NORTHERN TERRITORY GOVERNMENT

DEPARTMENT OF
**PRIMARY INDUSTRY AND RESOURCES**

John England Building
Berrimah Farm
DARWIN NT 0800
AUSTRALIA

**Postal Address**
GPO Box 4550
DARWIN NT 0801

[redacted]

**File Ref:** E2016/0036

The Honourable Justice
Rachel Pepper
Hydraulic Fracturing Taskforce
GPO Box 4396
DARWIN NT 0801

By email: fracking.inquiry@nt.gov.au

Dear Justice Pepper

Thank you for the opportunity to assist the panel for the Scientific Inquiry into Hydraulic Fracturing in accordance with your letter dated 13 June 2017. The Department of Primary Industry and Resources (DPIR) has sought to address the request and provided the information we believe is relevant for the panel's deliberations. Additional information is provided on a data disk which has been submitted to the Inquiry's taskforce.

The information is being provided in good faith to the best of the DIPR's knowledge. The panel should be aware that some of the information provided is not in the public domain.

With reference to your question about the $10 000 security payable as a condition of grant of an Exploration Permit, we refer to the guideline in relation to Section 21E of the *Petroleum Act*, "Petroleum Exploration Permit Application and conditions" at Appendix 6, page 135 of the DIPR's submission. You have correctly stated that the statutory basis for the requirement of a security is held under Section 79 of the *Petroleum Act*. Section 79 provides for the requirement of a security upon grant, renewal or variation of a petroleum interest as the Minister thinks fit and for the variation of the amount of the security as the Minister considers appropriate during the terms of a Production Licence.

Furthermore, the grant of an Exploration Permit, in the form of an instrument under Section 20(5) of the *Petroleum Act*, includes conditions as per Section 20(4)(a). Relevantly, the instrument contains a clause (clause 10 at Attachment A) in relation to a security that reads as follows: " *The Minister may at any time determine that the Minister requires a security in the form and for the amount that the Minister thinks fit for the purpose of securing the permittee's compliance with the Petroleum Act, to secure the permittee's compliance with these permit conditions and/or for securing the payment by the permittee compensation that may be payable for the effect of the grant, renewal or variation of the permit on native title rights and interests. In the event that the Minister makes such a determination, the permittee shall, within 30 days of the date that the permittee is notified in writing that the security is required; lodge with the Minister a security in the amount and form determined by the Minister.*"

This clause is given further effect by requiring an environmental rehabilitation bond to be paid prior to the approval of any regulated petroleum activity. The guidelines, published on the DIPR's website, clearly indicate the requirement for the payment of an Environmental Rehabilitation Bond for any (geophysical) survey, drilling and workover activity. Those guidelines are also included in the DIPR's submission to the Inquiry at Appendixes 11 and 12.

With reference to your question whether the DIPR makes the amount of the Environmental Rehabilitation security publicly available the answer is currently no, however this policy is under review. DPIR wishes to emphasise that the Environmental Rehabilitation Security should be considered together with other provisions in the Act and requirements in the Schedule of Onshore Petroleum Exploration and Production Requirements. Importantly, operators are required to carry comprehensive insurance, including, but not limited to, public liability, loss of well control (including blowouts), relief well drilling, containment and clean-up.

In relation to the actual value of the Environmental Security Rehabilitation Bond, DPIR uses a template in the form of an excel spreadsheet with detailed questions and calculations to determine actual clean-up cost. The principle applied is that the value of the security must be sufficient to allow DPIR to carry out the clean-up (with a 15 percent level of contingency) should the operator default on his obligations.

Proponents are required to lodge a self-assessment of the rehabilitation costs to DPIR with the submission of any activity application. DIPR officers verify the self-assessment and benchmark costs based on the nature of the activity (type of well, stimulation and testing, survey), area affected and location. A copy of the assessment form is included at Attachment B. Attachment C shows the rehabilitation calculations for recent drilling, workover and survey activities with proponent self-assessment and final securities held after DPIR recalculation. The experience has been that proponents are generally accepting of the recalculation by DPIR and adequate bonds are being held.

