Warro Gas Field 3D Onshore Seismic Survey

Latent Petroleum Limited

Report and recommendations of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia

Report 1369
October 2010

Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
18/02/08	**Level of Assessment set (date appeals process completed)**	
16/11/09	**Proponent Document Released for Public Comment**	**92**
11/01/10	**Public Comment Period Closed**	**6**
29/07/10	**Final Proponent response to the issues raised**	**28**
24/09/10	**Condition consultation**	**4**
09/10/10	**EPA report to the Minister for Environment**	**11**
11/10/10	**Publication of EPA report**	**11***
25/10/10	**Close of appeals period**	**2**

* **STATEMENT OF TIMELINES**
Timelines for assessment may vary according to the complexity of the project and are usually agreed with proponents soon after the level of assessment is determined. In this case, the Environmental Protection Authority did not meet its agreed timeline objective of 10 weeks for the completion of the assessment and provision of a recommendation to the Minister. However, the timeline, did include the additional and recently introduced step of consultation with the proponent and key decision making authorities on the draft conditions, which had a target timeline of two weeks.

Paul Vogel
Chairman
11 October 2010

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Summary and recommendations

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for Environment on the proposal by Latent Petroleum Pty Ltd (Latent) to conduct an onshore seismic survey for gas 250 Kilometres (km) north-east of Perth.

Section 44 of the *Environmental Protection Act 1986* (EP Act) requires the EPA to report to the Minister for Environment on the outcome of its assessment of a proposal. The report must set out:

- the key environmental factors identified in the course of the assessment; and
- the EPA's recommendations as to whether or not the proposal may be implemented, and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may include in the report any Other Advice and recommendations as it sees fit.

The EPA is also required to have regard for the principles set out in section 4A of the EP Act.

Key environmental factors and principles

The EPA decided that the following key environmental factors relevant to the proposal required detailed evaluation in the report:

(a) vegetation and flora;
(b) terrestrial fauna and habitat; and
(c) rehabilitation and closure.

There were a number of other factors which were relevant to the proposal, but the EPA is of the view that the information set out in Appendix 3 provides sufficient evaluation.

The following principles were considered by the EPA in relation to the proposal:

(a) precautionary principle;
(b) principle of intergenerational equity; and
(c) principle of the conservation of biological diversity and ecological integrity.

Conclusion

The EPA has considered the proposal by Latent to conduct a 3D onshore seismic survey, of the Warro Gas Field. The proposed survey extends into the Watheroo National Park which is classified as an A Class reserve and into the proposed Big Soak Plain conservation park.

The proposal is within the Warro Gas Field area located approximately 250 km north-east of Perth, 60 km east of Jurien Bay and 25 km west of the Watheroo town. The survey would involve 791 km of seismic lines. Both receiver and source lines would be located at spacings of 400 metres (m) apart. The width of source lines would be between 3.5-4 m. The width of each second receiver line would be 3.5 m and the alternate receiver lines 2.5 m. The field work for the proposed survey is anticipated to take 4-6 weeks.

The Watheroo National Park is recognised for its significant environmental values. The EPA notes that impacts to flora, vegetation and fauna habitat would arise from rolling vegetation in preparation for the placement and use of seismic lines. The EPA considers that there is potential for greater impacts than have been predicted by the proponent if the risk of introduction dieback and weeds into the Watheroo National

Park and the proposed Big Soak Plain conservation park is not successfully managed. The EPA acknowledges that the Department of Environment and Conservation (DEC) providing its expertise to this proposal is essential for good management.

The proponent is proposing to offset the environmental impacts of the proposal. Negotiations between the proponent and the DEC are continuing. The EPA understands that the proposal will not be implemented until these negotiations have been finalised.

The EPA considers that the proposal can meet its environmental objectives provided that the proponent's proposed management procedures, the recommended conditions set out in Appendix 4 and the proposed environmental offset are implemented.

Recommendations

The EPA submits the following recommendations to the Minister for Environment:

1. That the Minister notes that the proposal being assessed is the Warro Gas Field 3D On-shore Seismic Survey;
2. That the Minister considers the report on the key environmental factors and principles as set out in Section 3;
3. That the Minister notes that the EPA has concluded that the proposal can be managed to meet the EPA's environmental objectives, provided:
    - there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 4; and
    - an offset for residual impacts is agreed between the proponent and the DEC prior to implementation of the proposal.
4. That the Minister imposes the conditions and procedures recommended in Appendix 4 of this report.

Conditions

Having considered the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by Latent to conduct an onshore seismic survey of the Warro Gas Field is approved for implementation. These conditions are presented in Appendix 4. Matters addressed by the conditions include the following:

(a) Carnaby's Cockatoos – survey of nesting and potential nesting sites and establishment of a buffer around sites identified if seismic activity is undertaken in the July to December breeding period.
(b) vegetation and flora – surveys to be undertaken prior to seismic acquisition and avoidance of Declared Rare Flora (DRF) or priority flora.
(c) fauna habitat – fauna surveys to be undertaken by experienced personnel to identify nesting and nesting habitat for significant bird, reptile and mammal fauna.
(d) weeds – management procedures to prevent the introduction of new weed species and spread of existing weed species.
(e) dieback – management procedures to prevent the introduction of dieback and monitoring to confirm the success of the measures.
(f) third party access – management and monitoring to prevent third party access to seismic lines.
(g) rehabilitation;
(h) bushfire prevention; and
(i) rehabilitation financial assurance.

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1. Introduction and background

The report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment on the key environmental factors and principles relevant to the proposal by Latent Petroleum Limited (Latent) to conduct an onshore 3D seismic survey of the Warro Gas Fields.

Latent holds Exploration Permits 407 and 321 which are located approximately 250 kilometres (km) north-east of Perth. The company proposes to carry out a 3D seismic survey in an area of freehold land, the proposed Big Soak Plain conservation park and the Watheroo National Park (Figure 1).

Watheroo National Park is listed by the Australian Heritage Council on the Register of the National Estate for reasons including, but not limited to, "Heath rich in rare species". Given the proximity of the proposed Big Soak Plain conservation park relative to this notably significant area it is highly likely that the conservation values would be similar.

The proposed Big Soak Plain conservation park is made up of two land parcels being 1025 hectares (ha) and 1476.2 ha respectively. The area is home to many species of threatened flora, provides foraging habitat for Carnaby's Cockatoo and forms a direct link between the nearby Alexander Morrison National Park and Watheroo National Park, and more broadly a link between Watheroo National Park, Alexander Morrison National Park, Coomallo Nature Reserve, Lesueur National Park and the Jurien Bay Marine Park (Figure 3).

The proposal was referred originally to the EPA in January 2008 and the Level of Assessment was set at Public Environmental Review (PER) with a 6 week public review period under the Western Australian *Environmental Protection Act 1986* (EP Act). The Environmental Scoping Document (ESD) was approved on 26 September 2008 but a subsequent change to the proposal in the form of increased activity in Watheroo National Park required the ESD to be revised. The revised ESD was approved on 25 August 2009.

As part of the assessment the EPA undertook a site visit to the proposal area.

Further details of the proposal are presented in Section 2 of this report. Section 3 discusses the key environmental factors and principles for the proposal. The Conditions to which the proposal should be subject, if the Minister determines that it may be implemented, are set out in Section 4. Section 5 provides Other Advice by the EPA, Section 6 presents the EPA's Recommendations.

Appendix 5 contains a summary of submissions and the proponent's response to submissions and is included as a matter of information only and does not form part of the EPA's report and recommendations. Issues arising from this process, and which have been taken into account by the EPA, appear in the report itself.

2. The proposal

Latent proposes to conduct an onshore 3D seismic survey in EP407 and EP321 in order to define the extent of the gas reserves within the Warro Gas Field. The proposed onshore 3D seismic survey would involve 397 km of receiver lines and 394 km of source lines over an area of approximately 16,180 ha. The site is located

within Watheroo National Park, the proposed Big Soak Plain conservation park, cleared agricultural land and remnant vegetation.

The proposal consists of a total of 791 km of seismic lines. A 284 km portion of the seismic survey lines would encroach into the Watheroo National Park. The seismic survey lines would also total 88 km within the proposed Big Soak Plain conservation park and 101 km over other areas of remnant vegetation.

The work requires the preparation of a reasonably clear line for the laying of cables and geophones, and passage of the vibroseis trucks used to generate the seismic source. At the end of the survey the cables would be removed and the lines closed off to traffic access. The survey is expected to take 30 to 40 days to complete. There would be an additional 20 days of preparation and approximately 7 days of demobilisation.

The survey would involve the "rolling" of lines of vegetation in a grid pattern. The rolled receiver lines (east-west) would be alternate lines 3.5 m and 2.5 m wide on a 400 m spacing. Source lines (north-south) would have a width of 3.5 – 4 m and be spaced 400 m apart.

Vibroseis trucks, carrying impulse generating equipment, would drive north and south along the rolled source lines, lowering their vibration pads to vibrate the ground with a range of low to medium frequencies.

The survey would involve the use of up to four vibroseis trucks, four trucks, four personnel carriers and twelve four wheel drive vehicles passing over the survey areas.

Following the survey, the proponent would undertake line access closure and site rehabilitation/monitoring activities on access lines created by the survey until agreed completion criteria have been achieved.

The key components of the proposal are:
- rolling of vegetation for seismic truck access;
- laying of seismic lines;
- vibroseis trucks generating energy waves; and
- access of seismic trucks and support vehicles.

The main characteristics of the proposal are summarised in Table 1 below.

Table 1: Summary of key proposal characteristics

Element	Description
Total length of seismic lines (line kilometres	• Total line 791 km • Cleared land 289 km • Watheroo National Park 284 km • Proposed Conservation Park 88 km • Areas of remnant vegetation 101 km • Existing tracks/roads 30 km
Total length of receiver lines	397 km
Total length of source lines	394 km
Rolled source lines (width)	3.5 m – 4 m
Rolled receiver lines (width)	3.5 m and alternate lines 2.5 m
Seismic lines over cleared land (maxi cleared area)	87 hectares (ha)

Element	Description
Seismic lines in Watheroo National (maximum cleared area, excluding existin breaks)	90 ha
Seismic lines in Proposed conservation (maximum cleared area)	30 ha
Seismic lines over remnant vegetation regrowth (maximum cleared area)	35 ha

Since release of the PER, a number of modifications to the proposal have been made by the proponent. These include:

- The proponent has provided additional management protocols for the proposal. The Environmental Management Plan is included in the response to submissions.
- The proponent increased the size of each alternate receiver line to a maximum 3.5 m and other lines up to 2.5 m. The line width given in the PER of 1.5-2 m wide was an error. The proponent has stated that the additional width of the receiver lines has been included in the original calculations of area of impact.

The potential impacts of the proposal initially predicted by the proponent in the PER document (Latent, 2009) and their proposed management are summarised in the "Table of Key Environmental Factors and Principles for this Proposal" in the executive summary.

3. Key environmental factors and principles

Section 44 of the EP Act requires the EPA to report to the Minister for Environment on the key environmental factors relevant to the proposal and the conditions and procedures, if any, to which the proposal should be subject. In addition, the EPA may make recommendations as it sees fit.

The identification process for the key factors selected for detailed evaluation in this report is summarised in Appendix 3. The reader is referred to Appendix 3 for the evaluation of factors not discussed below. A number of these factors are relevant to the proposal, but the EPA is of the view that the information set out in Appendix 3 provides sufficient evaluation.

It is the EPA's opinion that the following key environmental factors for the proposal require detailed evaluation in this report:

(a) vegetation and flora;
(b) terrestrial fauna and habitat; and
(c) rehabilitation and closure.

The above key factors were identified from the EPA's consideration and review of all environmental factors generated from the PER document and the submissions received, in conjunction with the proposal characteristics.

Details on the key environmental factors and their assessment are contained in Sections 3.1 - 3.3. The description of each factor shows why it is relevant to the proposal and how it would be affected by the proposal. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor.

The following principles were considered by the EPA in relation to the proposal:
(a) precautionary principle;
(b) principle of intergenerational equity; and
(c) principle of the conservation of biological diversity and ecological integrity.

