



MATTER OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

DRAFT FOR PUBLIC COMMENT

ATTACHMENT E

to

**Environmental Review Document
REFERRAL APPLICATION**

Section 38 of the Environmental Protection Act 1999

Project:	UIL Energy 2D Seismic survey, Onshore, Perth Basin, WA
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Document Information

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1. INTRODUCTION AND OVERVIEW OF THE PROPOSAL

The Proposal is located in the Perth Basin, approximately 170km north of Perth in the Shire of Dandaragan and partly in the Shire of Coorow. The nearest town to the Proposal is Badgingarra. The Proposal is located on Exploration Permits EP447, EP488 and EP489 granted under provision of the PGER Act 1967, **Figure 1: Regional location and the Proposal area**, provided in Attachment G - Figures.

The Proposal is designed to acquire approximately 264km of two dimensional (2D) seismic data. The proposal is a temporary activity with the life of the Proposal being approximately 8 weeks. The Proposal includes the following key components:

- preparation of seismic lines;
- seismic data acquisition by generation of acoustic signal using seismic trucks;
- rehabilitation and monitoring.

The current Proposal is related to the UIL Energy Badgingarra 2D Seismic survey undertaken in April 2013. The Proposal will be tied to the Badgingarra 2D seismic grid to confirm subsurface morphology and structural complexity of the Perth Basin in order to mature conventional leads initially identified during the 2013 seismic interpretation.

Due to potential impact on MNES listed under Section 18 Part 3 of the EPBC Act, on 28/08/2015 the Proposal was referred to the Commonwealth Department of the Environment (DoE) to determine whether assessment is required under the EPBC Act. The Proposal, EPBC Ref. No 2015/7554 was published on the DoE website for public consultation for the period of 10 business days (14 calendar days). No submissions were received during the consultation period.

The Proposal is referred to the Office of the Environmental Protection Authority (OEPA) for a determination on whether assessment under the EP Act is required.

If it is determined that the Proposal requires assessment under both the EPBC Act and the EP Act, UIL Energy will request assessment of the proposed action in accordance with the Approval Bilateral Agreement under the EPBC Act between the Commonwealth and the State of Western Australia (Commonwealth of Australia and the State of Western Australia, 2014).

To address requirements of the Approval Bilateral Agreement assessment process, a relevant extract from the Environmental Review Document (Attachment A to the UIL referral application s.38 of the EP Act) should be released for public comment for at least 14 days. As mentioned above, the Proposal was already listed for public consultation as part of the UIL Energy referral under the EPBC Act, however, if the OEPA will request another round of public consultation UIL Energy will release the *Matters of National Environmental Significance (MNES) assessment report – Draft* (this document) for public comment for at least 14 calendar days. Responses to submissions received on this document will be provided to the OEPA to assist with the UIL referral application assessment.

This document is an extract from the Environmental Review Document that was prepared to support the referral application required under s. 38 of the EP Act. This document addresses the MNES listed under the EPBC Act and has been prepared in accordance with *Section 6 of the WA Environmental Assessment Guideline (EAG 14)* and the EPBC Act Policy Statement: Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (DOtE, 2013) and *the EPBC Act Referral Guideline For Three Threatened Black Cockatoo Species*, (DoE, April 2012).

2. DESCRIPTION OF THE PROPOSAL

The Proposal is designed to acquire 264km of 2D seismic data, **Figure 2 – Conceptual design of the Proposal**, provided as Attachment G- Figures. Seismic acquisition will be undertaken by three Hemi 50 vibe trucks that drive along the prepared lines with a nominal speed of 5kph. Data will be acquired using a seismic vibrator energy source deployed at regular 25m intervals along the survey lines. The reflected acoustic signal will be collected by linear arrays of wireless geophones. A typical active ‘spread’ of geophone arrays might cover a distance of 8-10km or more.

Approximately 54 linear km (or 24ha) of the Proposal requires clearing of native vegetation. Clearance will occur, only where necessary, in discrete linear segments ranging from 3.6 to up to 4.5m wide i.e., just wide enough to allow the seismic trucks to transit the area. The spacing between the lines varies from 2 to 9km.

The proposed clearing method involves cutting vegetation above ground only and mulching greenstock with immediate replacement of mulch in-situ. Mulching has been adopted as best practice in the Perth Basin for previous seismic acquisitions (Norwest Energy 2015 and Warrego Energy 2015) in preference to broad scale clearing. The mulching technique retains topsoil and leaves seed bank and rootstock in-situ, both of which facilitate rehabilitation and vegetation re-growth. This method results in temporary disturbance and vegetation is able to regenerate more quickly than would be the case with conventional clearing (Terrex Seismic, 2012). Where practical, the vegetation will be rolled flat without clearing or disturbing the soil.

Cleared and disturbed areas will be rehabilitated immediately following completion of the survey. Due to the proposed “mulching” methods of clearing, disturbed areas will require only minor civil works to return them to a condition similar to that of surrounding undisturbed areas. Rehabilitation works will be undertaken to establish a safe stable non-polluting landform similar to that of surrounding undisturbed areas.

The ideal seismic acquisition period in the Perth Basin is typically the end of summer season from February through to the end of April. The exact timeframe for the Proposed Action is subject to availability of a seismic crew and all parties’ government approvals. The current preferred time for the Proposed Action is tentatively between March and April 2016. Should this time not be possible then the next time slot, to undertake the program, will not be until the end 2016/ early 2017.

Key Proposal Characteristics

Summary of the Proposal	
Proposal Title	UIL Energy 2D Seismic Survey EP447, EP488 and EP489
Proponent name	UIL Energy Ltd
Life of Proposal	8 weeks including mobilisation, line preparation, data acquisition and rehabilitation (excluding ongoing rehabilitation monitoring)
Short description	<p>The Proposal is to undertake 2D seismic acquisition within exploration permits 447, 488 and 489 in the locality of the town of Badgingarra, the Shire of Dandaragan and partly within the Shire of Coorow. The objective of the Proposal is to map the subsurface morphology and structural complexity of the Perth Basin. The Proposal is designed to acquire 264km of 2D seismic data. The Proposal includes the following components:</p> <ul style="list-style-type: none"> - Seismic line preparation; - Seismic data acquisition; - Workforce accommodation; - Rehabilitation
Key proposal elements	
2D seismic data acquisition	264 linear km. Conceptual design is shown in Figure 2 , Attachment G
Seismic lines preparation	Involves clearing up to 24ha of native vegetation calculated on maximum width of 4.5m seismic lines. The line spacing varies from 2km to 9km.

