Environmental Protection Act 1986

Section 43A

NOTICE OF DECISION TO CONSENT TO CHANGE TO PROPOSAL DURING ASSESSMENT

PERSON TO WHOM THIS NOTICE IS GIVEN

(a) Bennett Resources Pty Ltd (ACN: 145 113 186)
Level 9, 40 The Esplanade
PERTH WA 6000

PROPOSAL TO WHICH THIS NOTICE RELATES:

Valhalla Gas Exploration and Appraisal Program
Assessment No. 2281

Pursuant to section 43A of the *Environmental Protection Act 1986* (EP Act), the Environmental Protection Authority (EPA) consents to the proponent making the following changes to the proposal during assessment without a revised proposal being referred:

- increase the total area of clearing from 102 to 110 ha
- the total area of the disturbance footprint from 109 to 112 ha
- increase the maximum amount of groundwater abstraction from 40 ML per well to 100 ML per well
- increase the number of hydraulic fracture stimulation (HFS) intervals from 50 to 70 per horizontal well
- use of the term drill site rather than well site for consistency
- inclusion of flare stack to combust gas off the separator as an alternative to Well test flare pit.

See the attached Proposal Content Document and Figure 1

EFFECT OF THIS NOTICE:

1. The assessment of the proposal is to be completed in respect of the proposal as amended in accordance with the decision set out in this notice.

2. The proposal as amended in accordance with this notice is taken to have been referred to the EPA under Section 38 of the EP Act.

RIGHTS OF APPEAL:

There are no rights of appeal under the EP Act in respect of this decision.

Professor Matthew Tonts
Delegate of the Environmental Protection Authority
CHAIR

6 May 2022

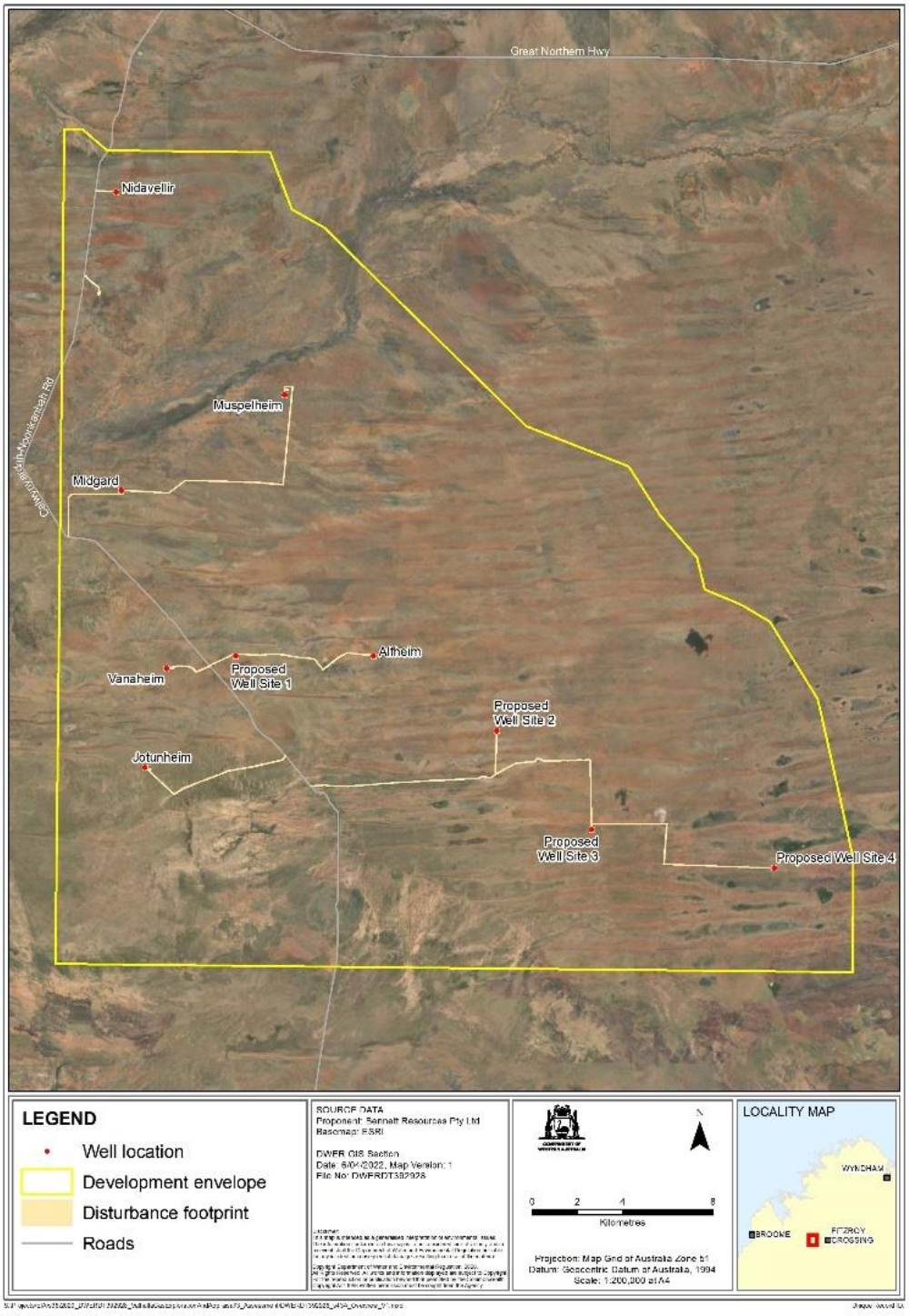

Figure 1 Development Envelope and indicative footprint

Summary of reasons for decision – request to amend a referred proposal under s43A of the *Environmental Protection Act 1986*