3.1 Vegetation and Flora

Description

The proposal may impact the health of flora, vegetation and habitat as a consequence of:

- rolling of vegetation;
- introduction of dieback;
- introduction of weeds;
- increased risk of fire; and
- increased potential for third party access.

The proposed seismic survey site is located within part of the Watheroo National Park, the proposed Big Soak Plain conservation park (identified within the Environmental Protection Authority Red Book (EPA, 1976), on remnant vegetated land and on cleared agricultural lands.

The project area is located within the Irwin Botanical District on the Lesueur, Marchagee and Warro vegetation systems as defined by Beard (1991). The Lesueur vegetation ranges from heath on the upper slopes and summits, scrub-heath on the mid slope sands, low Banksia woodland on the deep sand valleys to Eucalypt woodland along drainage lines (Latent 2009).

Located in the north-east of the project, the Marchagee System is dominated by scrub-heath on yellow sandplain with smaller areas of Casuarina thicket on rocky ridges, Eucalypt woodland on red loams and mallee with halophytes in depressions. Dominant species of the scrub-heath include *Banksia prionotes, B. attenuata, Actinostrobus arenarius, Grevillea leucopteris* and *Xylomelum angustifolium*. Where this system borders the Dandaragan System to the west a stretch of hilly country is covered by the *Hakea oblique* scrub-heath and *Dryandra-Xanthorrhea* heath.

The current extent of Beard vegetation association 694 (Shrublands; scrub-heath on yellow sandplain *Banksia-Xylomelum* alliance in the Geraldton Sandplain & Avon-Wheatbelt Regions) is listed as 17.61% of its original coverage pre-European settlement.

No Declared Rare Flora (DRF) is expected to be impacted by the proposal as none have been identified to date. However, the DRF species, *Eucalyptus rhodantha* var. *rhodantha* has been identified as having the potential to occur within the proposal area. Twenty-two Priority species under the *Wildlife Conservation Act 1950* (WC Act) were recorded during flora surveys. No Priority 1 flora species were identified.

The proposal would impact on between 1.25-5.15% of the estimated population of priority flora species within the proposal area. This percentage does not take into account the populations found outside the project area. A qualified botanist would walk the seismic lines prior to line preparation in areas of Kwongan vegetation to confirm the absence of *Eucalyptus rhodantha* var. *rhodantha* and provide advice on realignment of lines to avoid populations of Priority flora wherever practicable.

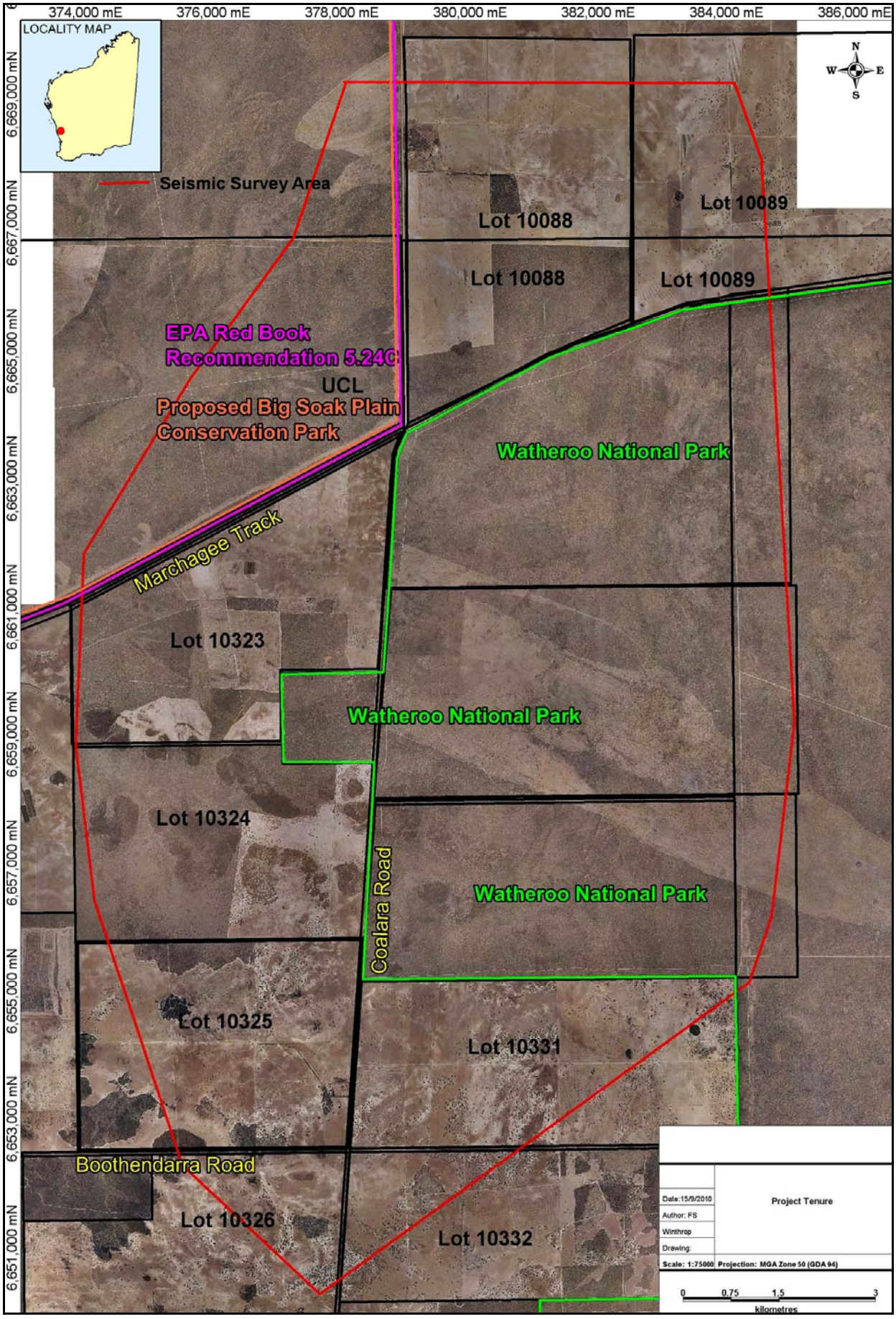

Figure 1: Proposal areas

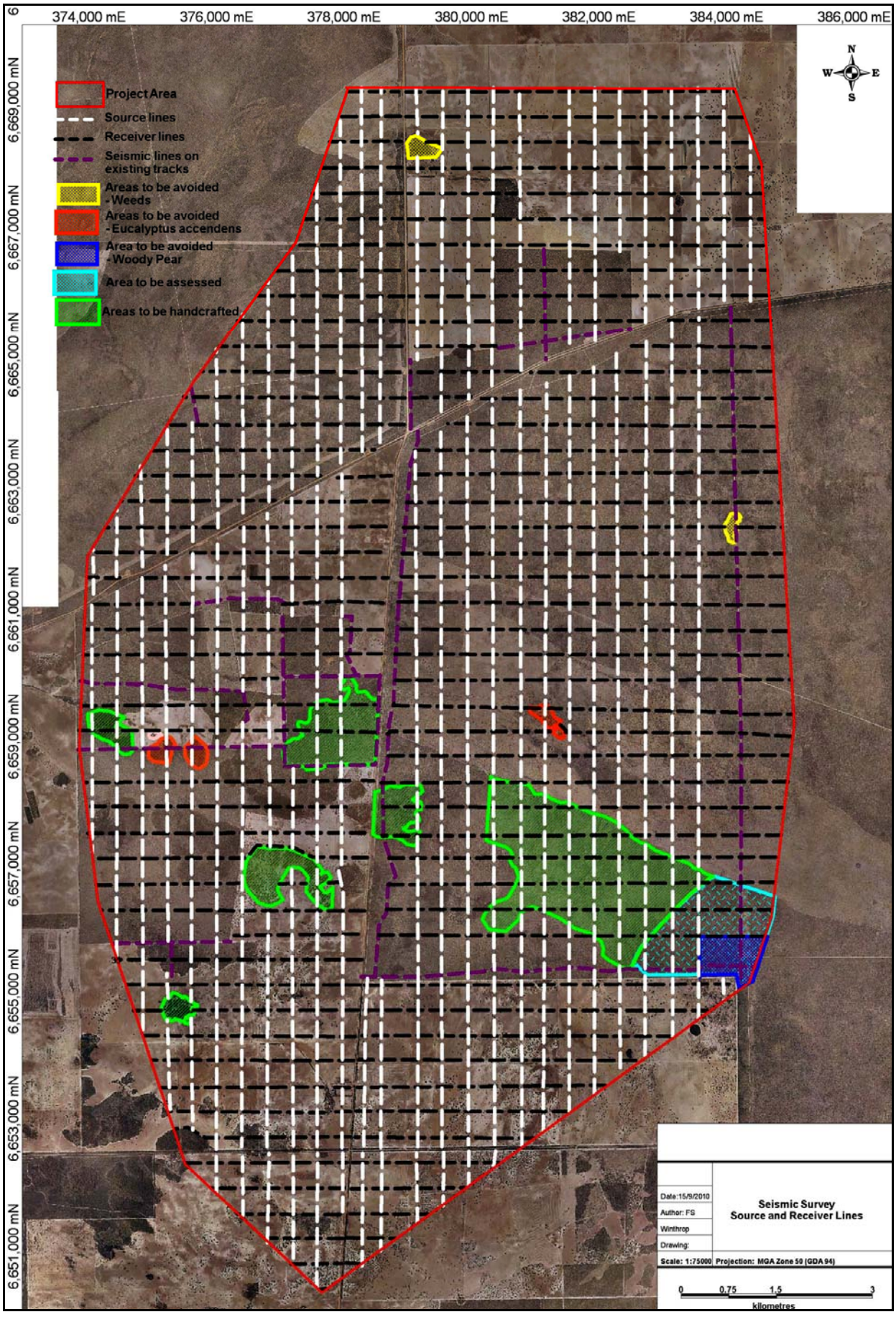

Figure 2: Vegetation areas to be avoided or hand cut.