In response to the panel's question, an Environmental Rehabilitation Security is considered "acceptable" if it is deemed sufficient to cover costs if DPIR were required to commission local contractors to perform the works required to achieve full rehabilitation of the site in accordance with the approved Environment Management Plan with a 15 percent level of contingency.

In the interest of inclusiveness, Sections 73, 74 and 77 provide further powers for the Minister to require rehabilitation of any petroleum site to his satisfaction prior to voluntary surrender or after forced cancellation of a petroleum interest.

I trust that you will find the information provided comprehensive and useful. Should you require any further information please do not hesitate to contact the Department through Deputy Chief Executive, Rod Applegate.

Yours sincerely

Alister Trier
Chief Executive

19 June 2017

**NORTHERN TERRITORY OF AUSTRALIA**

***Petroleum Act***

**GRANT OF PETROLEUM EXPLORATION PERMIT XXX [EPXXX]**

I, NAME, Delegate of the Minister for Primary Industry and Resources, under section 20(5) of the *Petroleum Act*,

hereby grant to:

**COMPANY (ACN XXX XXX XXX)**
**Address 1**
**Address 2**
**TOWN STATE P/CODE**

an exploration permit for petroleum in respect of the blocks described in Schedule 1, subject to the conditions specified in Schedule 2 and Schedule 3, to have effect for a period of five (5) years.

Dated this day of MONTH YEAR.

NAME
Director of Energy

Delegate of Minister for Primary Industry and Resources
*Pursuant to an Instrument of Delegation dated 11 October 2016*

## SCHEDULE 1

## DESCRIPTION OF BLOCKS

The reference hereunder is to the name of the map sheet of the 1:1 000,000 series prepared and published for the purposes of the *Petroleum Act* and to the numbers of the graticular sections shown thereon.

- **Map Sheet SXXX (MAP SHEET NAME)**
  **Block Nos**

Assessed to contain XXX blocks.

## SCHEDULE 2

## WORK PROGRAM COMMITMENTS

| **Year of Term of Permit** | **Permit Year Starts** | **Permit Year Ends** | **Minimum Work Requirements** | **Estimated Expenditure Constant $A** (indicative only) |
|---|---|---|---|---|
| 1 | DATE | DATE | WORK PROGRAM | $ |
| 2 | DATE | DATE | WORK PROGRAM | $ |
| 3 | DATE | DATE | WORK PROGRAM | $ |
| 4 | DATE | DATE | WORK PROGRAM | $ |
| 5 | DATE | DATE | WORK PROGRAM | $ |

The permittee -

(a) shall carry out in the year of the term of the permit specified in the first column of the table, in or in relation to the permit area, to a standard acceptable to the Minister, the work specified in the minimum work requirements set out opposite that year in the fourth column of the table;

(b) may carry out in a year of the term of the permit specified in the first column of the table, in or in relation to the permit area, to a standard acceptable to the Minister, all or part of the work specified in the minimum work requirements of a subsequent year or years of that term set out opposite that year or those years in the fourth column of the table; and

(c) may carry out in or in relation to the permit area, to a standard acceptable to the Minister, work in addition to the work specified in the minimum work requirements set out in the fourth column of the table.

Any work carried out in accordance with above paragraphs (a) (b) and (c) shall, if the Minister in his discretion by notice in writing so approves, be treated as if it had been carried out in the subsequent year or years of the term of the permit specified by the Minister in that notice.

The permittee shall not commence a seismic survey or drilling of a well unless he has by notice informed the Minister of the relevant details (including the geographic position of the well or area of the seismic survey) and obtained the necessary approval from the Minister.

## SCHEDULE 3

## CONDITIONS

### General Principals

1. The permittee shall comply with the provisions of, and directions lawfully given under the *Petroleum Act* (NT) and all other laws in force in the Territory, as are applicable in relation to its activities on the permit area.

2. Subject to the provisions of the *Petroleum Act*, the permittee shall in the course of their operations remain subject to the provisions of other relevant legislation. The permittee shall ensure that all exploration personnel and their contractors and agents are familiar with such legislative requirements.

