

Response to public comments during the seven (7) day comment period

No	Public comment	Response
1	<p>Clearing of highly biodiverse and endangered Kwongan Heath vegetation that has been proposed by scientists for World Heritage Listing.</p>	<p>The Proposal will involve clearing of no more than 4.5 hectares (ha) of native vegetation. The vegetation to be cleared does not contain any Threatened or Priority Ecological Communities or habitat suitable for listed flora species and no conservation significant flora were recorded during vegetation surveys. The area is not listed as World Heritage and vegetation within the Development Envelope is well-represented within the wider region.</p> <p>The disturbed areas will be rehabilitated on completion of activities on the site. The objectives of the rehabilitation will be to return the drilling site and access tracks to a safe, stable landform that blends with the surrounding landscape and re-establish vegetation that is similar to the surrounding area.</p> <p>Overall, the Proposal will not impact any flora or vegetation communities of conservation significance and is not anticipated to result in significant impacts to vegetation given the proposed measures to minimise potential impacts and rehabilitation of the site on completion of activities.</p>
2	<p>Potential for groundwater contamination very close to the coast.</p>	<p>A detailed Environment Plan (EP) is required under the provisions of <i>the Petroleum and Geothermal Energy Resources Act 1967</i> (PGER Act). The EP details the environmental risk assessment and management measures that will be implemented to ensure the stated objectives are met. The EP is currently being assessed by DMP.</p> <p>The proposed well will be located on a hard stand drill pad. Norwest is committed to ensuring that fuel, lubricants and chemicals are stored in compliance with the <i>Dangerous Goods Safety Act 2004</i> and associated Dangerous Goods Safety Regulations 2007, the relevant Australian Standard (AS1940:2004) and the respective Material Safety Data Sheets.</p> <p>All fuel, lubricants and chemicals will be stored in a bunded storage area (or self-bunded pallets, double-skinned tanks or chemical dangerous goods containers) that can contain 110% of the largest container or 25% of the total volume of stored material (whichever is</p>

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		<p>greater) to contain any potential spills. This will be audited for compliance.</p> <p>The well has been designed in accordance with the onshore regulations and following good oilfield practice and will be drilled under a Well Management Plan that will be in place and approved by Department of Mines and Petroleum (DMP). This includes design and operational measures to ensure well Integrity and protection of groundwater and aquifers.</p> <p>A turkey nest will be constructed for containment of non-contaminated waters and a sump for drill cuttings. Both holding facilities will be appropriately lined in accordance with relevant standards. The sump has been designed to hold all the cuttings and mud/water predicted to be generated during drilling operations including a contingency volume. The sump will also have sufficient capacity to hold water from a 95<sup>th</sup> percentile rainfall over the period of operation while still maintaining an allowance for 500 mm freeboard.</p> <p>Norwest proposes to install a shallow monitoring bore located on the western edge of the drill pad between the sump and the beach. This will be used to monitor near surface groundwater pre- and post- drilling. The DoW have identified that flows in the surficial groundwater will be in the range of 0.07 - 0.11m/d. Any spills would be noticed almost immediately and spill management procedures will be implemented in accordance with an approved Oil Spill Contingency Plan (OSCP).</p> <p>The drill pad will be graded upwards on the seaward (western) edge and a 0.75m high "bunded" wall incorporated around the western perimeter to prevent potential run off from the site towards the beach. On the site there will also be drainage channels that drain excess surface water / run-off into the sump. The drill pad is itself is compacted and presents a relatively impermeable surface and any spill will be managed under the OSCP. The OSCP includes provision for mobilising, at short notice, the earth-moving plant and equipment should it be required to help contain and clean-up any major spills. The site will be manned 24 x 7 hrs during drilling operations and therefore any spills would be identified and managed immediately.</p> <p>The Proposal will comply with management actions defined in the EP including storage and</p>

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3	If the Xanadu oil deposit is developed it will be a significant new source of carbon pollution contributing to climate change.	<p>use of hydrocarbons and chemicals and lining of holding facilities.</p> <p>The Proposal is to explore offshore oil reserves through the construction of a conventional oil well. The Proposal does not involve the establishment of a production well. It is estimated that the well will be drilled and tested in approximately 26 days. The well will subsequently be plugged and abandoned, equipment demobilised and the site decommissioned, following which the site will be rehabilitated.</p> <p>Due to the exploratory nature of the proposed well and duration of testing, it will not result in a significant source of carbon pollution. In the event that further development is proposed, this would be the subject of further assessment under both the <i>Environmental Protection Act 1986</i> (EP Act) and the PGER Act.</p>
4	This could open up the turquoise coast region to industrial fossil fuel extraction on a large scale.	<p>The Proposal is to explore offshore oil reserves within TP15 through the construction of an onshore conventional oil well. The Proposal does not involve the establishment of a production well. It is estimated that the well will be drilled and tested in approximately 26 days. The well will subsequently be plugged and abandoned, equipment demobilised and the site decommissioned, following which the site will be rehabilitated.</p>
5	Renewable energy should be considered as an alternative to fossil fuels.	<p>While the submitters comment is noted, Norwest is an oil and gas operator. The Proposal is for the construction of a conventional oil well to explore offshore oil reserves within TP15.</p>
6	Less invasive methods for producing energy should be investigated.	<p>The Proposal is to explore offshore oil reserves within TP15 through the construction of an onshore conventional oil well and requires clearing of no more than 4.5 ha of native vegetation. The vegetation to be cleared does not contain any Threatened or Priority Ecological Communities or habitat suitable for listed flora species. There will be no impact on the marine environment. The Proposal area will be rehabilitated on completion of activities.</p> <p>The impacts of the Proposal on the environment are not considered significant.</p>
7	The impacts of the total operations,	<p>The purpose of this well is to explore offshore oil reserves within the TP/15 permit from the</p>