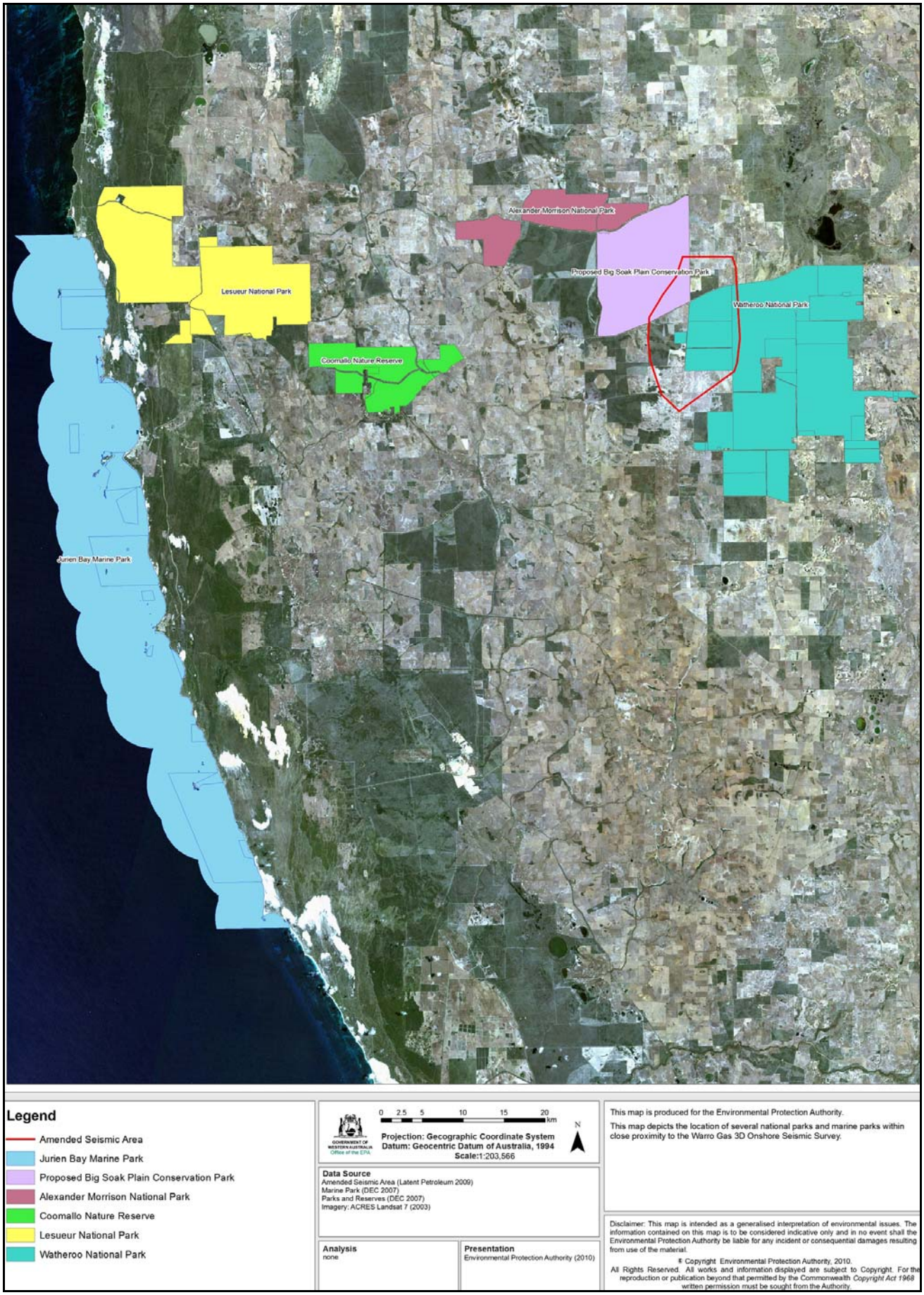

Figure 3: ***Location of Alexander Morrison National Park, Watheroo National Park, Coomallo Nature Reserve, Lesueur National Park and the Jurien Bay Marine Park.***

A DEC record of the DRF *Eucalyptus johnsoniana* indicates it is located northwest of the proposal area on the proposed Big Soak Plain conservation park. The proponent's PER states that it believes that this record could potentially be an error, given the location is outside its known distribution.

Vegetation groups W2 and W4 (Open-mid dense *Xylomelum angustifolium, Banksia prionotes* and *Actinostrobus arenarius woodland* with scattered *Eucalyptus todtiana* over *Eremaea beaufortioides, Leptospermum erubescens, Mesomelaena stygia, Hakea playsperma, Hakea prostrata* with some kwongan species on yellow sand and Open mid-dense *Xykinekum angustifolium* woodland with scattered *Banksia sp, Eucalyptus todtiana* and *Actinostrobus aernarius* over *Hakea cygna, Leptospermum erubescens, Banksia leptophylla, Hakea asilorrhyncha* and *Verticordia eriocephala kwongan* on deep yellow sand identified during the flora surveys are similar to a Priority Ecological Community (PEC) listed in the Wheatbelt region '*Banksia prionotes* and *Xylomelum angustiolium* low woodlands on transported yellow sand'.

Rolling of Vegetation

The proposal involves the rolling of vegetation within the Watheroo National Park, the proposed Big Soak Plain conservation park and on private land. The procedure results in the flattening of vegetation without disturbing the topsoil and rootstock. The proponent expects that vegetation would regenerate from the rootstock within a few years.

Slow growing species such as the *Macrozamia fraseri* would be avoided and not be disturbed by the proposed seismic survey. The proponent intends to avoid dense areas of *Xanthorrhoea preissii* and minimise impacts elsewhere. This species is restricted to vegetation group K1 on the western boundary of the project area within the proposed Big Soak Plain conservation park. The proponent has stated that plants are approximately one metre in height and has expressed the opinion that after rolling they would regenerate from the root system.

Dieback

The introduction of dieback (*Phytophthora* spp.) into the Watheroo National Park or the proposed Big Soak Plain conservation park would severely impact vegetation within these areas as it can lead to the death of a wide range of flora species. Although once thought to be too dry for *Phytophthora*, severe infestations have been recorded in Badgingarra National Park and surrounds (Latent 2009).

Dieback assessments conducted within the vicinity of the project area found evidence of poor health of *Banksia prionotes* at two sites within the Watheroo National Park. However, the proponent states that the remaining Proteaceous species at these sites were observed to be healthy and the poor health was attributed to moisture stress resulting from low rainfall.

The proponent's proposed dieback management measures include hygiene stations to be established at each entry point to Watheroo National Park, the proposed Big Soak Plain conservation park, other areas of remnant vegetation, and at other strategic points. Stations would include lined sumps to trap soil and plant material removed from vehicles and machinery.

Weeds

Approximately 32% of the project area is located on cleared agricultural land where various agricultural weed species were recorded. No declared weeds listed by the Department of Agriculture and Food were located during surveys.

The proposal has the potential to introduce and spread weeds which could affect flora and vegetation within the Watheroo National Park and the proposed Big Soak Plain conservation park and compromise the success of rehabilitation. The proponent would implement weed hygiene and management measures to minimise this risk. Management includes hygiene stations being established at entry points in Watheroo National Park and the proposed Big Soak Plain conservation park and where lines enter areas of native vegetation from areas of farmland. A qualified botanist would walk each survey line and turnaround area in areas that potentially may have weed species present. Global Positioning System (GPS) points of weed infested areas would be recorded and seismic lines realigned that avoid these areas. Weed infestations occurring in direct path of seismic lines that cannot be avoided may be sprayed with a suitable herbicide prior to vegetation disturbance.

Fire

There is the potential for activities at the seismic survey to increase the risk of fire and therefore impact the Watheroo National Park and proposed Big Soak Plain conservation park. A Bushfire Prevention Management Plan has been prepared as part of the PER document. Management and mitigation include appropriate training of staff and equipping each vehicle with equipment such as a rake and a hoe to assist in suppressing small fires, and pressurised water fire extinguisher applicable to scrub fires.

Third Party Access

There is a potential for an increase in third party access to the seismic survey area either during or post survey. This could result in an increase in the dispersal of weeds, increased fire risk, disturbance to threatened flora and fauna as well as fauna habitat, land degradation, poor regeneration of rolled vegetation and encourage further third party access.

The proponent's management of third party access includes the following measures:

- entrances to seismic lines would be blocked or obscured behind existing vegetation;
- dog legs in conjunction with a small mound of soil would be constructed at the beginning of access lines;
- immediate closure of lines upon completion of survey using logs, vegetation and sand at line entry;
- along the Marchagee Track or Coalara Road, only one or two access points would be used with lines generally being accessed from firebreaks instead; and
- signage, gates and barriers would be avoided as they generally attract attention.

Submissions

The Watheroo National Park is DEC managed land and therefore the main issues raised in public submissions include:

- avoidance of all conservation significant flora and vegetation communities identified in the project area;
- environmental management should be to the requirements of the DEC;
- bushfire management should be to the requirements of the DEC;
- offset requirements to the satisfaction of the DEC; and
- strategies for management of third party access should be discussed with the DEC.

Assessment

The EPA's environmental objectives for this factor are to:

- maintain the abundance, species diversity, geographic distribution and productivity of vegetation communities; and
- protect Declared Rare and Priority Flora, consistent with the provisions of the *Wildlife Conservation Act 1950*.

The EPA has considered the values of the Watheroo National Park, the proposed Big Soak Plain conservation park and the remnant vegetation within the proposed seismic survey.

The Watheroo National Park and the proposed Big Soak Plain conservation park are located in the Central West Coast Sandplain about 200 km north of Perth. The Lesueur floristic communities associated with the Watheroo National Park and the proposed Big Soak Plain conservation park contain a large number of distinct, species rich and geographically restricted communities and therefore a large number of threatened flora are recorded from the general area, although no DRF have been identified by the proponent within the proposal area.

The area exhibits extremely high floristic endemism with over 250 species of sandplain flora endemic to the Lesueur Sandplain subregion. This region is known to have high numbers of endemic plants, a high species richness of vascular plants and vertebrate animals, and diverse vegetation associations and communities.

Considering the values of the area, the EPA considers that a similar level of environmental management should be applied to the proposed Big Soak Plain conservation park as would be applied to the Watheroo National Park.

Rolling of vegetation

The EPA notes that vegetation association 694 has 17.61% of the pre-European settlement extent remaining. It is estimated that 51.95% of this remnant vegetation group is located within DEC managed lands (Latent, 2009). This association correlates with vegetation groups K2, W2, W4 and BW1 of which an estimated 100 hectares (0.18%) of the current extent would be impacted.

Although no Threatened Ecological Communities were identified within the proposal area, vegetation groups W2 and W4 are similar to a PEC '*Banksia prionotes* and *Xylomelum angustifolium* low woodlands on transported yellow sand' listed in the Wheatbelt region. Approximately 60-65 ha of disturbance (rolling) is proposed in these groups which accounts for approximately 7% of the total area of W2 and W4 located within the project area.

The proponent expects that most vegetation would regenerate from the rootstock within a few years. The DEC has previously reported that this has generally been true for rehabilitation of rolled seismic lines from other proposals in the region, except where third party access to the rolled lines has caused further degradation and hindered regeneration.

Slow growing species may take longer to recover. The EPA notes that slow growing species *Macrozamia fraseri* would be avoided. However, *Xanthorrhoea preissii,* which is restricted to the western boundary of the project area, may be rolled in some locations. The proponent has provided management for the *Xanthorrhoea preissii* within its Environmental Management Plan. This management includes the avoidance of dense areas of the species whilst developing tracks through less dense

areas. On advice from the DEC, the EPA does not agree with the proponent that rolled *Xanthorrhoea* would regenerate from the root system and considers that all *Xanthorrhoea* should therefore be avoided.

The EPA notes that no DRF or Priority 1 species have been identified within the proposal area, although twenty two other priority species have been identified, of which some may be impacted. The proponent intends to manage impacts to conservation significant flora by having a botanist survey each line ahead of rolling equipment so that any DRF can be avoided, and if possible Priority Flora would also be avoided.

Although not noted by the proponent, the EPA understands that there is potential for the DRF *Eucalyptus impensa* to be within the location of the proposal area. Therefore, the EPA has recommended condition 6 to ensure that the proponent consults with the DEC on possible DRF within the area prior to a botanist walking the lines and flagging conservation significant flora.

Taking into consideration that the proposal is partly located in the Watheroo National Park and proposed Big Soak Plain conservation park, the EPA considers that enhanced management of impacts on conservation significant flora would be appropriate. The DEC, as manager of the estate, has recommended that all conservation significant flora, vegetation communities and fauna habitats, as well as mature trees and the slow growing *Macrozamia fraseri* and *Xanthorrhoea* species should be avoided. The EPA agrees with this position and has recommended condition 6 which requires a minimum buffer distance to be maintained for conservation significant species. The exceptions are Priority 3 and 4 species which are too widespread for complete avoidance and the proponent is required to report impacts to these.

Dieback

The EPA notes that dieback caused by infestation with *Phytophthora* species has been located within the Badgingarra National Park and the EPA therefore considers that there is a high risk of infestation of Watheroo National Park, proposed Big Soak Plain conservation park and other areas of native vegetation due to the proposal activities. The introduction of dieback could potentially destroy the structure of native communities, reduce floristic diversity and primary productivity, and destroy the habitat of dependent native fauna.

The EPA understands that once dieback is introduced there are limited options for restoration of infected areas. Management must therefore focus on preventing transportation of *Phytophthora* into the proposal area. In view of the conservation status and environmental values of the proposal area, the EPA considers that measures taken to prevent the spread of dieback need to go beyond the standard vehicle and personnel clean-down procedures specified in the proponent's Dieback Management Plan. The EPA considers that clean-down procedures at each entry point need to be witnessed by an appointed person with authority to stop vehicle access if necessary. Each vehicle needs to be certified to be clean by the appointed person each time it enters the proposal area.