3. Within twenty-eight (28) days after the expiration of each 12 month period of this permit or other longer approved period, the permittee shall lodge in writing a comprehensive report on the exploration and other activities within the permit area during that period.

4. The grant of this permit is subject to compliance with the *Schedule of Onshore Petroleum Exploration and Production Requirements* which can be downloaded from the Department of Primary Industry and Resources website: https://nt.gov.au/industry/mining-and-petroleum/petroleum-activities/apply-for-exploration-and-production-activity-approval

5. The permittee shall indemnify and hold indemnified at all times the Territory and its servants and agents from claims, actions suits and demands whether debt, damages, costs or otherwise arising out of a breach of the duties and obligations, whether express or implied, of the permittee at common law, or of the Claim or of any law in force in the Territory that is applicable and whether such breach shall be that of the permittee or any of its subcontractors, servants, employees or agents.

6. Exploration shall not take place within one hundred and twenty-five (125) metres of the centreline of any road or railway, unless specific approval is given by the Director of Energy.

7. The permittee shall not significantly disturb any area or carry out blasting activity within 200 metres of a gas or oil pipeline unless prior written approval has been obtained from the Minister responsible for the *Energy Pipelines Act* or the pipeline operator.

8. The permittee shall carry out its activities in such a way as to minimise disturbance to the environment of the permit area, in particular, by minimising:

   (a) interference with the use of the land by other persons;

   (b) the disturbance of flora, fauna and other natural resources;

   (c) pollution, including soil, water and atmospheric pollution;

   (d) the incidence and effects of soil erosion.

9. To the extent possible the permittee should employ persons and contractors resident in or around the permit area and give them the opportunity of quoting or tendering for contract works.

10. The Minister may at any time determine that the Minister requires a security in the form and for the amount that the Minister thinks fit for the purpose of securing the permittee's compliance with the *Petroleum Act*, to secure the permittee's compliance with these permit conditions and/or for securing the payment by the permittee compensation that may be payable for the effect of the grant, renewal or variation of the permit on native title rights and interests. In the event that the Minister makes such a determination, the permittee shall, within 30 days of the date that the permittee is notified in writing that the security is required; lodge with the Minister a security in the amount and form determined by the Minister.

**Consultations with Native Title Parties**

11. (a) The permittee shall, prior to the commencement of exploration activities other than reconnaissance, convene a meeting on the permit area (or the nearest convenient locality) with registered native title claimants or holders to explain the exploration activities. The permittee may also invite the relevant pastoral lessee(s) or landholders to this meeting.

    This provision does not apply where the Holder is required to consult with registered native title claimants or holders because of the existence of a separate agreement.

    (b) Notice of the meeting shall be by letter and shall be posted to the registered native title claimants or holders and the representative body not less than 17 days before the meeting and shall nominate the date, time and place of the meeting.

    (c) The permittee must have regard to representations made to it at the meeting regarding any aspect of the exploration activities which raises concerns. These representations may deal with access procedures to particular areas of land within the permit area.

12 The permittee shall carry out its activities in such a way as to minimise any impact to any extant native title rights and interests in the permit area, in particular by minimising:

    a) any interference directly with the carrying on of community or social activities of registered native title claimants or holders; or

    b) any interference with the areas of sites of particular significance, in accordance with the traditions of registered native title claimants or holders.

13. Compensation for the effect if any of a prescribed petroleum act or petroleum interest on native title is payable to the native title holder by the holder of the petroleum interest and includes compensation for the effect if any on native title of activities done under the prescribed petroleum act or petroleum interest. In the event that the Territory pays any compensation for the effect on native title of the grant of the prescribed petroleum act or petroleum interest, the permittee shall, upon request of the Territory, reimburse the Territory with thirty (30) days of the date of such request.

14. If and when the permittee applies to the Minister for a retention licence or production licence, any registered native title claimants or holders are to be informed of this fact in writing so as to signal that another future act process may follow which allows them to exercise procedural rights.