3. ALTERNATIVES TO THE PROPOSAL

The proposed action may only occur where potential petroleum resources have been identified. UIL Energy considered a range of seismic survey location options in order to avoid and reduce environmental impacts, cost, efficacy and timing issues. UIL Energy considers the Proposal as the most preferred, taking into consideration the restrictions imposed by identified locations of petroleum resources. Any alternative to the proposed layout would impact the quality of required data and consequently compromise resource assessment.

To avoid and minimise potential environmental impacts the following alternative actions were considered during the design stage but have not been proposed:

Not taking the action

A seismic survey is the only available technology that collects sufficient data to define the structural geology of the region without significant drilling. In addition a “No survey” alternative would breach the permit commitments and consequently lead to withdrawal of the permits.

Interpretation of existing seismic data and avoidance of the survey

The acquisition of 212km of 2D seismic data in 2013(UIL Energy Badgingarra 2D Seismic Survey) together with 4000km of older vintage seismic data and logs of twenty five wells in and around the Proposal formed the basis for seismic interpretation undertaken between 2013 and 2015. The vintage seismic data used in the interpretation is of insufficient quality to identify local geological structure and features. Despite the poor

quality of vintage seismic data a number of indicative leads were identified during the interpretation. However, further new 2D seismic data is also required to more accurately define the boundary of these leads and mature them to prospects. Due to the large area covered by these leads, approximately 264km of new 2D seismic data is required to confirm the critical elements of the leads.

Seismic survey technologies

It is proposed to utilise seismic vibrator (Vibroseis) as the seismic source and a nodal (wireless) geophone system in preference to dynamite source and a cable of geophones. The vibrator unit is typically mounted on a 6WD vehicle and deployed in groups of two or more units, in an ‘in-line’ array at regular 25m intervals along the survey lines to produce an acoustic signal. The reflected acoustic signal is collected by linear arrays of geophones. A typical active ‘spread’ of geophone arrays might cover a distance of 8-10km or more. The seismic survey will be carried out by Terrex Seismic Pty Ltd. Terrex has conducted other onshore 2D and 3D seismic surveys in the Perth Basin including the UIL Energy Badgingarra 2D Seismic Survey in 2013.

Initial work program

A series of smaller scale 2D seismic surveys were initially designed for two exploration permits (EP488 and EP489) totalling 101km in the first year and 140km in the second year. This would result in duplication of survey effort, an increase of disturbance area in the longer term and a longer period of time to complete the surveys. UIL Energy has proposed to combine two years’ commitments in one survey resulting in approximately 110km of seismic data acquisition over the two permits. In addition, UIL Energy has also proposed to carry out a new 130km seismic survey on EP447, totalling 240km of 2D seismic acquisition over the three permits. Overall, the Proposal will take a shorter period of time to complete and as only one mobilisation/demobilisation of equipment will be required in comparison with the initial two-stage design will reduce the disturbance footprint by 40 per cent and GHG emissions by 10%.

Cumulative impacts

The Proposal includes three seismic surveys proposed over three exploration permits EP447, EP488 and EP489. In this case each survey can be initiated as a separate project with impacted footprint for each project to be addressed and assessed separately. Despite that UIL Energy has decided to optimise the three surveys into one program. Therefore DMA should take into consideration the fact that the Proposal addresses cumulative impacts resulting from three projects.

Avoidance of clearing of native vegetation within ESAs

The Proposal may only occur where potential petroleum resources have been identified. UIL Energy considered a range of seismic line layout options with the view to avoid clearing of native vegetation and reduce environmental impacts. It was determined that this approach would impact the quality of acquired data and consequently compromise resource assessment. Ideally, the survey may require more seismic lines within the Badgingarra National Park and Coomallo Nature Reserve to ensure sufficient data is acquired to delineate boundaries of identified leads. The current seismic program design has, however, been restricted to minimise encroachment into the Badgingarra National Park and avoid disturbance within the Coomallo Nature Reserve. Where clearing of native vegetation is unavoidable UIL Energy has considered appropriate management measures and proven clearing methods to minimise potential environmental impacts. UIL Energy has selected “mulching” as an option to mitigate potential impacts from clearance in highly protected areas. This method involves cutting off vegetation above ground only, mulching and placing mulched materials at its point of origin. This technique was accepted as best practice in recent 3D seismic surveys carried out by Norwest Energy and Warrego Energy in the Perth Basin.

Seismic lines design

UIL Energy has considered a low-impact seismic (LIS) method for operations within high ecological value areas. To minimise the clearing footprint, UIL Energy proposes to reduce the width of seismic lines to a maximum of 4.5m or just wide enough to accommodate seismic trucks in comparison with 6m in the conventional methods. The width will depend on factors such as size of equipment, terrain, vegetation cover, density of vegetation, valued ecosystem components and safety. The proposed maximum clearing footprint of 24ha is based on 4.5m seismic line width.

Timeframes

The preferred timeframe for the Proposal to commence is between February and April. There are no alternative timeframes proposed due to various restrictions including exploration permit obligations (ie. Require work

commitments to be completed by May 2016), the wet season (May-October); harvest season (November-January), the fire ban period (November-February), Carnaby's Black Cockatoo breeding season (July-December), and the threatened flora growth period (May to December).

UIL Energy considers that the proposed program is the most preferred in terms of minimising environmental impacts, cost, efficiency of acquired data and timing.

4. PROPOSER DETAILS

This Proposal is submitted by UIL Energy Ltd. UIL Energy is the licenced holder of petroleum exploration permits EP488 and EP489 granted 28 May 2014 and the joint venture operator of EP447 renewed 23 August 2013.