The EPA has recommended an outcome based condition (condition 9) requiring the proponent to ensure that dieback is not introduced. The recommended condition also requires baseline and follow-up dieback surveys and ongoing remedial management in the case that infected sites are identified in previously clean areas.

The EPA considers that dieback interpretation and hygiene should be conducted to the satisfaction of the DEC.

Weeds

The EPA notes that the proponent intends to manage the risk of introducing weeds by means of clean down protocols and by minimising disturbance of the soil surface. If post survey rehabilitation monitoring indicates that weeds have been introduced the proponent intends to carry out a weed eradication program.

The EPA has recommended an outcome based condition (condition 8) which requires the proponent to ensure that no new species of agricultural or environmental weed is introduced into the proposal area within Watheroo National Park and other areas of remnant vegetation and that the abundance and distribution of existing weeds is not increased as a direct or indirect result of implementation of the proposal.

The recommended condition also requires the proponent, in consultation with the DEC, to carry out a field survey of the proposal area along the planned seismic lines to collect baseline data on the species, location and areas of agricultural and environmental weed plants present. It also requires the proponent to repeat the weed survey for a number of years after the seismic acquisition is completed and put in place remedial measures, if needed.

Fire

The EPA notes that the proposal may take place within the months of year that rainfall is low and that this is necessary to reduce the risk of spreading dieback. The DEC has advised that if the survey was to be conducted within April/May there would be a high fire risk, and that any fire ignition caused by survey activities would require a high level of fire preparedness and response. This would particularly be the case within the Watheroo National Park and the proposed Big Soak Plain conservation park.

The proponent has provided a Bushfire Prevention Management Protocol in the *Warro Gas Field 3D Seismic Survey Environmental Management Plan* (Latent Petroleum Limited, April 2010) and the DEC has advised that the Bushfire Prevention Management Protocol meets the requirements of the DEC. Therefore, the EPA has recommended condition 12 requiring implementation of the Bushfire Prevention Management Protocol by the proponent.

Third Party Access

The EPA notes that the proponent's management of third party access includes:

- entrances to seismic lines being blocked or obscured behind existing vegetation;
- dog legs in conjunction with a small mound of soil being constructed at the beginning of access lines;
- immediate closure of lines upon completion of survey using logs, vegetation and sand at line entry;
- one or two access points would being used along the Marchagee Track or Coalara Road with lines generally being accessed from firebreaks; and
- signage, gates and barriers being avoided as they generally attract attention.

The EPA considers that third party access to the rolled seismic lines is a critical issue that must be prevented during and after the survey because it has the potential to contribute to:

- facilitating the illegal taking of native species;

- introducing and spreading dieback;
- introducing and spreading weeds;
- disturbing vegetation and threatened flora;
- disturbing fauna including (endangered fauna) and fauna habitat;
- causing land degradation; and
- preventing regeneration of vegetation on the seismic lines.

Considering the significance of the issue, the EPA has recommended a condition (condition 10) that requires the proponent, in consultation with the DEC, to block and/or obscure all entrances to the rolled seismic lines to prevent third party access, within two weeks of its last use for the seismic survey. It also requires the proponent to inspect the entrances on a 3 monthly basis and repair and report any breaches until such time as the area has recovered or it is determined that third party access is not occurring.

Offsets
The DEC has advised that it is in discussion with the proponent over a framework to deliver conservation and environmental benefits and offsets in a way that delivers effective and strategic conservation outcomes for the National Park and its hinterland. The Framework Agreement would be between Latent and the DEC. The EPA supports the provision of this offset package given the impacts on a recognised conservation asset and recommends that the agreement is finalised prior to implementation of the proposal.

Summary
Having particular regard to:
- the temporary nature of most of the clearing impacts due to leaving the rootstock in place;
- recommended condition 6 requiring avoidance of Declared Rare Flora, priority flora and the slow growing *Macrozamia fraseri* and *Xanthorrhoea* species and mature trees;
- recommended condition 8 for weed hygiene and management;
- recommended condition 9 for dieback hygiene and management;
- recommended condition 10 for prevention of third party access;
- recommended condition 12 for bush fire prevention; and
- the proponent's offset package,

it is the EPA's opinion that the proposal can meet the EPA's environmental objectives for this factor.

3.2 Terrestrial Fauna and Habitat

Description
The proposal has the potential to impact on fauna by disturbance of habitat through the rolling of vegetation and seismic activity including vibration and noise.

The project area is located within the Geraldton Lesueur Sandplain (G53) IBRA subregion which supports a number of significant fauna species.

Results of database searches indicate there are potentially 13 fauna species of conservation significance that occur in the proposed seismic survey area. Six species are listed as Matters of National Environmental Significance under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), three

are listed in Schedule 1 under the WC Act, one as Priority One and four as Priority Four species on the DEC Threatened and Priority Fauna database.

Specific database searches listed a further two Schedule 1 (Rare and likely to become extinct) species under the WC Act (Woma Python *Aspidites ramsayi* and Carpet Python *Morelia spilota subsp.imbricata*). Of the birds of conservation significance, three have been observed in the survey area in 2007/2009, namely the Australian Bustard *Ardeotis australis*, listed as Schedule 4 under the WC Act, the Malleefowl *Leipoa ocellata* which is listed as Vulnerable under the EPBC Act and Schedule 1 under the WC Act and the Carnaby's Cockatoo *Calyptorhynchus latirostris* listed as Endangered under the EPBC Act and Schedule 1 under the WC Act.

One Level 1 fauna survey plus targeted surveys were conducted for species of conservation significance that may be impacted by the proposal. The targeted surveys included the Carnaby's Cockatoos, Woma Python, Carpet Python and Malleefowl.

During the targeted surveys ten potential nesting hollows for Carnaby's Cockatoo were identified. Most of these showed evidence of being used in the past few years (Latent, 2009). Latent commissioned Cockatoo specialists from the Western Australian Museum to assess the vegetation within a smaller seismic survey area to identify breeding, feeding or roosting habitat for the species. It was estimated there is a small population of about 6 – 10 breeding pairs in this area and the area also provides important foraging habitat for Carnaby's Cockatoo (Latent, 2009).

Eucalyptus accedens trees may provide suitable nesting locations for Carnaby's Cockatoos. The seismic lines would be re-aligned around *E. accedens* trees containing hollows potentially large enough to accommodate a Carnaby's Cockatoo breeding event. The proponent has proposed to walk all seismic line areas containing *E. accedens* trees (Figure 2) prior to disturbance so that seismic lines can be realigned where necessary.

The Eucalyptus woodlands, Kwongan (heath) and Banksia/Pine woodlands within and adjacent to the seismic survey area provide potential foraging and breeding habitat for Carnaby's Cockatoo. The proponent has proposed to avoid significant habitat and flora during line preparation and design.

Targeted surveys did not identify any Malleefowl mounds within the seismic survey area. If any active mounds are identified, seismic lines would be realigned and a 50 m buffer applied so that the mound is not disturbed.

Neither the Woma nor Carpet Python were found within the survey area. All areas to be disturbed that comprise potential Python habitat would be walked immediately prior to disturbance to identify habitat logs with hollows sufficiently large enough (>30 cm diameter) to accommodate a Woma or Carpet Python, or other animal warrens that may be used by these species.

The proponent would avoid or move habitat logs with hollows sufficiently large enough (>30 cm diameter) to accommodate Woma or Carpet Pythons. The proponent would also realign seismic lines to avoid warrens and apply a 20 m buffer as these may also contain a python.

Submissions

A submission recommended that a condition be applied that all conservation significant flora, vegetation communities and fauna habitats identified within the project area are avoided.

Assessment

The EPA's environmental objectives for this factor are to:

- protect Specially Protected (Threatened) and Priority Fauna and their habitats, consistent with the provisions of the WC Act;
- protect fauna listed on the Schedules of the EPBC Act*;* and
- maintain the abundance, species diversity, geographic distribution and productivity of fauna species and ecosystem levels through the avoidance or management of adverse impact and improvement in knowledge.

Two areas were noted as being representative of relatively scarce fauna habitat elements.

1. Heathland/shrubland along the Marchagee Track in the Watheroo National Park.

   The predominant fauna habitat in these areas is shrubland/heath less than 2 metres in height with very high diversity of plant species. In places, either as a result of soil differences or fire age/patterns, there are smaller areas of taller mature trees and shrubs consisting of *Banksia* species, *Xylomelum angustifolium* (Woody Pear), and Native Pine (*Callitris* and/or *Actinostrobus*). These are relatively scarce fauna habitat elements and provide important nesting sites for a number of bird species as well as essential habitat for fauna species requiring taller vegetation. This includes the only habitat for the Priority listed White-browed Babbler. These habitats also are known feeding areas for the threatened Carnaby's Cockatoo.

2. Woodland site on Coalara Road in the Watheroo National Park

   The Powderbark (*Eucalyptus accedens*) woodland is an old long unburnt and scarce habitat element in the area. The larger trees provide suitable nesting hollows for the threatened Carnaby's Cockatoo as well as any other bird species requiring tree hollows for nest sites. This includes various species of parrots, nocturnal species including owls and the severely declining Owlet Nightjar, as well as several smaller species of birds including Tree Martins and Striated Pardalotes. A number of reptile species use tree hollows as well as crevices in trees including geckoes, Black-headed Monitors and skink lizards. Another very important scarce habitat element provided by these woodlands are logs on the ground (particularly those greater than 10cm diameter) which provide resting and retreat areas for Carpet Pythons, a number of species of gecko and dragon lizards, Echidnas, and other mammal species. There was also recent evidence of feeding by Carnaby's Cockatoo on *Banksia sessilis* (previously *Dryandra sessilis*) in the understorey of these woodlands. These woodlands, including their constituent logs, are the most diverse and restricted fauna habitat elements in the area.

The EPA considers that both types of habitat elements outlined above are important on a local as well as a regional scale and, in principle, impacts on them should be avoided. In particular, seismic lines should be diverted around standing trees and logs. Although not ideal, logs could be temporarily moved and later replaced in their original positions, if necessary.

The EPA considers that nocturnal animals could be impacted more during their inactive times when they may be in burrows or log hollows. Experienced fauna surveyors would be required to check intended seismic lines before disturbance to locate inactive fauna. This also applies to slowly moving diurnal fauna including reptiles which may need moving from the path of machinery.

Carnaby's Cockatoos

The EPA notes that the Carnaby's Cockatoo is listed as 'rare and likely to become extinct' under the WC Act. It is also listed as Endangered under the Commonwealth EPBC Act.

According to the *Carnaby's Black-Cockatoo (Calyptorhynchus latirostris) Recovery Plan 2002-2012* (CALM, 2003) it is endangered because:

- much of its habitat in the wheatbelt of Western Australia has been cleared or fragmented;
- clearing of heathland surrounding breeding sites has reduced availability of food for breeding birds and young;
- in many woodland remnants the lack of eucalypt regeneration and deterioration of hollows has reduced the availability of suitable nest hollows; and
- it is a highly prized cage bird that is taken illegally from the wild.

The following activities are listed as having potential for significant impact on Carnaby's Cockatoos:

- any action that leads to clearing or degradation of woodlands used now or potentially used for breeding;
- any action any action that leads to a loss of vegetation used for feeding;
- any action that facilitates illegal taking from the wild for the cage bird trade;
- any action that leads to an increase in bush fires; and
- any action that increases the distribution or promotes the abundance of hollow competitors, especially feral bees.

Of these, only the last activity is not relevant to the proposal. Typically, feral bees are encouraged if new water sources are provided, but the proposal would not have this effect.

Carnaby's Cockatoos are known to nest in hollows of *E. accedens* in the proposal area and feed in adjacent kwongan (heath). *Banksia* species, especially *Banksia sessilis* and other proteaceous genera provide primary food sources.

The EPA considers it to be critical for the proponent to survey all *E. accedens* woodlands in the proposal area to identify existing or potential Carnaby's Cockatoo nesting hollows prior to undertaking seismic line rolling and seismic acquisition, if these activities are to take place in the breeding season. Alternatively, if activities are to take place out of the breeding season, the proponent need only deviate seismic lines to avoid damaging any *E. accedens* trees. This is addressed in recommended condition 5.