Proposal Title: Valhalla Gas Exploration and Appraisal Program

Proponent: Bennett Resources Pty Ltd

Proposal referral date: 24 December 2020

Date request to amend referred proposal under section 43A received: 3 March 2022

Existing referred proposal:

The Proposal is to complete an unconventional exploration drilling and Hydraulic Fracture Stimulation (HFS) program within existing Petroleum Exploration Permit (EP) 371 in the Canning Basin, within the Shire of Derby-West Kimberley in Western Australia. The intent of the proposal is to evaluate the large tight gas resource in the region.

Short description of amendment(s) sought:

- Increase the total area of clearing from 102 to 110 ha
- increase the total area of the disturbance footprint from 109 to 112 ha
- increase the maximum amount of groundwater abstraction from 40 ML per well to 100 ML per well
- increase the number of hydraulic fracture stimulation (HFS) intervals from 50 to 70 per horizontal well
- inclusion of flare stack to combust gas off the separator as an alternative to well test flare pit
- use of the term drill site rather than well site for consistency.

Decision:

Amendments to proposal as described above and shown in Figure 1 of Attachment 1 are approved.

Environmental factors relevant to amendment(s):

- Flora and Vegetation: increase in additional clearing of native vegetation from 102 ha to 110 ha.
- Terrestrial Fauna: increase in the loss of fauna habitat, including for conservation significant fauna species.
- Inland Waters for additional water abstraction.

Summary of likely changes to environmental impacts from proposed amendment(s)

Amendment sought	Changes to environmental impacts
Increase the total area of clearing from 102 to 110 ha. The change reflects the avoidance and mitigation measures the proponent is committing to avoid several sensitive areas	The revised indicative disturbance footprint is shown in Figure 1 and represents a 6.8 percent increase in native vegetation clearing to align tracks to avoid sensitive sites. The area of increased clearing of native vegetation is pindan and spinifex vegetation types which is regionally common. The change would increase avoidance of known listed flora species and vegetation features (large trees, riparian vegetation). The disturbance area has been redesigned to avoid crossing the creek and no works will occur within 100 m each side of the Mt Hardman Creek. Redesign of the track also decreases effect on heritage values as it avoids a heritage site (bore) and associated structures (dam). The impacts of the changes will be considered in the assessment.

Change in numbers of HFS intervals for Phase 2 well design from 50 to 70	The main impact of this change is the duration of the drilling program and air, light and noise emissions. The environmental risks and risk levels are unlikely to change significantly given the remote location and proximity to receptors sensitive to these emissions. The duration of the activity is still generally consistent with what has been described in previous documentation due to a conservative approach to the time required for the drilling program. The impacts of the changes will be considered in the assessment.
increase in groundwater extraction per well from 40 to 100 ML per well	Refinement of well design, specifically for Phase II wells, has led to an updated requirement of up to 100 ML of groundwater abstraction. This could result in a temporary increase in groundwater drawdown. Groundwater level recovery is still expected to be within 0.2 m of the static water level within hours of the cessation of pumping, and to fully recover within weeks. There are limited groundwater demands within 1 km of well sites and the area in general so there would be limited risks of cumulative impacts. The impacts of the changes will be considered in the assessment.

Inclusion of flare stack	The use of a vertical flare stack does not change flaring requirements for the program compared to a flare pit. Flare stacks require less clearing than a flare pit as there is reduced fire break requirement. The height of the flare stack could be in the order of 6 meters tall which is significantly less than rig height.. Flaring would only occur when drilling the horizontal section, and is likely only at the end of the well drilling. Flaring could be in the order of a couple of weeks per well, compared to many months for drilling the entirety of the well. Given the remoteness of the operations, low stack height and short duration of flaring any changes to visual amenity are not likely to be significantly The impacts of the changes will be considered in the assessment.
Clarification of wording using the term drill site rather than well site	Administrative change to make it clearer that a drill site is the location to host well exploration and well testing phases. There are not on ground changes from this change in terminology.

Summary of consideration of amendment

The EPA has considered whether, if the proposal were already approved, the amendment would be a significant amendment. This has included considering the likely significance of:

- effects of the proposed amendment on its own
- effects of the proposed amendment in the context of the existing referred proposal
- cumulative environmental impacts
- holistic impacts.

The EPA has considered whether it has sufficient information about the proposed amendment to be able to reasonably proceed with assessment of the amended proposal with or without performing any additional functions at this stage.

The EPA has considered whether the amended proposal will still be substantially the same character as the existing referred proposal.