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5. DESCRIPTION OF RELEVANT MNES

Desktop assessment

A search of the EPBC Act Protected Matters database indicates thirty-nine threatened flora species are known, likely or may potentially occur within the Proposal area and 5km buffer, (DoE, 2015). Three (3) critically endangered, twenty-seven (27) endangered and nine (9) vulnerable flora species are known, likely or may occur within the Proposal area and 5km buffer (UIL, 2015).

A search of the EPBC Act MNES database indicates five fauna species listed as Threatened under the EPBC Act are likely or may potentially occur within the Proposal area and the 5km buffer. Of these, one species, Baudin Island spiny-tailed skink (*Egernia stokesii aethiops*) is a synonym for the western spiny-tailed skink and is no longer used (OEPA advice, 2015).

Of the Matters of National Environmental Significance (MNES), the Carnaby's Black Cockatoo and the Western Spiny-tailed Skink species are the only endangered fauna species considered that are likely or may occur within the Proposal area and 5km buffer. Following the field survey, the western spiny-tailed skink (*Egernia stokesii badia*) was considered unlikely to occur within the survey area as no suitable habitat was recorded.

An EPBC Act Protected Matters Search identified seven migratory and marine species that are likely to occur within the Proposed Action area. They are the Fork-tailed Swift, Great Egret, Cattle Egret, White-bellied Sea-Eagle, Rainbow Bee-eater, Osprey and Hooded Plover. These species are protected under international agreements (UIL, 2015).

On-ground ecological survey

An on-ground ecological survey specific to the Proposal was conducted during November to December 2015. The survey involved targeted conservation significant flora/fauna survey and assessment of habitat suitable for threatened fauna species (Astron, 2015).

No EPBC Act listed threatened flora species or ecological communities were identified during the on-ground ecological survey.

Two threatened fauna species were recorded during the survey: Carnaby's Black Cockatoo (endangered) and Rainbow bee-eater (Migratory). Due to the Proposal being a temporary (petroleum exploration activity), short term (8 weeks) action with a dispersed footprint of disturbance direct impacts on the threatened fauna species are not expected.

No suitable roosting or breeding habitat of Carnaby's Black Cockatoo species was observed or recorded along the alignments. The Proposal area provides suitable foraging habitat for Carnaby's Black Cockatoo species although no direct observations or recent foraging evidence was recorded within the survey area during the on-ground ecological assessment. The banksia woodland/shrubland, sparse eucalypt woodland and low heath are considered to provide suitable foraging resources for Carnaby's Cockatoo representing approximately 52 linear km or 23.5ha of suitable foraging habitat assuming a 4.5m clearing corridor width.

Therefore, approximately 23.5ha of suitable foraging habitat may be temporarily lost due to clearing of native vegetation for seismic activities. The controlling provision identified under the EPBC Act and considered applicable to the Proposal for referral is: s.18 of the EPBC Act - potential impact on foraging habitat for threatened fauna species through proposed clearing of native vegetation that exceeds referral trigger thresholds defined in the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species (DoE, 2012) such as "Clearing of more than 1ha of quality foraging habitat for the Carnaby's Black Cockatoo".

No weeds of national significance were recorded within the search alignments. Phytophthora Dieback infestation occurs within the far eastern boundary of the Badgingarra National Park (DPAW, 2015). However, the proposed seismic layout does not interact or overlap declared dieback infestation areas.

No feral fauna species were observed along proposed alignments during the survey. Secondary evidence such as fox and possible feral cat footprints were observed along some existing tracks during the on-ground ecological survey. Foxes and feral cats are already established within the project area.

6. ENVIRONMENTAL ASPECTS and ASSESSMENT OF POTENTIAL SIGNIFICANT IMPACTS

Based on the UIL Energy desktop review, the on-ground ecological survey results and UIL Energy's risk assessment of environmental impacts, the operational environmental aspects of the proposal will be limited to clearing of native vegetation and movements of machinery and seismic trucks.

These aspects of the Proposal are likely to result in following direct environmental impacts on MNES:

- Temporary reduction (24ha) of suitable foraging habitat for Carnaby's Black Cockatoo This is a conservative estimate, as the proposed disturbance is actually an over-estimation of likely impacts. That is, these calculations are based on a maximum clearing width of 4.5m width, which in practice will be reduced to 3.6m wherever possible.
- Injury or mortality of the threatened fauna species.

The most significant and certain direct impact to results from the implementation of the proposal is the temporary loss of foraging habitat associated with clearing of native vegetation. The indirect impacts may include increase in feral fauna species as a result of increased accessibility and use of linear pathways and introduction and increased spread of weeds.

A regional estimate reveals that approximately 22,466ha of potential foraging habitat is contained within the Parks and Wildlife managed lands in the vicinity of the survey (Astron, 2015). The amount of native vegetation requiring clearing within the survey area represents 0.1% of these potential resources. This estimate does not include vegetation suitable as foraging habitat associated with private properties, unallocated crown land and established pine plantations.

Table 6.1 summarises an assessment of potential impacts to the identified MNES. The assessment is based on results of the UIL Energy desktop review of environmental factors, results of reconnaissance surveys and the on-ground ecological study undertaken in Nov-Dec 2015. The scale and nature of impacts associated with native vegetation clearing was considered based on recommendations provided in Table 3 of the *Environmental Protection Authority Guidance Statement No.51 Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment*, Western Australia. The level of impact resulting from vegetation clearing was determined based on the area of proposed clearing, the presence or otherwise of rare or priority flora and the degree of clearing within the region.