The EPA has been advised that male Carnaby's Cockatoos typically range over 5 km from nesting trees collecting food and returning to the nest to feed the young. The returning birds are easily frightened and any disturbance close to the nest may prevent their return. For this reason the EPA considers that no activities should take place within 400 m of identified potential nesting trees during the breeding season.

The EPA notes that in general the proponent intends to avoid large trees including feeding trees, but other vegetation would be rolled. The EPA considers that the temporary loss of feeding habitat due to vegetation rolling should not have a significant impact on Carnaby's Cockatoos but regeneration of vegetation is important in the longer term. The DEC has advised that rolled vegetation from other seismic acquisition projects in this region generally recovers within a few years, except where third party access to the cleared (rolled) lines results in ongoing damage to regenerating vegetation. The EPA therefore considers that prevention of third party access by disguising old entrances after the proposal is completed must be a primary management objective for the proponent and that it should be carried out in consultation with and to the requirements of the DEC.

Prevention of third party access is also critical to reducing the risk of bush fires and illegal taking of Carnaby's Cockatoos as cage birds.

Malleefowl

The EPA notes that the Malleefowl (*Leipoa ocellata*) is listed as 'rare and likely to become extinct' under the WC Act and vulnerable under the EPBC Act and that Malleefowl have been seen just outside the proposal area. No mounds were located within the proposal area in the targeted survey in 2009.

The EPA has been advised that the proposal area would currently be considered a marginal area for Malleefowl distribution because of the prevalence of predation by foxes. Opening up access to bushland by rolling of seismic lines has potential to increase the activity of predators and would probably be of greater significance to Malleefowl than direct impacts from the proposal. Overall, the presence of Malleefowl in the proposal area is considered to be of low probability.

The proponent has proposed to survey 5 m either side of planned seismic lines and to apply a 20 m buffer around inactive Malleefowl mounds and a 50 m buffer around active Malleefowl mounds. However, the EPA considers that the 5 m survey either side of seismic lines essentially invalidates the 50 m and 20 m buffers because mounds could potentially be as close as 6 m without being recognised. The EPA considers that the proponent should survey 20 m either side of seismic lines and maintain a buffer of 20 m at all times for both active and inactive mounds. This is addressed in recommended condition 7.

Woma and Carpet Python

The EPA notes that the Woma and Carpet Python have not been located within the proposal area during targeted surveys but recognises that their presence may be difficult to detect. The proponent intends to prevent impacts by avoiding or moving hollow logs with a diameter greater than 30 cm. The proponent would avoid any warrens large enough to accommodate a Woma. The EPA considers that this management approach is satisfactory except that any logs greater than 20 cm diameter should be avoided or moved and there should be a preference for leaving logs in place if possible. This is addressed in recommended condition 7.

White-browed Babbler

The EPA notes that although there is potential habitat for the Priority Four listed White-browed Babbler in the proposal area, it is at the extent of its range and its presence would be considered to be uncommon. No Babblers were identified during the proponent's reconnaissance surveys. The EPA is satisfied with the proponent's proposed management, which is to have a zoologist walk the seismic lines prior to rolling vegetation and deviate the lines if Babbler nests are encountered.

Summary

Having particular regard to the habitat preferences and potential presence of Carnaby's Cockatoo, Malleefowl, the Woma and Carpet Python and having consideration for the following management actions prescribed in draft conditions 5 and 7 by the EPA:

- avoidance of activities in *E. accedens* woodlands in the Carnaby's Cockatoo breeding season, unless surveys have been carried out to identify breeding trees, in which case a buffer of 400 m around any breeding trees would apply within the breeding season;
- avoidance of Carnaby's Cockatoo breeding trees in any season;
- a 20 m survey distance for Malleefowl mounds either side of seismic lines and a 20 m buffer around Malleefowl mounds;
- avoidance by 10 m or moving of habitat logs of greater than 20 cm diameter, and
- a 10 m buffer around to any warrens large enough to contain a Woma or Carpet Python.

it is the EPA's opinion that the proposal can meet the EPA's environmental objectives for this factor provided that recommended conditions 5 and 7 are implemented.

3.3 Rehabilitation and Closure

Description

The total disturbance to vegetation from rolling and hand cutting the seismic lines would be 240.7 ha, of which 89.7 ha is within the Watheroo National Park, 30 ha is within the proposed Big Soak Plain conservation park, 35 ha is remnant vegetation and 86 ha is on cleared land. The proponent has committed to rehabilitating the area as well as monitoring and reporting to the DEC on the progress of rehabilitation.

Rehabilitation on private farm land would be to the owner's satisfaction. In areas of native bush-land the proponent expects that the rolled vegetation would return in three seasons. This would be monitored by the proponent annually and if there is not sufficient vegetation growth returning, remedial rehabilitation work would be implemented. Any vegetation that has been set aside from brush cutting or pruning would be placed on top of the seismic lines to provide organic matter and assist in rehabilitation.

The proponent has proposed a number of rehabilitation management measures including monitoring annually for three years following the end of the seismic survey or longer until the DEC is satisfied. The monitoring and follow-up would include the following:

- transects in representative survey lines and adjacent vegetation;
- photo monitoring points in representative communities;
- where the required regeneration standard has not been attained, rehabilitation programs would be developed in conjunction with the DEC;
- completion criteria would be developed in conjunction with the DEC and monitoring would continue until the completion criteria have been met;
- the results of the monitoring would be reported annually to the DEC; and
- monitoring would continue until the DEC is satisfied with the condition of the regeneration.

Third party access to the Watheroo National Park and the proposed Big Soak Plain conservation park has the potential to spread weeds and dieback. The proponent proposes to minimise third party access by restricting the number of access points to the Parks to a small number. Access to the Parks would be from firebreaks located away from the access roads. In addition, the proponent would block off all seismic line entrances from main access roads to deter casual use. Vegetation and large branches removed during rolling would be placed to deter and prevent access by third parties. In some cases, entrance tracks would be offset to disguise the entry point.

Rehabilitation would include all of the access tracks being closed off to third party access.

Submissions

The main submissions requested that:

- a condition be applied that requires the development and achievement of completion criteria to the requirements of the DEC, particularly in Watheroo National Park and the proposed Big Soak Plain conservation park;
- a bond under the EP Act be required to ensure rehabilitation outcomes to the satisfaction of the DEC; and
- a condition be applied that requires monitoring and annual reporting on the recovery of the seismic lines, relevant to completion criteria, and that the monitoring and reporting continue until these criteria have been met to the satisfaction of the DEC.

Assessment

The EPA's environmental objective for this factor is to ensure that rolled vegetation in the seismic survey lines recovers and that the abundance, species diversity, geographic distribution and productivity of vegetation communities is maintained in the longer term.

The DEC has advised the EPA that vegetation impacted by the rolling of seismic lines would be expected to recover in the medium term; however, there is a risk that, if public access to the seismic lines is not prevented, vegetation may not fully regenerate and the lines may become long term or permanent pathways for degrading processes.

Third party access onto the rolled seismic lines would lead to soil erosion and compaction, loss of seed stock, degraded soil conditions, potential spread of weeds and dieback and possible direct impacts to fauna. These impacts would result in loss of vegetation, habitat and biodiversity in the areas of cleared seismic lines with little chance of re-vegetation. Prevention of third party access is addressed by recommended condition 10.

The EPA considers that rehabilitation completion criteria, timeframes and monitoring techniques should be agreed in consultation with the DEC as managers of the conservation estate. The EPA has recommended condition 11 requiring baseline information to be collected prior to seismic line including that completion criteria are to be developed on advice of the DEC.

The EPA considers that there is a risk that the rehabilitation criteria would not be achieved by the proponent. The EPA is advised it is not possible to require a financial assurance under the *Petroleum and Geothermal Energy Resources Act 1967*. The EPA has therefore recommended that a rehabilitation financial assurance

be required. The DEC has advised that the financial assurance should be $140,000 (condition 13) to cover the cost of any remedial works by the DEC, if necessary.

Summary

Having particular regard to:

(a) the DEC's advice that the rolled vegetation can be expected to recover, provided that third party access is prevented;
(b) recommended condition 10 for prevention of third party access;
(c) recommended condition 11 for rehabilitation criteria and monitoring; and
(d) recommended condition 13 for provision of a rehabilitation financial assurance,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objectives for this factor.

3.4 Relevant Environmental Principles

In preparing this report and recommendations, the EPA has had regard for the object and principles contained in s4A of the EP Act. Appendix 3 contains a summary of the EPA's consideration of the principles.

4. Conditions

Section 44 of the EP Act requires the EPA to report to Minister for Environment on the key environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

4.1 Recommended conditions

Having considered the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by Latent Petroleum Pty Ltd to conduct an on-shore 3D seismic survey of the Warro Gas Field is approved for implementation. These conditions are presented in Appendix 4.

Consultation

In developing these conditions, the EPA consulted with the proponent and the Department of Environment and Conservation in respect to matters of fact and matters of technical or implementation significance.

These conditions are presented in Appendix 4. Matters addressed in the conditions include the following:

(a) Carnaby's Cockatoos – survey of nesting and potential nesting sites and establishment of a buffer around sites identified if seismic activity is undertaken in the July to December breeding period.
(b) vegetation and flora – surveys to be undertaken prior to seismic acquisition and avoidance of Declared Rare Flora or priority flora.
(c) fauna habitat – fauna surveys to be undertaken by experienced personnel to identify nesting and nesting habitat for significant bird, reptile and mammal fauna.
(d) weeds – management procedures to prevent the introduction of new weed species and spread of existing weed species.
(e) dieback – management procedures to prevent the introduction of dieback and monitoring to confirm the success of the measures.

(f) third party access – management and monitoring to prevent third party access to seismic lines.
(g) rehabilitation;
(h) bushfire prevention; and
(i) rehabilitation financial assurance.

5. Other Advice

Offset

The EPA notes that the proponent is in current negotiations with the DEC for a suitable offset given the proposal would have residual environmental impacts on a recognised conservation asset. Whilst the finalisation of the proposed project offset is still outstanding, the EPA considers that an offset should be finalised with the DEC prior to the commencement of the proposed works.

Potential Production Phase Impacts

The proponent has advised that the gas production phase of the Warro Gas Project would be confined to cleared agricultural land and would therefore not impact on the Watheroo National Park, the proposed Big Soak Plain conservation park or remnant vegetation.

6. Recommendations

The EPA submits the following recommendations to the Minister for Environment:

1. That the Minister notes that the proposal being assessed is the Warro Gas Field 3D On-shore Seismic Survey;
2. That the Minister considers the report on the key environmental factors and principles as set out in Section 3;
3. That the Minister notes that the EPA has concluded that the proposal can be managed to meet the EPA's environmental objectives, provided:
    - there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 4; and
    - an offset for residual impacts on a recognised conservation asset is agreed between the proponent and the DEC prior to implementation of the proposal.
4. That should the proposal be approved, the Minister imposes the conditions and procedures recommended in Appendix 4 of this report.

Appendix 1

List of submitters

Organisations:	Department of Environment and Conservation Department of Mines and Petroleum

Appendix 2

References

Beard, J S (1981) *Swan: The vegetation of the Swan Area: explanatory notes to sheet 7, 1:1,000,000 vegetation series.* University of Western Australia Press, Nedlands.

Department of Conservation and Land Management (2003) *Carnaby's Black-Cockatoo (CALYPTORHYNCHUS LATIROSTRIS) Recovery Plan.*

Environmental Protection Authority (1976) *Redbook Systems 1,2,3,5*

Environmental Protection Authority (2004) *Guidance for the Assessment of Environmental Factors Statement No. 51 – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessments in Western Australia.*

Environmental Protection Authority (2004) *Guidance for the Assessment of Environmental Factors Statement No. 56 – Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia.*

Environmental Protection Authority (2004) Bulletin 1147 – *Denison 3D Seismic Survey – Shire of Irwin.*

Environmental Protection Authority (2007) Bulletin 1266 – *Mullering 3D Onshore Seismic Survey.*

Latent Petroleum Limited (2009) *Warro Gas Field 3D Seismic Survey Public Environmental Review,* November 2009

Latent Petroleum Limited (2010) *Warro Gas Field 3D Seismic Survey Environmental Management Plan,* April 2010.