**Complaint Mechanism**

15. Should any native title claimant or holder lodge a written complaint with the Minister that exploration activities are being conducted in a manner that adversely affects native title rights and interests in the permit area, the Minister may do one or more of the following:

    (a) seek an explanation in writing about the matter from the permittee;

    (b) request the permittee attend a meeting with the Minister to discuss the matter;

    (c) request the permittee attend a conference with the Minister and the complainant with a view to resolving the matter;

    and, having done one or more of the foregoing, may do one or more of the following:

    (d) direct the permittee to carry out rectification work;

    (e) carry out rectification work at cost to the permittee;

    (f) subject to the *Petroleum Act*, take any other action, including the cancellation of the permit, as the Minister considers appropriate.

**Site Protection**

16. All exploration personnel and their contractors and agents shall be instructed on the legal necessity to protect sacred sites and other significant archaeological sites and structures which may exist within the permit area.

17. Prior to carrying out any work in the permit area the permittee must consult with the Aboriginal Areas Protection Authority and inspect the Register of Sacred Sites. A permittee wishing to carry out work may apply for an Authority Certificate.

**Minimising of Environmental Impact**

18. The permittee shall not bring firearms or traps onto the permit area and shall not take or kill any wildlife.

19. All structures, facilities, survey markings or other related infrastructure shall be of a temporary nature and shall be removed from the area at the completion of the exploration programme unless approved otherwise in writing by the Minister.

20. The permittee shall not use fire, unless in accordance with the *Bushfires Act*.

21. The permittee shall not construct new vehicle tracks unless unavoidable. New tracks should be constructed at the minimum width possible to conduct the exploration programme, avoid long straight stretches, and be constructed with sufficient furrows to provide appropriate drainage.

22. The permittee shall keep clearing and/or disturbance of vegetation to a minimum; with particular care taken in regard to preserving mature trees and vegetation along watercourses.

23. The permittee shall take such steps as are reasonably practical to prevent the spread of noxious weeds, including the washing down of vehicles and removal of grass seeds before moving vehicles and equipment to a new area.

24. No sites or structures that may have historic significance shall be disturbed or interfered with in any way unless prior written approval has been given by the Minister.

25. The permittee shall take such steps as are practical to minimise disturbance to the soil, rocks, rock formations, creeks and watercourses.

26. The permittee shall take all precautions necessary to prevent contamination of underground and surface waters in the permit area.

27. Where artesian groundwater is encountered during drilling, the permittee shall advise the Minister of its occurrence and protects the water from wastage, pollution, deterioration or undue depletion.

**Environmental Rehabilitation**

28. Following any soil disturbance, the permittee shall replace topsoil as near as possible to its original profile and contour.

29. The permittee shall remove all rubbish and waste from the permit area and shall comply with directions of the Minister regarding disposal.

30. To the extent possible the permittee should choose drillhole and excavation sites to minimise environmental impact and after completion of drill holes, the collar should be sealed off and casing plugged.

**Definitions**

“Permittee” means the grantee of the exploration permit and includes its workers, employees, contractors and agents.

"Minister" means the responsible Northern Territory Minister or delegate appointed under s7 *Petroleum Act.*

Last Revision: April 2015

# Petroleum Activity - Rehabilitation Security Calculation Form

## Calculation Summary

| | |
|---|---|
| **Project** | |
| **Operator** | |
| **Operator Contact** | |
| **Date** | |

| **Management Areas** | **Calculated Cost** (auto-filled from individual worksheets) |
|---|---|
| **Mobilization / Demobilization of Equipment** | **$0** |
| **Disposal of Wastes** | **$0** |
| **Removal of Facilities and Equipment** | **$0** |
| **Restoration of Infrastructure** | **$0** |
| **Land Rehabilitation** | **$0** |
| **Remedial Maintenance** | **$0** |
| **Post Activity Monitoring** | **$0** |
| | |
| **Sub-Total** | **$0** |
| | |
| **CONTINGENCY @15%** | **$0** |
| | |
| **TOTAL COST** | **$0** |

| FOR OFFICE USE | |
|---|---|
| **Petroleum Operations Assessment of Operator's Calculation** | |
| **Assessing Officer** | |
| **Date** | |



