa.com.au
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From: Malavazos, Michael (DEM) <Michael.Malavazos@sa.gov.au>

Sent: Wednesday, 28 November 2018 6:44 PM

Subject: [EXT]: FW: Request for Public Comment - Beach Onshore Otway Basin Production Operations EIR/SEO

Hi all,

You may have read in last Saturday's Advertiser, DEM-ERD's call for public comment on the Beach Energy review of its Production and Processing Statement of Environmental Objectives (SEO) for the Onshore Otway Basin. This call for public comment was also made in the Penola Pennant, South Eastern Times and Border Watch. Attached here for your convenience are those

adverts.

In preparation of the Environmental Impact Report (EIR) and draft SEO Beach Energy undertook targeted stakeholder consultation in August 2018 on initial drafts of these documents. Once Beach Energy completed its consultation and revised the initial documents to address the feedback and comments received it submitted the revised documents to DEM-ERD for assessment under Part 12 of the *Petroleum and Geothermal Energy Act 2000* (the Act).

As a result of this assessment DEM-ERD through its Ministerial delegation, classified these activities under section 98 of the Act as medium impact and in turn triggered the 30 day statutory consultation provisions under section 102 of the Act. In this case, consultation will be run for a period greater than the standard 30 business days, considering it falls over the Christmas period.

Therefore we are now seeking public comment on the following EIR and proposed draft SEO that can be downloaded from our web site at:

http://www.energymining.sa.gov.au/petroleum/latest_updates/invitation_for_public_comment

- EIR, Beach Energy, Onshore Otway Basin Production Operations, October 2018; and
- Draft SEO, Beach Energy, Onshore Otway Basin Production Operations, October 2018;

Please feel free to distribute these documents further through your networks and we look forward to any comments you may want to submit during this process which closes on the **1 February 2018**.

If you have any questions regarding this process or the attached documents please don't hesitate to contact myself or Mr Jarrod Spencer on (08) 8429 2447 or via email at jarrod.spencer2@sa.gov.au

Regards

Michael Malavazos (FICHEM)
Director Engineering Operations

Energy Resources Division
Department for Energy and Mining

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