R.E. Johnstone and G.M Storr (1998) – *Handbook of Western Australian Birds – Volume 1 – Non-Passerines (emu to dollarbird).* WA Museum October 1998

Appendix 3

Summary of identification of key environmental factors and principles

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
BIOPHYSICAL			
Vegetation and Flora	The disturbance area consists of approximately 16,180 hectares (ha) which includes 6,217 ha in Watheroo National Park, 1,618 ha in a proposed Conservation Park. The project area lies within the Lesueur Sandplain Region of the Geraldton Sandplains Interim Biogeographic Region covering an area of 1,358,915 ha. No Threatened Ecological Communities or Priority Ecological Communities were identified within the proposal area. A dieback survey was undertaken to assess the potential for dieback within the project area. No declared weeds were recorded during surveys undertaken. Cape Weed (*Arctotheca calendula*), Broome grass (*Bromus alopecuroides*), Storkbill (*Erodium botrys*) and Barley grass (*Hordeum leporinum*) were recorded in Watheroo	<u>The Department of Environment and Conservation (DEC)</u> • That a condition be applied that all conservation significant flora, vegetation communities and fauna habitat identified in the project area are avoided. • The proponent should prepare and implement an Environmental Management Plan to the requirements of the DEC. • The proponent should prepare and implement a Bushfire Management Plan to the requirements of the DEC. • If the project is found to be environmentally acceptable and is subsequently approved, an offset should be applied to mitigate residual impacts to the Watheroo National Park.	**Considered to be a key environmental factor.**

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
	National Park. The current extent of Beard vegetation association 694 (Shrublands; scrub-heath on yellow sandplain Banksia-Xylomelum alliance in the Geraldton Sandplain & Avon-Wheatbelt Regions) is listed as 17.61% of its original coverage pre-European settlement.		
Terrestrial Fauna and Habitat	The project has the potential to impact on terrestrial fauna as a result of rolling and cutting of vegetation, reduction in habitat and vibration caused by seismic activities. There are three listed threatened species under the *Environmental Protection of Biodiversity and Conservation Act* (EPBC) 1999 within the area. These include the Malleefowl (*Leipoa ocellata*), Australian Bustard (*Ardeotis Australis*) and Carnaby's Cockatoo (*Calyptorhynchus latirostris*). Of these species the Carnaby's cockatoo species was located within the proposal area (foraging). The Carnaby's Cockatoo (*Calyptorhynchus*	<u>The Department of Environment and Conservation (DEC)</u> • That a condition be applied that all conservation significant flora, vegetation communities and fauna habitat identified in the project area are avoided.	**Considered to be a key environmental factor.**

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
	latirostris) is listed under the EPBC Act as "Endangered".		
Third Party Access	Watheroo National Park and proposed Big Soak Plain conservation park	There were no submissions relating to this factor.	**To be discussed under rehabilitation.**
POLLUTION			
Noise	Ambient noise levels near the vibrator would be approximately < 75dBA at 7m with noise suppression panels in place (comparable to vacuum cleaner). Noise may impact on landowners within the seismic survey area. Noise has the potential to impact on fauna.	There were no submissions relating to this factor.	All operations would comply with the noise regulations under the *Environmental Protection Act (Noise) Regulations 1997.* **Factor does not require further EPA evaluation.**
Dust	Rolling of vegetation and seismic activities.	There were no submissions relating to this factor.	All vehicles would be limited to designated access tracks where dust control measures can be used. **Factor does not require further EPA evaluation.**
SOCIAL SURROUNDINGS			
Aboriginal Heritage	No sites of Aboriginal heritage significance were identified in the seismic survey project area.		Latent would ensure the seismic survey proposal complies with the requirements of the *Aboriginal Heritage Act 1972*. **Factor does not require**

Preliminary Environmental Factors	Proposal Characteristics	Government Agency and Public Comments	Identification of Key Environmental Factors
			further EPA evaluation.
Non-Aboriginal Heritage	No sites of European heritage significance were identified in the seismic survey project area.	There were no submissions relating to this factor.	The proponent would ensure that the proposal complies with the requirements of the *Heritage Act of Western Australia 1990*. **Factor does not require further EPA evaluation.**
OTHER			
Rehabilitation and Closure	The proposal includes the rolling of vegetation within: • 6,217 ha within Watheroo National Park; • 1,618 ha within the proposed Big Soak Plain conservation park; • 3,117 ha of remnant vegetation; and • 5,228 ha of cleared agricultural land.	<u>Department of Environment and Conservation</u> • A condition should be applied that requires the development and achievement of completion criteria to the requirements of the DEC, particularly in Watheroo National Park and the proposed Big Soak Plain conservation park. • A bond under the *Environmental Protection Act* 1986 should be required to ensure rehabilitation outcomes to the satisfaction of the DEC. • A condition should be applied that requires monitoring and annual reporting on the recovery of seismic lines, relevant to completion criteria, and that the monitoring and reporting continue until these criteria have been met to the satisfaction of the DEC.	**Considered to be a key environmental factor.**

PRINCIPLES		
Principle	**Relevant Yes/No**	**If yes, Consideration**
1. The precautionary principle *Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.* *In application of this precautionary principle, decisions should be guided by –* *(a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and* *(b) an assessment of the risk-weighted consequences of various options.*	Yes	The proposal has the potential to impact flora, vegetation, fauna and fauna habitat in a National Park and proposed Conservation Park. Therefore, monitoring and management measures is to be implemented to detect changes and avoid significant impact. An offset for the impacts of the proposal to the Watheroo National Park, proposed Big Soak Plain conservation park and remnant vegetation would be agreed to between the proponent and the DEC prior to implementation of the proposal.
2. The principle of intergenerational equity *The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations*	Yes	The proposal has the potential to reduce the environmental values of the land if not managed and rehabilitated properly. Vegetation, flora and fauna including habitat and rehabilitation and closure are key environmental factors discussed within this report.
3. The principle of the conservation of biological diversity and ecological integrity *Conservation of biological diversity and ecological integrity should be a fundamental consideration.*	Yes	The proposal has the potential to impact vegetation in a National Park and proposed Conservation Park. Impacts have the potential to affect diversity integrity. Flora and vegetation and fauna are relevant environmental factors addressed in this report.

Appendix 4

Identified Decision-Making Authorities
and
Recommended Environmental Conditions

Identified Decision-making Authorities

Section 44(2) of the *Environmental Protection Act 1986* (EP Act) specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities, and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities (DMA) have been identified for this consultation:

Decision-making Authority	Approval
1. Director General - Department of Environment and Conservation	*Conservation & Land Management Act 1984*
2. Minister for Lands	*Land Administration Act 1997*
3. Minister for Environment	*Wildlife Conservation Act 1950*
4. Minister for Mines - Department of Mines and Petroleum	*Petroleum and Geothermal Energy Resources Act 1967*
5. Director General – Department of Mines and Petroleum	*Petroleum and Geothermal Energy Resources Act 1967*

RECOMMENDED ENVIRONMENTAL CONDITIONS

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE *ENVIRONMENTAL PROTECTION ACT 1986)*

WARRO GAS FIELD 3D ONSHORE SEISMIC SURVEY

Proposal: The proposal is to conduct a 3D seismic survey within an area consisting of private land, the proposed Big Soak Plain Conservation Park and the Watheroo National Park approximately 60 kilometres east of Jurien Bay. The survey would involve the rolling of vegetation for vehicle access to the seismic lines.

The proposal is further documented in schedule 1 of this statement.

Proponent: Latent Petroleum Pty Ltd

Proponent Address: Ground Floor, 1292 Hay Street, WEST PERTH WA 6005

Assessment Number: 1725

Report of the Environmental Protection Authority: Report 1369

The proposal referred to in the above report of the Environmental Protection Authority may be implemented. The implementation of that proposal is subject to the following conditions and procedures:

1 Proposal Implementation

1-1 The proponent shall implement the proposal as documented and described in schedule 1 of this statement subject to the conditions and procedures of this statement.

2 Proponent Nomination and Contact Details

2-1 The proponent for the time being nominated by the Minister for Environment under sections 38(6) or 38(7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal.

2-2 The proponent shall notify the Chief Executive Officer of the Office of the Environmental Protection Authority of any change of the name and address of the proponent for the serving of notices or other correspondence within 30 days of such change.

3 Time Limit of Authorisation

3-1 The authorisation to implement the proposal provided for in this statement shall lapse and be void five years after the date of this statement if the proposal to which this statement relates is not substantially commenced.

3-2 The proponent shall provide the Chief Executive Officer of the Office of the Environmental Protection Authority with written evidence which demonstrates that the proposal has substantially commenced on or before the expiration of five years from the date of this statement.

4 Compliance Reporting

4-1 The proponent shall prepare and maintain a compliance assessment plan to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority.

4-2 The proponent shall submit to the Chief Executive Officer of the Office of the Environmental Protection Authority the compliance assessment plan required by condition 4-1 at least six months prior to the first compliance report required by condition 4-6, or prior to ground disturbing activities, whichever is sooner.

The compliance assessment plan shall indicate:

1 the frequency of compliance reporting;

2 the approach and timing of compliance assessments;

3 the retention of compliance assessments;

4 the method of reporting of potential non-compliances and corrective actions taken;

5 the table of contents of compliance assessment reports; and

6 public availability of compliance assessment reports.

4-3 The proponent shall assess compliance with conditions in accordance with the compliance assessment plan required by condition 4-1.

4-4 The proponent shall retain reports of all compliance assessments described in the compliance assessment plan required by condition 4-1 and shall make those reports available when requested by the Chief Executive Officer of the Office of the Environmental Protection Authority.

4-5 The proponent shall advise the Chief Executive Officer of the Office of the Environmental Protection Authority of any potential non-compliance within seven days of that non-compliance being known.

4-6 The proponent shall submit to the Chief Executive Officer of the Office of the Environmental Protection Authority the first compliance assessment report fifteen months from the date of issue of this Statement addressing the twelve month period from the date of issue of this Statement and then annually from the date of submission of the first compliance assessment report.

The compliance assessment report shall:

1 be endorsed by the proponent’s Managing Director or a person delegated to sign on the Managing Director’s behalf;

2 include a statement as to whether the proponent has complied with the conditions;

3 identify all potential non-compliances and describe corrective and preventative actions taken;

4 be made publicly available in accordance with the approved compliance assessment plan; and

5 indicate any proposed changes to the compliance assessment plan required by condition 4-1.

5 Carnaby's Cockatoos

5-1 The proponent shall not carry out seismic line preparation or seismic acquisition in areas within 400 metres of *Eucalyptus accedens* woodlands during the Carnaby's Cockatoo breeding season (July to December), until such time as a Carnaby's Cockatoo specialist approved by the Chief Executive Officer of the Office of the Environmental Protection Authority has carried out a field survey to identify Carnaby's Cockatoo nests or potential nest sites within the *Eucalyptus accedens* woodlands.

NOTE: Seismic line preparation refers to rolling or hand cutting of vegetation.

5-2 The proponent shall report the locations of Carnaby's Cockatoo nests or potential nest sites identified pursuant to condition 5-1 to the Office and the Environmental Protection Authority and the Department of Environment and Conservation prior to carrying out seismic line preparation during the Carnaby's Cockatoo breeding season (July to December).

5-3 If Carnaby's Cockatoo nests or potential nesting sites are identified pursuant to condition 5-1, the proponent shall not carry out seismic line preparation or seismic acquisition within 400 metres of such nests or potential nesting sites during the July to December breeding period.

6 Vegetation and flora

6-1 Prior to seismic line preparation the proponent shall:

1. in consultation with the Department of Environment and Conservation identify a list of potential Declared Rare Flora and other conservation significant species in the proposal area; and
2. employ a suitably qualified botanist to walk the planned seismic lines and identify and flag any declared rare flora (DRF), priority flora, the slow growing *Macrozamia fraseri* and *Xanthorrhoea* species and mature trees.