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## Mobilization-Demobilization of Equipment

| Item of Equipment (e.g. grader, dozer, other rehabilitation equipment) | Unit of Measure (UOM) | Range per UOM ($) | Cost per UOM ($) | Quantity | Sub Total ($) (auto-filled from cost and quantity) |
|---|---|---|---|---|---|
| | | | | | $0 |
| | | | | | $0 |
| | | | | | $0 |
| | | | | | $0 |
| | | | | | $0 |
| | | | | | $0 |
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| | | | | | $0 |
| | | | | | $0 |
| | | | | | $0 |
| | | | | | $0 |
| | | | | | $0 |
| **Total** | | | | | **$0** |



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## Disposal of Wastes

| Management Area | Technique | Unit of Measure (UOM) | Range per UOM ($) | Cost per UOM ($) | Estimated Quantity | Sub Total ($) (auto-filled from cost and quantity) | Technique Notes | Considerations (indicative) |
|---|---|---|---|---|---|---|---|---|
| Whole of activity area | Cleanup and disposal of domestic waste and litter | | | | | $0 | Onsite or off-site disposal depending on the environmental management plan for the activity and the type of waste | Distance from disposal site, volume of waste, charges for dumping, travel time, type of waste |
| | Disposal of septic tank or treatment plant wastes, sewage contaminated soil etc | | | | | $0 | On-site or off-site disposal depending on the environmental management plan for the activity | Mobilization costs, charges for disposal, labor costs |
| | Testing and appropriate disposal of chemical wastes/dangerous goods and chemically contaminated material | | | | | $0 | Testing should be undertaken to determine classification for proper On-site or off-site disposal. | Type of chemicals/dangerous goods, volumes, state of/need for containers, requirements for transport, nature of the environment, who is going to transport the wastes, necessity for interstate disposal |
| | Testing and appropriate on-site remediation or off site disposal of hydrocarbon contamination in soil or water body. | | | | | $0 | Testing should be undertaken to determine the for proper On-site or off-site disposal. Nature of the contamination must be taken into account - e.g heavy oils vs petrol, large spills vs dribbles | Volume of soil contaminated, nature and volume of hydrocarbons, site particulars |
| | Testing and removal of all drilling and fracturing related waste fluids. | | | | | $0 | Testing and categorisation of wastes should be done before the appropriate disposal method can be undertaken. | volume of and toxicity of drilling wastes |
| | Closure and rehabilitation of on-site waste disposal facilities/pits | | | | | $0 | Closure and rehabilitation must provide adequate safeguards for humans and the environment | Mobilization and demobilization costs, equipment cost, operator's wages - if not in equipment cost, fuel - if not in equipment cost |
| **TOTAL** | | | | | | **$0** | | |

## Removal of Facilities and Equipment

| Management Area | Technique (where applicable) | Unit of Measure (UOM) | Range per UOM ($) | Cost per UOM ($) | Estimated Quantity | Sub Total ($) (auto-filled from cost and quantity) | Technique Notes |
|---|---|---|---|---|---|---|---|
| Camp Areas and Activity Sites | Disconnect and terminate services | | | | | $0 | This item includes disconnecting all services such as communications, power, water and sewerage. |
| | Remove onsite facilities. | | | | | $0 | For example, Workshop and camp facilities may be transportable or fixed - these require different approaches to closure operations. In addition, the wishes of the land holder(sd) will need to be taken into consideration (e.g. the workshops and camps may have to be left because the land holder views them as an asset). |
| | Remove equipment | | | | | $0 | This item includes water piping, culvert pipes, electrical cables, generators, compressors, pumps, sewage treatment plant, communications dishes and towers. consider distance to remove all mobile plant to the nearest appropriate centre |
| | Remove mobile plant | | | | | $0 | This item includes demountables, caravans, motor vehicles, special vehicles. Consider distance to remove all mobile plant to the nearest appropriate centre. |
| | Remove tanks | | | | | $0 | This item includes water tanks, septic and secondary treatment tanks, fuel tanks etc. |
| **TOTAL** | | | | | | **$0** | |