Table 6.1

Environmental aspect	Extent	Duration	Magnitude	Direct impact
Foraging habitat loss for Carnaby's Cockatoo	24ha (or 54 linear km maximum 4.5m corridor width)	Temporary	Low – no suitable breeding/roosting habitat of threatened fauna species were recorded within the proposed alignments. 0.1% of existing potential sources in the vicinity of the survey. More than 22,466ha similar habitat is available in the vicinity of the proposed disturbance.	Moderate
Disturbance to threatened fauna species from noise /vibration	54 linear km of proposed alignments travers native vegetation	Intermittent - temporary (8 weeks)	Identified MNES fauna are mobile species (birds), therefore individuals are unlikely to be affected due to available similar habitat directly adjacent to the alignments where fauna species could move to avoid disturbance. No habitat suitable for other MNES was recorded within the proposed alignments.	Minor
Disturbance response (weeds/plant diseases)	264 linear km	Temporary	None of recorded species are listed as WoNS or as declared pest plant in WA.	Moderate
Increase in feral fauna species as result of increased accessibility and use of linear pathways	24ha	Temporary	Foxes and feral cats are already established within the project area. No feral fauna species were observed along proposed alignments. Secondary evidence (footprints, scats) were observed along some existing tracks.	Moderate (indirect impact)
Barrier effects caused by linear alignments, habitat and population fragmentation	54 linear km, maximum 4.5m corridor width	Temporary	Linear infrastructure already exists within the survey (roads, pipelines, transmission lines, access tracks, firebreaks, fence lines). Nine alignments are proposed over 22,466ha of similar habitat. The spacing between lines varies from 2 to 9 km.	Minor

Table 6.1 shows that, without mitigation measures, the temporary reduction in foraging habitat for Carnaby's Black is considered to be a moderate impact.

7. PROPOSED MITIGATION MEASURES AND MANAGEMENT CONTROL

The Assessment Table 7 describes identified MNES in the context of the relevant EPA factor, relevant Commonwealth legislation and proposed management and mitigation measures. The proposed management strategies and mitigation measures were developed to reflect UIL Energy's commitment to ensure that impacts and risks on the environmental values are minimised to as low as reasonably practicable (ALARP) and to ensure that UIL Energy's environmental management objectives are enforced to ensure appropriate management of impacts on MNES:

- Protect biodiversity values and protected habitat of state and national conservation significance and minimise disturbance on native and protected vegetation, flora and fauna species.
- Avoid clearing of native vegetation where possible;
- Where clearing of native vegetation is not avoidable minimise impacts on flora species by deploying appropriate clearing technique and reducing the clearing to the practicable extend;
- Minimise topsoil disturbance, protect the environmental value of soil ecosystems;
- Prevent introduction and spread of noxious weeds and plant diseases;
- Minimise time between clearing and rehabilitation and restore disturbed areas to previous land use or similar to that of surrounding undisturbed areas.

To achieve these objectives and reduce potential impacts to MNES, UIL has identified further reductions to the initially proposed disturbance footprint. This was based on the results of the UIL Energy detailed desktop review of environmental factors, results of reconnaissance surveys, subsequent reviews, proposed variations (which include seismic reprocessing of historic lines and reducing the footprint of new seismic lines in order to minimise impacts) and consultation with various decision making authorities. Part of this work involved the re-design of some lines to place them on existing disturbance (e.g. tracks/ firebreaks) and undershoot some sections associated with isolated patches of native vegetation. This more recent work has resulted in a further reduction to the disturbance footprint by approximately 20%.

UIL has also modified the seismic survey methodology to remove up-holes from the seismic survey program, totally eliminating impacts associated with drilling activities.

Once the disturbance footprint was reduced, the on-ground ecological survey was undertaken in Nov-Dec 2015 to:

- quantify ecological values,
- confirm vegetation conditions on existing tracks and previously disturbed areas where seismic lines were relocated to minimise clearing footprint,
- ensure that there were no threatened flora species located within established alignments by deviating/adjusting alignments to avoiding identified locations of threatened flora/fauna species, and
- finalise the proposed disturbance.

As a result, the total new disturbance footprint that requires clearing of native vegetation now being proposed is approximately 54 linear km (or 24ha based on a 4.5m seismic line width).

UIL Energy has considered a low-impact seismic (LIS) method for operations within high ecological value areas. To minimise the clearing footprint, UIL is proposing to reduce the width of seismic lines to a maximum of 4.5m or just wide enough to accommodate seismic trucks in comparison with 6m in conventional seismic methods. The actual width will depend on factors such as terrain, vegetation cover, density of vegetation, valued ecosystem components and safety. In reality 3.6m would suffice, reducing the overall clearing footprint by a further 20%.

UIL Energy has considered appropriate management measures and proven clearing methods to minimise potential environmental impacts and facilitate rehabilitation success. UIL Energy has selected "mulching" as an option to mitigate potential impacts from vegetation clearance. This method involves cutting vegetation above ground only and mulching greenstock with immediate replacement of mulch in-situ. This technique was accepted as best practice in recent 3D seismic surveys carried out by Norwest Energy and Warrego Energy in the Perth Basin. It is expected that disturbed areas will be rehabilitated quickly with a high rate of vegetation re-growth in a relatively short time, three wet seasons.

The assessment of the likely significant residual impacts on MNES is provided in accordance with *Section 6 of the WA Environmental Assessment Guideline (EAG 14)*. The assessment of significant impacts on identified

MNES has been also undertaken in accordance with *the EPBC Policy Statement 1.1 Matters of National Environmental Significance* (DoE, 2006).

Table 7 Assessment of Matters of National Environmental Significance (MNES)