Note:

1. Seismic line preparation refers to the rolling or hand cutting of vegetation.
2. Suitably qualified botanists would have 5 years relevant field survey experience to the satisfaction of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation.
3. Mature trees includes trees that are either dead or alive.

6-2 Subject to condition 6-3, the proponent shall deviate the seismic lines to avoid impacts to the plants identified pursuant to condition 6-1 according to the following:

1. 50 metre buffer to any DRF;
2. 10 metre buffer to any priority 1 and 2 flora;
3. 1 metre buffer for *Macrozamia fraseri* and *Xanthorrhoea* species; and
4. mature trees may have branches removed by hand to maintain the width of seismic lines if necessary, unless the trees contain breeding hollows as referred to in condition 7-1.

6-3 Where the proponent is unable to achieve adequate seismic acquisition due to condition 6-2, application may be made for a site specific waiver of condition 6-2 to the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation.

6-4 The proponent shall maintain a record of declared rare flora, priority flora, *Macrozamia fraseri* and *Xanthorrhoea* species and mature trees that require seismic line deviation or branch trimming in accordance with condition 6-2 and report the species, location and achieved buffer distance, to the Department of Environment and Conservation within one month of completion of seismic line preparation and in the compliance assessment report referred to in condition 4-6.

6-5 The proponent shall maintain a record of all Priority 3 and 4 flora unable to be avoided and report the species, location and number of individuals destroyed to the Department of Environment and Conservation within one month of completion of seismic line preparation and in the compliance assessment report referred to in condition 4-6."

7 Fauna habitat

7-1 No more than 3 weeks prior to seismic line preparation the proponent shall employ a suitably experienced zoologist to walk the planned seismic lines and identify and flag:

- tree hollows large enough to accommodate a breeding event by Carnaby's Cockatoos within 400 metres if line preparation is to be undertaken during breeding season (July – December) or 20 metres if outside breeding season;
- nests of the White-browed Babbler situated within 10 metres of the planned seismic lines;
- logs of greater than 20 centimetres diameter situated within 10 metres of the planned seismic lines;
- rabbit warrens or other burrows that could accommodate a Woma or Carpet Python situated within 10 metres of the planned seismic lines ; and
- active or inactive Malleefowl mounds situated within 20 metres of the planned seismic lines.

Note: Suitably experienced zoologists would have at least five years relevant field experience in carrying out fauna surveys in the south west of Australia to the satisfaction of the Office of the Environmental Protection Authority.

7-2 Subject to condition 7-3, the proponent shall:

1. deviate the seismic lines so as to maintain a 20 metre buffer for Malleefowl mounds and 10 metre buffer for other habitat referred to in condition 7-1;
2. carefully reposition habitat logs if necessary; and
3. report sightings of the Woma Python to the Department of Environment and Conservation for determination of avoidance procedures prior to proceeding with seismic line acquisition within 400 metres of the sighting.

7-3 Where the proponent is unable to achieve adequate seismic acquisition due to condition 7-2 at a particular location, application may be made for a site specific waiver of condition 7-2 to the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation.

7-4 The proponent shall maintain a record of fauna habitat that requires seismic line deviation in accordance with condition 7-2 and report the type, location and achieved buffer distance, to the Department of Environment and Conservation within one month of completion of seismic line preparation and in the compliance assessment report referred to in condition 4-6.

8 Weeds

8-1 The proponent shall ensure that no new species of agricultural or environmental weed is introduced into the proposal area within Watheroo National Park, the proposed Big Soak Plain conservation park or other areas of remnant vegetation and that the abundance and distribution of existing weeds is not increased as a direct or indirect result of implementation of the proposal.

8-2 Prior to seismic line preparation, the proponent shall, in consultation with the Department of Environment and Conservation, have a suitably qualified botanist carry out a field survey of the proposal area along the planned seismic lines to collect baseline data on the species, location and areas of agricultural and environmental weed plants present.

NOTE: 1. Seismic line preparation refers to the rolling or hand cutting of vegetation.

2. Suitably qualified botanists would have five years relevant field survey experience to the satisfaction of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation.

8-3 Prior to seismic line preparation the proponent shall:

1. submit a report to the Department of Environment and Conservation on the results of the survey referred to in condition 8-2 detailing the survey method used, providing maps and photographs and outlining the planned risk mitigation in each instance of weed infestation; and
2 submit detailed management measures for the proposal including hygiene (clean down points and clean down procedures) to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation.

8-4 The proponent shall resurvey the seismic lines in spring annually for at least two years, unless otherwise agreed by the Chief Executive Officer of the Office of the Environmental Protection Authority, following completion of the seismic acquisition to ensure that the requirements of condition 8-1 have been met.

8-5 In the event that there are locations where condition 8-1 has not been met, the proponent shall develop remedial measures in consultation with the Department of Environment and Conservation and shall implement those remedial measures until approval is given to stop by the Chief Executive Officer of the Office of the

Environmental Protection Authority on advice from the Department of Environment and Conservation.

8-6 Prior to ceasing annual weed surveys and remedial measures referred to in condition 8-4 and 8-5 the proponent shall provide a closeout report and seek approval from the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation.

9 Dieback

9-1 The proponent shall ensure that dieback disease (*Phytophthora* species) is not introduced as a direct or indirect result of implementation of the proposal into uninfected areas that are in Watheroo National Park, the proposed Big Soak Plain conservation park or other remnant vegetation areas.

9-2 The proponent shall not carry or cause to be carried any soil into the Watheroo National Park, the proposed Big Soak Plain conservation park or remnant vegetation areas.

9-3 The proponent shall carry out seismic line preparation, seismic acquisition, demobilisation and rehabilitation activities in dry soil conditions.

NOTE: 1. Seismic line preparation refers to the rolling or hand cutting of vegetation.
2. Dry soil conditions are when soils (not dust) do not freely adhere to rubber tyres, trucks, vehicles chassis or wheel arches.

9-4 Prior to seismic line preparation the proponent shall, in consultation with the Department of Environment and Conservation, have an experienced dieback interpreter acceptable to the Department of Environment and Conservation carry out a baseline dieback survey of the planned seismic lines in the proposal area to determine whether there are any existing areas of dieback disease and, if it is present, to map the infected areas.

9-5 Prior to seismic line preparation the proponent shall:

1. Submit a report to the Department of Environment and Conservation on the results of the survey referred to in condition 9-4 providing maps and photographs and outlining the planned risk mitigation in each instance that dieback has been identified.

2. Submit detailed management measures including hygiene (inspection certification by appointed persons for each vehicle entry, clean down points and clean down procedures) to the requirements of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation.

3. Implement dieback management and hygiene measures detailed in 9-5.2 during seismic line preparation, seismic acquisition, demobilisation and rehabilitation activities.

9-6 The proponent shall resurvey the seismic lines in spring annually for at least two years unless otherwise agreed by the Chief Executive Officer of the Office of the

Environmental Protection Authority, following completion of the seismic acquisition, to ensure that the requirements of condition 9-1 have been met.

9-7 In the event that there are locations where condition 9-1 has not been met, the proponent shall develop remedial measures in consultation with the Department of Environment and Conservation and shall implement those remedial measures until approval is given to stop by the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation.

9-8 Prior to ceasing annual dieback surveys (condition 9-6) of at least two years and remedial measures referred to in condition 9-7 the proponent shall provide a closeout report and seek approval from the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation.

10 Third Party Access

10-1 The proponent shall block and/or obscure seismic lines agreed by the Department of Environment and Conservation to prevent third party access, within two weeks of the last use of the entrances for the seismic survey to the satisfaction of the Department of Environment and Conservation.

10-2 The proponent shall on a three monthly basis inspect all entrances to seismic lines for evidence of third party access until such time as it is deemed by the Chief Executive Officer of the Office of the Environmental Protection Authority, on advice from the Department of Environment and Conservation, that further third party access is unlikely.

10-3 The proponent shall repair the entrance blockades and/or disguises referred to in condition 10-1 within two weeks of evidence of a breach being detected and report the inspection results referred to in condition 10-2 and subsequent repair actions in the compliance assessment report referred to in condition 4-6.

11 Rehabilitation

11-1 The proponent shall rehabilitate the proposal area and implement rehabilitation measures on advice of the Department of Environment and Conservation to achieve the completion criteria referred to in condition 11-2.

11-2 Prior to commencement of seismic line preparation the proponent shall:

1. conduct surveys of the proposal area to collect baseline information in preparation for setting completion criteria for rehabilitation of the seismic lines; and

2. develop completion criteria for rehabilitation of the seismic lines,

to the requirements of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation.

Note: seismic line preparation refers to the rolling or hand cutting of vegetation.

11-3 Within one month following completion of seismic acquisition or within such other time as agreed by the Chief Executive Officer on advice from the Department of Environment and Conservation the proponent shall commence rehabilitation of the seismic lines to achieve the completion criteria referred to in condition 11-2.

11-4 In liaison with the Department of Environment and Conservation, the proponent shall monitor progressively the seismic line rehabilitation for a range of sites against the criteria developed pursuant to condition 11-2 with appropriately timed surveys, until the completion criteria are met. The surveys shall be conducted annually unless otherwise agreed by the Chief Executive Officer of the Office of the Environmental Protection Authority, on advice from the Department of Environment and Conservation.

11-5 The proponent shall include the results of the rehabilitation monitoring required pursuant to condition 11-4 in the compliance assessment report referred to in condition 4-6 commencing from the date rehabilitation was commenced. The report shall address the following:

1. The progress made towards meeting the completion criteria developed pursuant to condition 11-2; and

2. Contingency management measures in the event that the completion criteria required by condition 11-2 are unlikely to be met.

12 Bushfire Prevention

12-1 The proponent shall implement the Bushfire Prevention Management Protocol contained in the *Warro Gas Field 3D Seismic Survey Environmental Management Plan* (Latent Petroleum Limited, April 2010).

13 Rehabilitation Performance Bond

13-1 As security for the due and punctual observance and performance by the proponent of the requirements of condition 11 to be observed, conformed and complied with, the proponent shall lodge with the Chief Executive Officer of the Office of the Environmental Protection Authority prior to ground-disturbing activity, an irrevocable Performance Bond as nominated and approved by the Chief Executive Officer in his sole unfettered discretion to a cash value and in a form acceptable to the Chief Executive Officer ("the Security") which Security at the date hereof being $140,000.

13-2 The Chief Executive Officer of the Office of the Environmental Protection Authority may review the Security required by condition 13-1 at any time or times and if, on such review, the Chief Executive Officer considers that a security has ceased to be acceptable to the Chief Executive Officer, then the Chief Executive Officer may, with the approval of the Minister for Environment, require the proponent to furnish replacement or additional security for performance by the proponent of its obligations under condition 11.

13-3 The proponent shall within 14 days after written request by the Chief Executive Officer of the Office of the Environmental Protection Authority furnish replacement or additional security in such sum as the Chief Executive Officer shall nominate, in a form and upon terms and conditions approved by the Chief Executive Officer, which approval shall not be unreasonably withheld. On receipt of approved replacement security the Chief Executive Officer shall release and discharge the original security.

14 Proponent access to Watheroo National Park

14-1 The proponent shall only access Watheroo National Park for seismic operation and associated activities including activities required under this statement in accordance with written arrangement for the location, timing and application of precautionary measures for the protection of conservation values agreed by the Department of Environment and Conservation. These arrangements are to be revised and agreed on an annual basis or as required by the Regional Manager according to changing circumstances.

Notes

1. The Chief Executive Officer of the Office of the Environmental Protection Authority may seek advice from other agencies or organisations, as required.

2. The Minister for Environment will determine any dispute between the proponent and the Office of the Environmental Protection Authority over the fulfilment of the requirements of the conditions.

Schedule 1

The Proposal (Assessment No. 1725)

The proposal is to conduct a 3D seismic survey:

- on Exploration Permits 407 and 321 approximately 250 kilometres northeast of Perth, 60 kilometres east of Jurien Bay;
- consisting of approximately 397 kilometres of receiver lines and 394 kilometres of source lines; and
- approximately 371 kilometres of these source and receiver lines are within the Watheroo National Park and the proposed Big Soak Conservation Park.