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	both onshore and offshore activities, should be considered at the same time.	<p>nearest possible onshore surface location to avoid impacts on the marine environment. The referral describes the potential environmental impacts associated with the Proposal and measures proposed to minimise and manage those impacts during implementation.</p> <p>A detailed EP is required under the provisions of the PGER Act. The EP details the environmental risk assessment and management measures that will be implemented to ensure the stated objectives are met. The EP is currently being assessed by DMP. The Proposal will comply with management actions defined in the EP.</p>
8	Vegetation clearing will disturb dunes and there is the potential for increased degradation (e.g. erosion, weeds, loss of habitat).	<p>The Proposal will involve clearing of no more than 4.5 ha of native vegetation. The vegetation to be cleared does not contain any Threatened or Priority Ecological Communities or habitat suitable for listed flora species and no conservation significant flora were recorded during vegetation surveys. The vegetation to be cleared is well represented in the surrounding area and does not provide habitat for Threatened fauna.</p> <p>A detailed EP is required by DMP under the provisions of the PGER Act. The EP details the environmental risk assessment and management measures that will be implemented to ensure the states objectives are met. The EP is currently being assessed by DMP. The Proposal will comply with management actions defined in the EP including rehabilitation actions.</p> <p>Rehabilitation will be undertaken to return the drilling site and access tracks to a safe, stable landform that blends with the surrounding landscape and re-establish vegetation that is similar to the surrounding area. Rehabilitation will involve replacing stockpiled topsoil and active replanting with local indigenous species.</p> <p>The following management measures will be implemented to maximise rehabilitation success:</p> <ul style="list-style-type: none"> <li>• storing vegetation matter in windrows</li> <li>• replacing vegetative matter upon completion</li> <li>• establishing rehabilitation completion criteria</li> <li>• controlling weeds</li> </ul>

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		<ul style="list-style-type: none"> <li>• managing unauthorised access.</li> </ul> <p>Rehabilitation success will be monitored against established criteria addressing:</p> <ul style="list-style-type: none"> <li>• Species composition.</li> <li>• Percentage cover.</li> <li>• Presence of weeds.</li> <li>• Erosion.</li> </ul> <p>Well site rehabilitation will not be complete until the completion criteria stated within the Rehabilitation Plan (that will be approved by the DMP) are achieved.</p> <p>Norwest has a record in delivering similar projects with minimal environmental impact and successful rehabilitation outcomes. Norwest's Red Hill South well was drilled in 2010 into the same exploration permit (TP15) from an onshore coastal location close to the township of Dongara. This well was a conventional oil well similar to the proposed Xanadu-1 well, and the local community fully supported this project. This drilling location was without environmental incident and has now been rehabilitated. DMP has accepted Norwest's Rehabilitation Monitoring Report as meeting the site monitoring requirements of Section 11 (Rehabilitation Management Plan) of the Environmental Management Plan.</p> <p>Overall, the Proposal will not impact any flora or vegetation communities of conservation significance and is not anticipated to result in significant impacts to vegetation given the proposed measures to minimise potential impacts and rehabilitation of the site on completion of activities.</p>
9	Risk of contamination of the marine environment.	<p>The Proposal involves onshore exploration drilling therefore there will be no impacts to the marine environment.</p> <p>Refer to response to No. 2.</p>
10	Potential adverse effects on local tourism.	<p>Impacts to local tourism are not anticipated due to the nature and short duration of the Proposal.</p> <p>The proposed drill pad is situated behind a densely vegetated sand dune. Additionally, the</p>