## Restoration of Infrastructure

| Management Area | Technique (where applicable) | Unit of Measure (UOM) (Various piece rates plus labor) | Range per UOM ($) | Cost per UOM ($) | Estimated Quantity | Sub Total ($) (auto-filled from cost and quantity) | Technique Notes |
|---|---|---|---|---|---|---|---|
| Fencing | Restore fencing to agreed condition | | | | | $0 | Includes rewiring and restraining of fences, installation of new posts, installation of new gates and provision of locks. |
| Activity area | Restore bores, hard stand areas and other infrastructure to agreed condition | | | | | $0 | Includes repair of infrastructure to agreed condition. Items to be considered in establishing costs include: equipment hire rates plus labor, fuel, accommodation and food, transportation of equipment and personnel, equipment maintenance, downtime due to weather |
| Access Roads | Restore roads to agreed condition | | | | | $0 | Includes regrading and sheeting of tracks, (re)establishment of erosion control drains and banks, dispersing windrows, cattle grates, repairing culverts. Items to be considered in establishing costs include: equipment hire rates plus labor, accommodation, transportation of equipment and personnel |
| **TOTAL** | | | | | | **$0** | |



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## Land Rehabilitation

| Management Area | Technique (where required) | Unit of Measure (UOM) | Range per UOM ($) | Cost per UOM ($) | Estimated Quantity | Sub Total ($) (auto-filled from cost and quantity) | Technique Notes |
|---|---|---|---|---|---|---|---|
| Camp, Workshop, and Production Areas | reshaping land unconformnities to return area to natural topography. | | | | | $0 | windrows are pulled back and edges battered, sumps are appropriately filled in and leveled. |
| | structural works for drainage | | | | | $0 | construction of water management structures such as contour banks and diversion drains as required. |
| | respreading of vegetation | | | | | $0 | top soil and sub soil replaced back onto site and additional seed added as necessary. |
| | Ripping of all compacted areas and subsequent leveling | | | | | $0 | all hard stand and areas of compaction are to be deep ripped. Consideration should be taken into any dust supressants used. |
| | scarifying | | | | | $0 | all remaining and rahabilitated surfaces lightly scarifies to reduce erosion and retain moisture. |
| **Sub Total** | | | | | | $0 | |
| | | | | | | | |
| Seismic Lines and Temprorary Access Tracks | reshaping land unconformnities to return area to natural topography. | | | | | $0 | reshape dunes, restore drainage channels, respread windrows, batter slopes, area is ripped |
| | structural works for drainage | | | | | $0 | construction of water management structures such as contour banks and diversion drains as required. |
| | respreading of vegetation | | | | | $0 | top soil and sub soil replaced back onto area and additional seed added as necessary. |
| | Ripping of all compacted areas and subsequent leveling | | | | | $0 | all hard stand and areas of compaction are to be deep ripped. Consideration should be taken into any dust supressants used. |
| | Restore shot hole craters | | | | | $0 | |
| **Sub Total** | | | | | | $0 | |
| | | | | | | | |
| Other Significantly Impacted Areas (staging areas, temporary bores, pumping areas | Respread vegetation | | | | | $0 | top soil and sub soil replaced back onto area and additional seed added as necessary. |
| | reshape and deep rip | | | | | $0 | reshape dunes, restore drainage channels, respread windrows, batter slopes, area is ripped |
| | structural works for drainage and or to block access | | | | | $0 | construction of water management structures such as contour banks and diversion drains |
| | removal of flagging, sacred sites warnings, directional signs | | | | | $0 | |
| **Sub Total** | | | | | | $0 | |
| | | | | | | | |
| **TOTAL** | | | | | | $0 | |