The proposal is described in the following document – *Warro Gas Field 3D Seismic Survey Public Environmental Review, November 2009.*

The main characteristics of the proposal are summarised in Table 1 below.

Table 1: Summary of Key Proposal Characteristics

Element	**Description**
Total length of seismic lines (line kilometres)	• Total line 791 kilometres • cleared land 289 kilometres • Watheroo National Park 284 kilometres • Proposed Conservation Park 88 kilometres • Areas of remnant vegetation 101 kilometres • Existing tracks/roads 30 kilometres
Total length of receiver lines	397 kilometres
Total length of source lines	394 kilometres
Rolled source lines (width)	3.5 metres – 4 metres
Rolled receiver lines (width)	3.5 metres and alternate lines at 2.5 metres
Seismic lines over cleared land (maximum area)	87 hectares
Seismic lines in Watheroo National Park (maximum area, excluding existing fire breaks)	90 hectares
Seismic lines in Proposed Conservation Park (maximum area)	30 hectares
Seismic lines over remnant vegetation and regrowth (maximum area)	35 hectares

Figures

Figure 1. Location Plan (see Figure 1 above)
Figure 2. Vegetation Areas to be avoided or hand cut (see Figure 2 above)

Appendix 5

Summary of Submissions and Proponent's Response to Submissions

PUBLIC SUBMISSION TO PER	LATENT RESPONSE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION (29 December 2009)	
MANAGING CONSERVATION VALUES Recommendation 1: That a condition be applied to ensure all conservation significant flora, vegetation communities and fauna habitats identified in the project area are avoided.	Wherever possible all conservation significant flora, vegetation communities and fauna habitats will be avoided. In regard to flora, it has always been understood that this requirement will specifically relate to avoidance of Declared Rare Flora (DRF) and Priority 1 species and avoidance whenever possible of Priority 2, 3 and 4 species. With the detailed flora work completed by Latent at Warro, no (DRF) or Priority 1 species have been identified in the project area at this point in time. However, Latent recognises that DRF and Priority 1 species may occur in the project area. During the flora surveys, 22 Priority 2, 3 and 4 species were identified.
Recommendation 2: That the proponent prepares and implements an Environmental Management Plan (EMP) as a condition of the Minister's approval of the proposal, to the requirements of DEC.	As discussed at the meeting (held with representatives from DEC, OEPA, Latent and Keith Lindbeck and Associates) the draft Environmental Management Plan (EMP) submitted with the PER will be modified to incorporate management procedures and protocols will be prepared using the Denison 3D EMP as a guide. The revised draft EMP will be forwarded to the DEC, Environmental Management Branch (EMB), no later than 12 February. On 26 February 2010, a workshop to work through the content of the draft EMP will be held at the Kensington offices of the EMB (DEC). The workshop members will include a representative from Terrex Seismic, the company commissioned to undertake the seismic survey.
FIRE MANAGEMENT Recommendation 3: That the proponent prepares and implements a bushfire prevention management plan as a condition of the Minister's approval of the proposal, to the requirements of the DEC.	In discussion with Terrex, the Fire Management Plan attached to the PER will be modified in line with the requirements of the DEC.
SEISMIC LINE CLOSURE AND REHABILITATION Recommendation 4: That a condition be applied that requires the development and achievement of completion criteria to the requirements of DEC, particularly in Watheroo National Park and the Big Soak Plain Conservation Park.	Noted.
Recommendation 5: That a condition be applied that requires monitoring and annual reporting on the recovery of the seismic lines, relevant to completion criteria, and that the monitoring and reporting continue until these criteria have been met to the satisfaction of DEC.	Noted.

PUBLIC SUBMISSION TO PER	LATENT RESPONSE
PERFORMANCE BOND Recommendation 6: That the EPA investigates the potential for the application of a bond under the jurisdiction of the *Environmental Protection Act 1986* until completion criteria have been met to the satisfaction of the DEC.	An offset proposal has been forwarded to the DEC and a response received that the proposal is in line with DEC requirements. A meeting to progress the offset proposal is being held with the EMB on 29 January 2010.
OFFSETS Recommendation 7: If the project is found to be environmentally acceptable and subsequently approved, offsets be applied to mitigate residual impacts on Watheroo National Park (critical asset). Recommendation 8: That DEC is given an opportunity to formally comment on the offset proposal prior to completion of the EPA assessment.	An offset proposal has been forwarded to the DEC and a response received that the proposal is in line with DEC requirements. A meeting to progress the offset proposal is being held with the EMB on 29 January 2010. Noted.
DEPARTMENT OF MINES AND PETROLEUM (DMP) (11 January 2010)	
The risk level "E" given in Table 14 and carried through Table 19 is not defined and does not correlate with the levels set in Table 18. As previously mentioned it would also be relevant to include the residual risks (risk ranking given implementation of control measures) in Table 19, as a large proportion of the raw risk rankings as high/extreme which is generally uacceptable as it does not demonstrate the ALARP principle.	The risk level "E" has been misplaced in the tables. However, the levels in Table 19 are correct. Attached is a modification of Table 19 (from the PER) which includes an assessment of Residual Risk following the implementation of the management controls (right hand columns).

POTENTIAL INCIDENT / UNWANTED EVENT	ENVIRONMENTAL IMPACT	LIKELIHOOD	CONSEQUENCE	PRIORITY	RISK	CONTROL TO BE IMPLEMENTED	LIKELIHOOD	CONSEQUENCE	PRIORITY	RESIDUAL RISK
LINE PREPARATION										
Disturbance of vegetation outside the allocated disturbance area.	Disturbance of significant vegetation or habitat. Habitat destruction. Fauna loss. Vegetation loss.	D	3	17	M	The area to be disturbed will be clearly marked and flagged prior to the commencement of vegetation rolling activities. Area of disturbance will be minimised where possible. All vegetation disturbance will be supervised by the site supervisor All vegetation disturbance will be undertaken in accordance with the vegetation and line preparation management plan.	E	4	23	L
Removal of Priority flora or DRF.	Flora species of conservation significance lost. 22 Priority flora species were recorded in the seismic area. No DRF has been recorded to date.	E	2	14	H	Prior to disturbance seismic lines will be walked by a qualified botanist and all Priority flora flagged or line marked to avoid population. Lines will be diverted to avoid Priority flora populations identified during line preparation.	E	4	23	L
Clearing of restricted fauna habitat.	Reduction in available fauna habitat. Fauna loss.	D	2	12	H	Large breeding and feeding trees for Carnaby's Black Cockatoo will be flagged and not disturbed. Large logs (>30 cm diameter) will be left undisturbed and the lines diverted. Rabbit warrens will be avoided. Active and inactive Malleefowl mounds will be avoided. Active mounds by a minimum of 50 m.	E	4	23	L
Machinery and vehicles infected with pathogens (Dieback) or weeds.	Potential for weed or pathogens spread and/or introduced in the seismic area and Watheroo National Park.	D	2	12	H	Follow weed management procedure in the EMP. Follow dieback management procedures in the EMP. Onsite induction will highlight the importance of vehicle hygiene management and weeds occurring in the areas.	E	4	23	L
Vegetation completely cleared instead of rolled.	Complete loss of habitat. Longer rehabilitation time.	E	3	19	M	Clearing will be monitored by the Site Supervisor to ensure that rolling is undertaken in accordance with the Line Preparation Management Plan. Areas to be rolled will be marked with flagging tape and no other areas are to be disturbed.	E	4	20	L
Impacts to soil from vegetation disturbance	Increased erosion and changes in soil structure from vegetation disturbance.	D	3	17	M	Rolling vegetation maintains soil structure. No management required.	E	5	25	L
Excessive dust produced whilst rolling vegetation	Damage to flora	D	4	20	L	Rolling will not be conducted during periods of high winds.	E	5	25	L

HYDROLOGY										
Contamination to ground and/or surface water quality from seismic activities	Impact to ground and/or surface water quality	D	4	20	L	Seismic survey has no impact on surface or ground water. No management required.	E	5	25	L

WATHEROO NATIONAL PARK AND THE PROPOSED BIG SOAK PLAIN CONSERVATION PARK										
Introduction of weeds and pathogens into the Parks	Disturbance of significant vegetation or habitat.	C	2	9	E	Vehicle clean down points prior to entering the Parks Implementation of the weed and dieback management plans.	D	4	20	L
Unauthorised third party access into the Parks	Weed and pathogen introduction into the Parks	C	3	13	H	Remedial rehabilitation will be conducted 6 months after seismic work is completed and then annually for a minimum of three years in conjunction with advice from the DEC.	D	4	20	L
Disturbance to vegetation in the Parks	Disturbance of significant vegetation or habitat.	D	3	17	M	Seismic lines will be minimal width (~3.5 m). Avoidance of areas of dense native vegetation.	E	4	23	L

TRANSPORT AND VEHICLES										
Introduce and/or spread weeds and pathogens into the survey area from vehicles	Introduce weeds and pathogens in the seismic survey area	C	2	9	E	Follow clean down procedures stated in the weed and dieback management plan. Use existing tracks where practicable.	D	4	20	L
Road kill.	Fauna deaths on roads.	D	3	17	M	Staff educated to be alert for wildlife (especially at night). All vehicles must travel below 40km/hr within the Parks and on freehold land.	E	4	23	L
Combustion emissions from vehicles and equipment.	Combustion products from exhaust pipes. Air emissions.	A	5	16	H	Regular servicing of vehicles and equipment.	B	5	21	M
Dust produced by road traffic on unsealed roads.	Dust generation on public unsealed road. Air Pollution (particulates). Public nuisance/traffic hazard.	D	2	12	H	Use of water trucks along unsealed route – only if necessary. All vehicles must travel below 40km/hr within the Parks and on freehold land.	D	4	20	L
Increased traffic on Brand Highway and public roads.	Damage to road surface (public road). Public nuisance/ complaints.	D	4	20	L	There will be minimal large trucks entering the site; all other vehicles will be regular 4WD. Signs will be erected at the turnoff to site to advise of traffic entering.	E	5	25	L

HYDROCARBONS										
Minor hydrocarbon spill from vehicle or machinery	Hydrocarbon spills. Contamination of soil, groundwater and surface water.	D	2	12	H	All hydrocarbons will be stored within cleared land on freehold land. Any hydrocarbons will be stored in adequate bunding. Contaminated soil from a minor hydrocarbon leak will be removed offsite.	E	4	23	L

WASTE										
Inappropriate storage, handling and disposal of wastes.	Waste left onsite.	D	2	12	H	All rubbish will be removed off site.	E	4	23	L

FREEHOLD LAND										
Impacts to landholders from seismic activities	Gates left open by seismic staff Interference with cropping Damage to property and paddocks	D	4	20	L	Extensive landholder consultation. All seismic employees will be informed on the importance on gate management during the site induction	E	4	23	L

FIRE										
Lightning strike. Uncontrolled fire on-site.	Bushfire. Vegetation damage. Infrastructure damage.	E	2	14	H	Firebreaks constructed and maintained. Staff education on fire prevention techniques (inductions). No fires permitted on site. Vehicles must not park on vegetation A Fire Management Plan has been developed and will be implemented. Liaison will be undertaken between Latent, DEC and the local Fire Control Officer.	E	4	23	L

NOISE										
Complaints regarding noise.	Excessive noise generation associated with the seismic survey	E	4	23	L	Site is remote from any residences. Noise is anticipated to be low and have minimal impact.	E	5	25	L

REHABILITATION										
Establishment of weeds.	Invasion and spread of weeds on rehabilitated structures and project area. Reduction in germination and growth of required native species.	C	3	13	H	Monitoring of weed establishment. Follow machinery hygiene guidelines to minimise weed spread. A Weed Management Plan has been developed and will be implemented.	D	4	20	L
Tracks and lines not closed to third party access	Damage vegetation, leave rubbish and soil compaction. Slow rehabilitation.	D	3	17	M	All access lines from the public road will be closed to third party access by placing vegetation over tracks. Gates will be erected if there is a continuing problem.	E	4	23	L