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		<p>proposed access road entrance from Indian Ocean Drive is located about 500m south of the drill pad and the south to north alignment to the well site is located behind the vegetated sand dune. The access road will therefore be largely concealed from Indian Ocean Drive and the well pad location will not be visible from Indian Ocean Drive.</p> <p>The Proposal will involve drilling and evaluation of the well over an estimated duration of 26 days. Following drilling activities the well will be plugged and abandoned and all equipment removed from site (demobilisation). Given this, in the event that drilling equipment is partially visible from Indian Ocean Drive during drilling activities, they only occur over a very short duration.</p> <p>Norwest has been engaging with relevant stakeholders, including the Shire of Irwin which has indicated support for the project with. Dongara the nearest town to the project, and the local community has supported the last two wells drilled by Norwest due to the benefits from their use of local people and services.</p>
11	Concern at the adequacy of the proposed rehabilitation works.	<p>The Proposal will involve clearing of no more than 4.5 ha of native vegetation. The vegetation to be cleared does not contain any Threatened or Priority Ecological Communities or habitat suitable for listed flora species and no conservation significant flora were recorded during vegetation surveys. The vegetation to be cleared is well represented in the surrounding area and does not provide habitat for Threatened fauna.</p> <p>A detailed EP is required by DMP under the provisions of the PGER Act. The EP details the environmental risk assessment and management measures that will be implemented to ensure the states objectives are met. The EP is currently being assessed by DMP. The Proposal will comply with management actions defined in the EP including rehabilitation actions.</p> <p>As a summary, the rehabilitation works will involve:</p> <ul style="list-style-type: none"> <li>(a) Removal of all infrastructure, related equipment and waste from site</li> <li>(b) Removal of sheeting material</li> <li>(c) Fluids within the mud sump and turkey's nest will be allowed to evaporate</li> </ul>

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		<p>(d) Sampling and analysis of material contained within the turkey nest, mud sump and flare pit to determine suitable disposal method</p> <p>(e) Removal of liners from the mud sump and turkey nest and disposal at suitably licensed waste facility</p> <p>(f) Excavations pushed in and reshaped (pending results of soil sample analysis)</p> <p>(g) Disturbed areas at the well sites will be ripped to reduce compaction and re-contoured to match the surrounding landform</p> <p>(h) Any stockpiled subsoil and then topsoil will be re-spread over the area</p> <p>(i) Erected fencing removed</p> <p>(j) Monitoring of rehabilitation success following completion of rehabilitation activities.</p> <p>The following management measures will be implemented to maximise rehabilitation success:</p> <ul style="list-style-type: none"> <li>• storing vegetation matter in windrows</li> <li>• replacing vegetative matter upon completion</li> <li>• establishing rehabilitation completion criteria</li> <li>• controlling weeds</li> <li>• managing unauthorised access.</li> </ul> <p>Rehabilitation success will be monitored against established criteria addressing:</p> <ul style="list-style-type: none"> <li>• Species composition.</li> <li>• Percentage cover.</li> <li>• Presence of weeds.</li> <li>• Erosion.</li> </ul> <p>Well site rehabilitation will not be complete until the completion criteria stated within the Rehabilitation Plan (that will be approved by the DMP) are achieved.</p> <p>Norwest has a record in delivering similar projects with minimal environmental impact and successful rehabilitation outcomes. Norwest's Red Hill South well was drilled in 2010 into the same exploration permit (TP15) from an onshore coastal location close to the township of Dongara. This well was a conventional oil well similar to the proposed Xanadu-1 well, and</p>

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		<p>the local community fully supported this project. DMP has accepted Norwest's Rehabilitation Monitoring Report as meeting the site monitoring requirements of Section 11 (Rehabilitation Management Plan) of the Environmental Management Plan..</p> <p>Overall, the Proposal will not impact any flora or vegetation communities of conservation significance and is not anticipated to result in significant impacts to vegetation given the proposed measures to minimise potential impacts and rehabilitation of the site on completion of activities.</p>
12	<p>Question the adequacy of the flora and vegetation surveys undertaken for the proposal. The proposal area is representative of habitat for the Threatened flora species <i>Leucopogon obtectus</i>, however this species was not identified as potentially occurring, and no individuals were identified during the site surveys.</p>	<p>Adequate flora and vegetation data has been collected for the site via numerous flora and vegetation surveys. Each survey was conducted in accordance with Guidance Statement 51 (EPA 2004) and the relevant Technical Guidance. The surveys were also compared against the EPA's recent <i>Environmental Factor Guideline: Flora and Vegetation</i> and were found to be consistent with the guidance.</p> <p>The flora and vegetation surveys were conducted by botanists and ecologists with extensive experience in species identification and flora and vegetation surveys. The entire proposal area and its surrounds was traversed on foot.</p> <p>The vegetation to be cleared does not contain any Threatened or Priority Ecological Communities or habitat suitable for listed flora species and no conservation significant flora were recorded during vegetation surveys. The Threatened flora species <i>Leucopogon obtectus</i> was not listed in the desktop database searches (EPBC Protected Matters Search and Naturemap search) as having the potential to occur. The vegetation recorded within the Development Envelope was considered unlikely to provide suitable habitat for <i>Leucopogon obtectus</i> given the more open heath vegetation associated with dune systems close to the coast. The species was not found during the flora and vegetation surveys undertaken.</p>