## Considerations

- Availability of fill material
- Bioremediation of petroleum spills, respreading drill pads
- Cattle density
- Conservation areas
- Density and types of vegetation
- Distances to areas
- Establishing banks to prevent access to restored seismic lines
- Establishment of camps
- Establishment of erosion control drains and banks
- Filling of waste pits (rubbish/septic) and mud sumps
- Fuel
- Generally accepted timing of onset of wet periods
- Impact of drought on rehabilitation
- Labour
- Length of access roads
- Length of lines
- Likelihood of heavy compaction requiring deep ripping
- Likely nature and effects of rainfall
- Likely traffic over the rehabilitated areas and the effect of same
- Mobilization and demobilization costs
- Mulching
- Nature of drainage lines and special needs of various types
- Nature of dune fields and interdune areas
- Nature of soils (sand, massive earths, clay pans, scalds, rock etc.)
- Need for water carts
- Need to block access to areas
- Number of areas
- Previous erosion histories in proximity to the project areas
- Recontouring where original contour has been interrupted
- Removal/burial of drill cuttings
- Respreading windrowed or stockpiled soil
- Size of areas
- Spreading downed vegetation
- Topography
- Weed control,
- Wind effects on areas



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## Remedial Maintenance

| Management Area | Technique | Unit of Measure (UOM) | Range per UOM ($) | Cost per UOM ($) | Estimated Quantity | Sub Total ($) (auto-filled from cost and quantity) | Technique Notes |
|---|---|---|---|---|---|---|---|
| Remedial Maintenance | Contaminated sites management | | | | | $0 | Contaminated site assessments may be required depending on nature of the wastes, the site, the environmental management plan and landholder agreements |
| | Pest and weed management | | | | | $0 | Consider the nature of the Activity and the Activity area (e.g. seismic operations vs well drilling; weed free properties vs highly infested areas) - Where risk of infestation is high consider for monitoring and remedial action for a minimum of 5 years |
| | Drainage control structure maintenance | | | | | $0 | 2 - 10yrs |
| | Activity planning and management | | | | | $0 | Including surveying, tender preparation and assessment, accounting and reporting costs, meals and accommodation transportation |
| | Consultant services | | | | | $0 | 3rd party expert advice and oversight/activity supervision |
| | Erosion control | | | | | $0 | % of subtotal of land rehabilitation management costs (?), nature of the activity area(s) so ls and topography, mobilization and demobilization costs, equipment costs |
| | Other | | | | | $0 | |
| TOTAL | | | | | | $0 | |

## Post Activity Monitoring

| Monitoring Areas | Unit of Measure (UOM) | Range per UOM ($) | Cost per UOM ($) | Estimated Quantity | Sub Total ($) (auto-filled from cost and quantity) | Considerations |
|---|---|---|---|---|---|---|
| **Erosion** | | | | | | |
| Access roads and tracks | | | | | $0 | Frequency, seasonal implications, sensitive soils, meterological conditions, conservation areas, feral animal populations, surface hydrology, topography, accessibility of subject areas, likely impact of monitoring activities, alternatives for monitoring |
| Camp sites | | | | | $0 | |
| Drill sites | | | | | $0 | |
| Seismic lines | | | | | $0 | |
| Workshop and production areas | | | | | $0 | |
| **Contamination** | | | | | | |
| Camp sites | | | | | $0 | testing of possible contamination areas to provide evidence of no ongoing contamination. Waste disposal/remediation techniques used, nature of wastes disposed, needed for contaminated sites reviews |
| Drill sites | | | | | $0 | |
| Drilling fluid and/or fracturing fluid holding areas | | | | | $0 | |
| Ground water and water bores | | | | | $0 | |
| Sensitive environmental receptors (eg:creeks, lagoons) | | | | | $0 | |
| Workshop and production areas | | | | | $0 | |
| **Weeds** | | | | | | |
| Access roads and tracks | | | | | $0 | Weed life cycles and propagation methods, weed establishment in the vicinity of the activity area |
| Camp sites | | | | | $0 | |
| Drill sites | | | | | $0 | |
| Seismic lines | | | | | $0 | |
| Workshop and production areas | | | | | $0 | |
| **TOTAL** | | | | | **$0** | |



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