Inherent Impact	Environmental Aspect	Mitigation action to address residual impacts	Proposed regulatory mechanism for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
Section 1 - Threatened flora species and threatened ecological communities				
EPA objective: To maintain representation, diversity, viability and ecological function at the species, population and community level				
<p>Context The proposal area contains more than 22,466ha of native vegetation. Vegetation within the Proposal area predominantly characterised by Banksia shrublands, open heath and woodlands. Vegetation in the Proposal area ranged from “degraded” to “excellent” conditions.</p> <p>Key survey findings</p> <p><i>Desktop:</i> The EPBC Act MNES search tool database search identified 3 critically endangered, 27 endangered and 9 vulnerable flora species that are known, likely or may occur within the Proposal.</p> <p><i>On-ground botanical survey:</i> No threatened flora species were identified during the field survey. No threatened ecological communities (TEC) were identified and recorded within the survey area. No vegetation analogues with threatened ecological communities were observed within the survey area.</p> <p>Impacts Nil</p>	Temporary clearing of native vegetation	<p>Best practice and avoidance An on-ground botanical survey was carried out between November and December 2015 to identify and map threatened flora species and ecological communities. No threatened flora species/ TEC were identified during the field survey.</p> <p>Minimisation Temporary clearing of native vegetation will be limited to 24ha (54 linear km x 4.5 width). Clearing will be of a discrete nature with spacing between lines varying from 2km to 9km so the area of vegetation will not be significantly fragmented. Clearing lines width will be minimised further to 3.6m where possible to reduce disturbance footprint. “Mulching” method will be used to facilitate revegetation. This method involves removal of vegetation above ground level only leaving root stock intact. Mulched material will be respread immediately in-situ to stabilise soil, preserve roots/seeds and promote re-growth. Activities will be carried in the dry weather to prevent spread of weeds and dieback disease.</p> <p>Rehabilitation Disturbed areas will be rehabilitated immediately after completion of the survey. Rehabilitation will be subject to the previous land use conditions. Rehabilitation success will be monitored.</p>	<p>An Environmental Plan (EP) under the PGER Act 1967. The Plan will specify the methods, procedures and management to avoid, minimise and rehabilitate the impacts result from vegetation clearing.</p> <p>An assessment under Part IV or Part V “Clearing Permit” of the EP Act. The Proposal may be subject to a condition under Section 51I(2)(b) Div. 2 Part V of the EP Act requiring an offset where the loss of cleared vegetation is significant.</p>	<p>Though no threatened flora species/ TEC were identified, the Proposal can be managed to reduce overall impacts on native vegetation as follows and meet EPA’s objective:</p> <ul style="list-style-type: none"> - relatively small area of temporary disturbance comprising 24ha or 0.1% of the existing vegetation within the Proposal area; - baseline conditions of vegetation are established; - regulatory mechanisms to approve the Proposal are in place; - no known location of threatened flora species/TEC within the proposed alignments; - disturbed areas will be immediately rehabilitated and monitored for at least five years.
Section 2 - Threatened fauna species				
EPA objective: To maintain representation, diversity, viability and ecological function at the species, population and assemblage level.				
<p>Context A search of the EPBC Act MNES database indicates two (2) endangered and three (3) vulnerable fauna species that are likely or may potentially occur within the Proposal area and the 5km buffer.</p> <p>Key survey findings Two threatened fauna species were recorded within, or just outside the survey area: Carnaby’s cockatoo (Endangered) and rainbow bee-eater (Migratory).</p> <p>Impacts</p>	Vehicle and machinery movements	<p>Best practice and avoidance Baseline fauna assessment was conducted in November 2015 to identify threatened fauna species and potential breeding/feeding habitat. Though no suitable breeding/roosting habitat of threatened fauna species were detected or recorded during the ecological survey within the proposed alignments, activities will be carried out between February and April to avoid periods of the breeding cycle of threatened fauna species. Low speed limit will be in place to prevent collision with fauna.</p> <p>Minimisation Clearing will be undertaken in discrete linear segments allowing 2km - 9km spacing between lines and less than 4.5m width to prevent fragmentation of fauna habitat. The life of the project is expected to be 8 weeks during daylight hours only. Clearing and seismic acquisition will be carried out at low speed (5-10kph) to prevent collision with animals.</p>	<p>Environmental Plan approved by the DMP under the PGER Act 1967 and Petroleum (Environment) Regulations 2012.</p> <p>The Plan will specify mitigation measures and management procedures with respect to terrestrial fauna.</p> <p>Carnaby’s Cockatoo Recovery Plan, DPaw 2013</p>	<p>Given the temporary and discrete nature of the disturbance, its low density and distribution; mitigation measures and management practices it is unlikely that the Proposal will result in direct loss of any fauna individuals or decrease the size of protected fauna populations.</p> <p>It is more appropriate to consider impacts on fauna habitat rather than on fauna individuals or their populations.</p> <p>Impact on habitat is addressed in section 3 of this Table.</p>

Inherent Impact	Environmental Aspect	Mitigation action to address residual impacts	Proposed regulatory mechanism for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<ul style="list-style-type: none"> Death or injury as result of collisions with motor vehicles; Vibration and noise from vehicles may disturb fauna impacting their feeding and breeding habits; Competition for resources. <p>In regards to the Carnaby's Black Cockatoo species, due to the mobile and widely-distributed nature of the species, it is more appropriate to consider impacts on habitat rather than on a resident population.</p>		<p>Fauna encountered during clearing activities will be allowed to make their own way from the area. Feeding of fauna, hunting or keeping animals will be prohibited. Field personnel will be inducted on potential areas of protected fauna species and its habitat and instructed on what to do if they accidentally hit or injure wildlife. Waste management measures will be implemented to prevent attraction of feral fauna species (there will be no littering especially food scraps, no on-site waste storage, no on-site camping).</p> <p>Rehabilitation Injured animal(s) will be transferred to a local wildlife facility. Where required piled woody debris, logs and rocks will be re-spread immediately following completion of the survey. In regards to fauna habitat, cleared and disturbed areas will be rehabilitated immediately after completion of the survey. Rehabilitation will be subject to the previous land use conditions. Rehabilitation success will be monitored.</p> <p>Offsets It is unlikely that the Proposed action will have significant direct, indirect or residual impacts on threatened fauna species. Therefore a requirement for offset is not expected.</p>		<p>UIL Energy considers that the Proposal can be managed to meet EPA's objective for this factor provided:</p> <ul style="list-style-type: none"> Though no breeding habitat was recorded, activities will be undertaken in the non-breeding period for threatened fauna species. Clearing and seismic acquisition activities will be carried out at low speed (5-10kph) to prevent collision with animals. Disturbed areas will be immediately rehabilitated leading to re-establishment of fauna habitat. <p>Therefore, it is unlikely that there would be significant residual impacts on conservation significant fauna.</p>

Section 3 – Habitat for threatened fauna species

EPA objective: To maintain representation, diversity, viability and ecological function at the species, population and assemblage level.

<p>Context Suitable foraging potential for Carnaby's Cockatoo species. A regional estimate reveals that approx. 22,466ha of potential foraging habitat may be contained within Parks and Wildlife managed lands in the vicinity of the survey.</p> <p>Key survey findings A large portion of the proposed disturbance (54 linear km) is consistent with the definition of "quality" foraging habitat for Carnaby's cockatoo, in accordance with Commonwealth referral guidelines. Although no direct observation or recent evidence of foraging was observed within the survey area (partly due to the narrowness of the proposed alignments) the banksia woodland/shrubland, sparse eucalypt woodland and low heath habitat would be considered suitable Black Cockatoo foraging habitat.</p> <p>Impacts</p>	<p>Clearing of native vegetation</p>	<p>Best practice and avoidance On-ground ecological survey was carried out between November and December 2015 to identify, map and delineate actual extent and conditions of Carnaby's Black Cockatoo habitat to establish baseline conditions. No mature trees, suitable for breeding/roosting, were recorded within the proposed alignments.</p> <p>Minimisation The proposed disturbance will be limited to up to 24ha of suitable foraging habitat for Carnaby's Black Cockatoo. This is approx. 0.1% of available suitable foraging habitat in the vicinity of the proposed disturbance. Clearing will be of a discrete nature with spacing between lines varying from 2km to 9 km, so the area of occupancy and habitat will be not significantly fragmented. Clearing lines width will be minimised further to 3.6m where possible. Cleared areas will be clearly marked or DGPS navigated equipment will be used to prevent accidental clearing. "Mulching" method will be used to facilitate rehabilitation. This method involves removal of vegetation above ground level only leaving root stock intact. Cleared vegetation is mulched and respread immediately in-situ to stabilise soil, preserve roots/ seeds and promote re-growth. Activities will be carried in the dry weather to prevent spread of weeds and dieback disease.</p> <p>Rehabilitation Disturbed areas will be rehabilitated immediately after completion of the</p>	<p>Assessment under the EPBC Act if the Proposal is likely to impact foraging habitat for Black Cockatoo species.</p>	<p>UIL Energy considers that with proposed management and mitigation measures in place the residual impacts are unlikely to be significant and the proposal can be adequately managed to meet EPA's objective for this factor, in particular:</p> <ul style="list-style-type: none"> relatively small area of temporary disturbance comprising 0.1% of existing native vegetation within the Proposal area; maximum 24ha will be cleared; baseline conditions of vegetation are established; regulatory mechanisms to approve the Proposal are in place, disturbed areas will be immediately rehabilitated and monitored for at least five years; <p>Provision of offsets will be applied if significant residual impacts occur due to rehabilitation failure.</p>
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Inherent Impact	Environmental Aspect	Mitigation action to address residual impacts	Proposed regulatory mechanism for ensuring mitigation	Outcome to demonstrate that the Proposal meets EPA objective
<ul style="list-style-type: none"> Temporary reduction of 24ha of suitable foraging habitat for Carnaby's Black Cockatoo. <p>Residual impacts Refer to section 4 - Rehabilitation</p>		<p>survey. Rehabilitation will be a subject to the previous land use conditions. Rehabilitation success will be monitored.</p> <p>Offsets</p> <p>UIL Energy considers that residual impacts are unlikely to be significant given the proposed avoidance and mitigation measures. If the Proposal will be considered a controlled action, UIL Energy will negotiate offsets with the relevant assessment authority.</p>		
Integrating factors				
Section 4 - Rehabilitation <p>EPA objective: To ensure that premises are closed, decommissioned and rehabilitated in an ecologically sustainable manner.</p>				
<p>Context 24ha of suitable foraging habitat for Carnaby's Black Cockatoo will be restored to the previous environmental values and ecosystem functions and land use conditions</p> <p>Key survey findings Recovery of vegetation within three wet seasons.</p> <p>Impacts Loss or degradation of native vegetation that support suitable foraging habitat for threatened fauna species due to failure to complete rehabilitation</p> <p>Residual impacts</p> <ul style="list-style-type: none"> Partial recovery of vegetation which might occur as a result of slow performance of rootstocks, seeds and mulched material to regenerate due to changes in weather conditions or nutrients deficiency. Longer time lag for recovery due to severe weather conditions or fire. 				
	Rehabilitation	<p>Best practice</p> <p>24ha of clearing will be rehabilitated to the previous land use conditions. Baseline conditions of disturbed areas were established during the on-ground ecological survey. Mulching" technique was successfully adopted as a best practice by exploration companies for recent seismic acquisitions in the Perth Basin.</p> <p>Using appropriate clearing methods to retain vegetation rootstock and seeds in-situ and mulching to facilitate rehabilitation, mulched material will be re-spread immediately at its point of origin. Rehabilitation will start to take place immediately following the clearing/mulching and will progress at an accelerated pace during subsequent wet seasons.</p> <p>All clean-down points will be removed, contaminated material will be disposed accordingly.</p> <p>Temporary access tracks will be closed to prevent unauthorised third party access.</p> <p>Rehabilitation completion criteria will be set in consultation with relevant stakeholders.</p> <p>Rehabilitation progress will be monitored annually for at least five (5) years and as required remedial rehabilitation works will be undertaken to ensure rehabilitation completion criteria are met.</p> <p>Proposed rehabilitation practices have been adopted for similar activities in the Perth Basin demonstrating a quicker regeneration of vegetation in comparison with a broad scale clearing.</p> <p>Offsets</p> <p>Provision of offsets will be applied if significant residual impacts occur due to rehabilitation failure. If the Proposal results in significant residual impacts after mitigation and rehabilitation measures UIL Energy commits to offset the impacts.</p>	<p>Obligation under the petroleum exploration permits to restore and rehabilitate all damage in a manner consistent with current standards and without unacceptable liability to the State.</p> <p>Environmental Plan (EP) approved by the DMP under the PGER Act 1967 and Petroleum (Environment) Regulations 2012. The EP regime controls rehabilitation provisions and scope of works.</p> <p>Rehabilitation scope of works and "completion criteria" will be developed in consultation with affected parties (landowners and relevant state agencies) prior to clearing. Guidance No. 6 Rehabilitation of Terrestrial Ecosystems (EPA 2006); Schedule of Onshore Petroleum Exploration and Production Requirements 1991 (as amended May 2010).</p> <p>Offsets requirements under the Part IV or Part V of the EP Act and the EPBC Act 1999.</p>	<p>The Proposal can be managed to meet the EPA's objectives for this factor, given:</p> <p>The Proposal will be managed through implementation of the EP regime.</p> <p>The Proposal has been designed to minimise disturbance footprint and facilitate rehabilitation by using proven clearing methods.</p> <p>The proposed clearing method does not damage any underground parts of vegetation, only aboveground parts will be removed and mulched;</p> <p>There is no lag time expected before rehabilitation starts to address the direct impacts of clearing.</p> <p>It is expected that re-growth will occur within three (3) wet seasons anticipating high rate of vegetation recovery and within 5 years anticipating full recovery of ecosystem functions.</p> <p>In case of rehabilitation failure, UIL Energy commits to offset any significant residual impacts.</p> <p>It is considered that the proposed rehabilitation is unlikely to result in any significant residual impacts.</p>
	Force majeure events			

8. DISCUSSION OF THE LIKELIHOOD OF SIGNIFICANT IMPACTS ON MNES

Mulching will be adopted for native vegetation clearing. This method involves removal of vegetation above ground only leaving topsoil undisturbed and rootstocks intact. Cleared vegetation will be mulched and respread over cleared areas to facilitate rehabilitation and vegetation re-growth. Areas proposed for clearing will be clearly marked and GPS navigated equipment will be used to prevent accidental clearing.

Cleared and disturbed areas will be rehabilitated immediately following completion of the survey. Rehabilitation progress will be monitored annually for at least 5 years and remedial rehabilitation works will be undertaken (where required) to ensure rehabilitation completion criteria are met. It is important to note that no threatened flora species were found in the area and that the proposed disturbance is both temporary and discrete in nature. As a result, with proper mitigation measures and management controls in place, the residual impact is considered to be minor.

UIL Energy will endeavour to further minimise the disturbance footprint and reduce the width of cleared lines to 3.6m where possible. This will depend on factors such as equipment configuration, terrain, vegetation cover and density, valued ecosystem components and safety. The actual disturbance footprint will be recorded and reported to WA Administering Authorities.

It is possible that the proposed linear clearing may result in use of cleared lines as pathways by feral fauna species to access areas outside their normal habitat until reasonable levels of rehabilitation area achieved. This may increase predation for native fauna species and competition for resources. It is expected that alteration to feral fauna species habitat through vegetation clearing will be temporary. The proposed “mulching” method will facilitate recovery and regrowth of the native vegetation with the expectation that linear pathways will be concealed within three wet seasons. The risk of attracting feral animals through presence of waste is low as no on-site camping including waste storage or long-term activities are proposed. All waste generated on-site during clearing and seismic activities will be removed off site daily to prevent attracting feral animals to work areas.

It is not expected that there would be an increase in feral fauna as a result of the seismic survey, other than perhaps foxes. Foxes are the primary concern as their presence may be increased as a result of the linear clearing. In WA, the Department of Parks and Wildlife is focusing on controlling feral fauna species, foxes and cats, through Western Shield’s fox and feral cat poison baiting program currently implemented in numbers of locations within the project area (DPAW Moora District, 2015). As part of the State approval process, UIL Energy will be engaged within the relevant authority (DPaW) to discuss appropriate measures to control feral animals. UIL Energy believes that increased predation from alteration of feral fauna habitat can be better mitigated and managed by supplementing the DPaW’s Western Shield fox baiting program in the area. This will be achieved through consultation with relevant authorities (DPAW, DMP) as part of WA’s approval process. Given the temporary nature of the clearing and proposed mitigation and management measures, the residual impact is considered to be low. The feral predators control measures are also described in UIL’s Environmental Management Plan that is subject to WA Department of Mines and Petroleum (Environmental Branch) approval.

Only a small number of locations were identified as supporting weed species. The locations were recorded along existing tracks and within the road reserves. To prevent the spread of weeds and pathogens, the activity will be conducted during dry, non-sticky soil condition periods (November-April) when weed species are not actively shedding seeds. Clearing will be carried out first in weed uninfested areas to prevent introduction and spread. The clearing method will involve removal of vegetation above ground only leaving topsoil and roots undisturbed (no contact with topsoil and roots). Mulched material will be respread at the point of its origin eliminating spread of contaminated material.

Mitigation measures and management of *Phytophthora cinnamomi* will be undertaken in accordance with WA DPAW *Phytophthora cinnamomi* management guidelines and WA Dieback Working Group Best Practice Guidelines for management of *phytophthora* in extractive industries. According to these guidelines clean-down stations will be established with strict hygiene procedures. All equipment and vehicles will be cleaned prior to entering an alignment and between each alignment and prior to entering to and on exiting from conservation reserve areas. The preferred approach will be to always enter the reserve areas with clean equipment from the north, heading south where potential dieback

infestations occur and then clean equipment/vehicles upon leaving the reserve boundary. Weed control procedures will be applied to all field personnel. Clean down procedures will be applied to all vehicles, machinery and personal PPE. Geophones removed from infected areas will be cleaned-down to remove any soil before being carried to the next location. Rehabilitation progress will be monitored, including weeds and pathogens, annually for at least 5 years.

With weed, pathogen and pest control and avoidance measures in place, potential introduction or spread of weeds and pathogens is considered unlikely. As a result, the overall risk of environmental impact is considered low.

Barrier effects caused by linear clearing may include fragmentation of an existing population or an ecological community into two or more populations/vegetation communities. Due to the scale (approximately 24ha, which is 0.1% of Carnaby's Black Cockatoo foraging habitat present within the project area) and nature of the proposed linear clearing (e.g. width of clearing is up to 4.5m, the spacing between lines varying from 2km to 9km and discrete linear clearing pattern from 0.5km to 10km), it is highly unlikely that the proposed linear clearing will directly impact the size or separate the population of threatened flora/fauna species. To reduce barrier effects, only low shrub and trees less than 100-150mm in trunk diameter will be mulched. In this case, the root stock is left intact for regrowth thus eliminating potential native vegetation and flora species population fragmentation. Mulched material will be respread at the point of its origin. Mulched material will become composted within 6-12 months introducing nutrients to soil to facilitate regrowth. It is expected that barrier effects will be diminished quickly over time, with recovery of vegetation after three years. Therefore, the residual impact caused by temporary linear clearing is considered to be low.

There is a moderate risk regarding the potential timing of the project. The timing of the project is a crucial part of the planning as various restrictions exist that may increase the level of environmental impact. They are:

- Wet Season (May-October) - risks associated with introduction and spread of dieback disease, soil erosion and alteration of drainage lines ;
- Fire Ban Period (November-February) - risk of fire occurring from ignition sources;
- Threatened Flora Growth Period (May to December) – interaction with the growth cycle of flora species. For instance, most of the year terrestrial orchids are present as underground tubers (December and late April) and have a capacity to stay underground for years as tubers without producing above ground parts. It would be appropriate to consider that the proposed timing of clearing, between February and April, ie the dormant period for this species, is optimal and that the proposed mulching method is the optimal clearing method to result in an insignificant impact on these species;
- Harvest Season (November – January) –interaction with agricultural activities as 75% of the project overlaps agricultural land.

UIL indicated that February –April is the preferred time to carry out the seismic survey. Overall risk is considered low during this period.

There is a possibility that un-planned events such as fire or spill may occur during the life of the survey. This could be contributed by high fuel loads, the prevailing westerly winds, vehicles operations and smoking as ignition sources and third party activities such as authorised burning and vandalism. Approximately 20% of the proposed alignments are located within areas containing native vegetation, however with the proposed mitigation measures including fire prevention, response and control, the overall residual risk is considered low (noting that bushfire could occur as a natural event or be initiated by third party activities). In addition, the fire/spill prevention and response will be addressed in UIL's Safety Management Plan as part of the safety approval.

The Proposal may involve the use of hazardous materials such as fuel and lubricants in small quantities for refuelling and maintenance of vehicles. Given the small scale of the vehicles/machinery operations and proper management controls in place, spills from refuelling, storage and handling are highly unlikely to occur during the survey. UIL Energy has considered this risk as low.

Without mitigation, unauthorised third party access is likely to occur in disturbed areas (e.g. wildflowers collection, installation of beehives, shortcutting etc.). To prevent trespassing, the verges of public tracks will be reinstated to conceal the point at which seismic vehicles have crossed and

cleared areas will be restored as soon as practical and as near as possible to their natural state. As a result, the overall risk is considered low.

Rehabilitation works will be undertaken to establish a safe stable non-polluting landform similar to that of surrounding undisturbed areas including where relevant:

- suitably preparing the cleared areas for revegetation by immediate replacement of mulch in-situ during the clearing;
- reshaping surface disturbance and reinstating the top layer of the soil profile to be consistent with the pre-clearing conditions. This may include shallow ripping through wheels ruts and generally returning the area to its original profile ensuring erosion control where necessary;
- removing all clean down points and disposal of contaminated materials accordingly;
- re-establishing drainage lines;
- closing temporary access tracks to prevent unauthorised third party access (i.e. the verges of public tracks will be reinstated to conceal the point at which seismic vehicles have crossed. In well vegetated areas where the line crosses public tracks a dog-leg will be installed);
- monitoring rehabilitation success and, where required, undertaking remedial rehabilitation works.

There is strong evidence that native vegetation is able to recover within three wet seasons. Rehabilitation progress will be monitored annually for at least five years and if required remedial rehabilitation works will be undertaken to ensure rehabilitation completion criteria are met.

Given the proposed mulching method of clearing shows a quicker recovery rate of vegetation, the rehabilitation is unlikely to result in adverse and significant residual impacts, therefore the residual risk is considered to be Low.

9. CONCLUSION

The on-ground ecological survey identified environmental values associated with foraging habitat for listed threatened fauna species namely Carnaby's Black Cockatoo.

Given the temporary nature and limited extent of the disturbance of up to 24ha of native vegetation supporting only foraging habitat for Carnaby's Black Cockatoo, low density distribution of the proposed clearing and application of mitigation measures and management controls, UIL considers that the Proposal is unlikely to result in adverse or unacceptable direct impacts to identified MNES and therefore unlikely to result in any significant residual impacts.

The potential impacts can be mitigated and managed to a limited extent by rehabilitation strategies expecting environmental values will be returned within three wet seasons and full ecosystem functions within five years. As a result, the overall residual risk is considered to be Low.

In addition, the overall outcome of the risk assessment completed by UIL Energy in the EPBC Act referral application EPBC/Ref. 2015/7554, indicates that the impact on foraging habitat for the Carnaby's Black Cockatoo through clearing of native vegetation is UNLIKELY to be significant. The assessment has been completed in accordance with the EPBC Act Significant Impact Guidelines 1.1 – *Matters of National Environmental Significance* (DOtE, 2013) and the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species, (DOtE, 2012).

10. STAKEHOLDER CONSULTATION

UIL Energy has consulted the following government and non-government stakeholders throughout the design and planning stages of the Proposal:

- Petroleum Branch, the Department of Mines and Petroleum, WA;
- Department of the Environment, Commonwealth;
- Office of the Environmental Protection Authority (OEPA), WA;
- Department of Parks and Wildlife (DPaW), WA;
- Native Vegetation Clearing Branch, the Department of Mines and Petroleum, WA;
- Department of Indigenous Affairs (DIA);
- The Yued People;
- South West Aboriginal Land and Sea Council;
- Tronox Limited;

- Pipeline operators: APA Group (Parmelia pipeline and Emu Downs Wind Farm) and the DMP Dampier to Bunbury Pipeline (DBNGP)
- Western Power (Transmission lines);
- APPEA;
- Landholders;
- Astron Environmental Services;
- Terrex Seismic.

On 28/08/2015 UIL referred the Proposal to the Commonwealth Department of the Environment (DotE) to determine whether assessment is required under the EPBC Act. The Proposal, EPBC Ref. No 2015/7554 was published on the DotE website for public consultation for the period of consultation for 10 business days (14 calendar days). No submissions were received during the consultation period.

UIL Energy will continue to consult with relevant government authorities, community, interested third parties and organisations throughout the life of the Proposal providing updates to relevant stakeholders as required.

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