Approval – not a significant amendment

The EPA considers the amended proposal to be substantially the same character as the existing referred proposal and does not consider that the amendment would be a significant amendment if the proposal were already approved. The EPA considers it has enough information to reasonably proceed with assessment of the amended proposal without performing any additional functions at this stage.

Attachments

1) Figure 1: Amended indicative disturbance footprint
2) Proposal Content Document

Appeals: Decision not appealable.

Professor Matthew Tonts
CHAIR
Delegate of the Environmental Protection Authority

Date: 6 May 2022

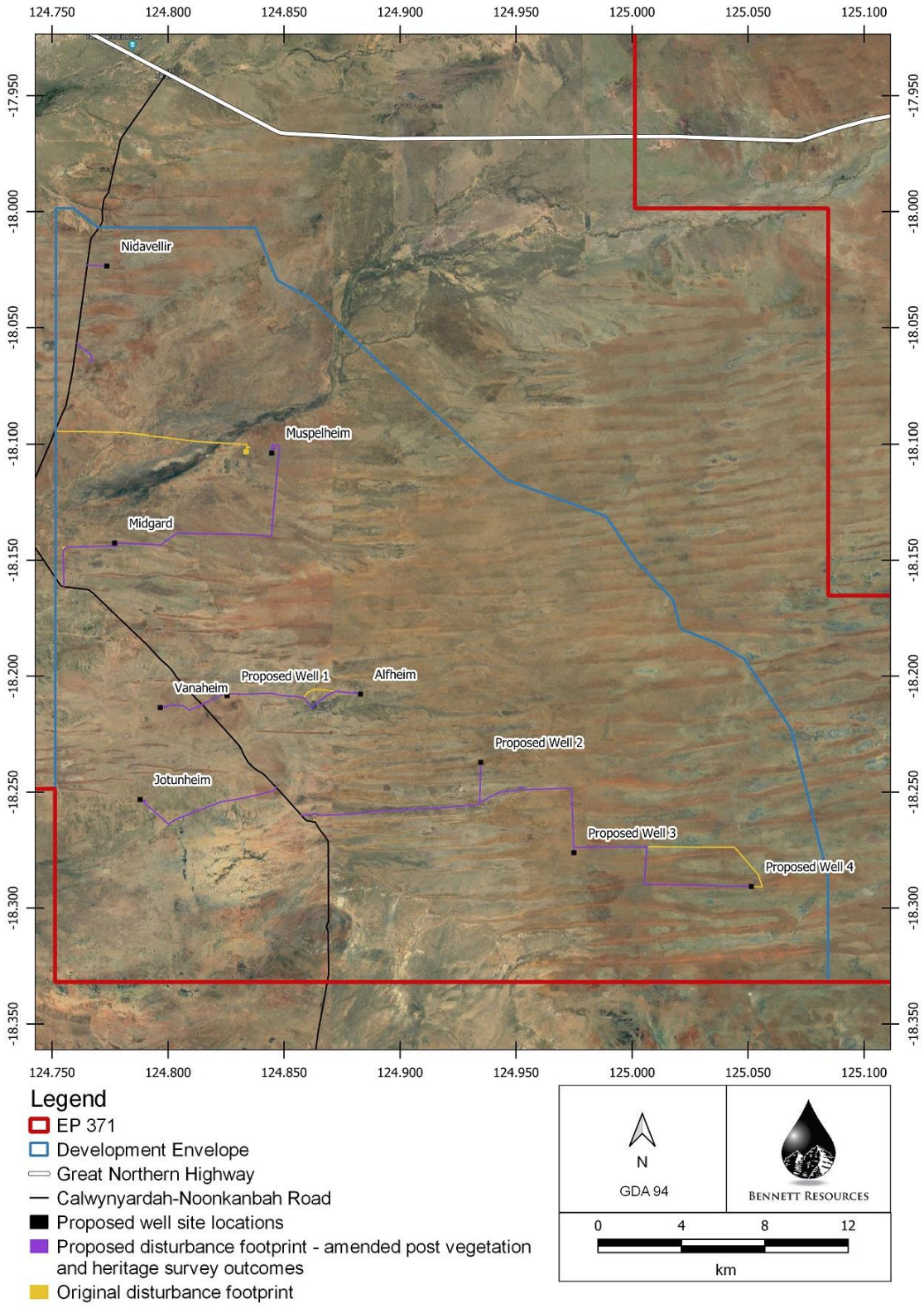

Figure 1: Amended indicative disturbance footprint

Table 1: General proposal content description

Proposal title	Valhalla Gas Exploration and Appraisal Program
Proponent name	Bennett Resources Pty Ltd (BNR)
Short description	The Proposal is to undertake an unconventional exploration and appraisal drilling program within EP 371, located in the Canning Basin, West Kimberley of Western Australia. The Proposal includes constructing up to 20 exploration wells within 10 well sites. The intent of the Proposal is to further explore and appraise the extent of the tight gas reservoirs present from the Laurel through to the Devonian Formations, at depths ranging from 2,000 m to 5,000 m below ground level. The main target is the Laurel Formation with hydrocarbon shows present at depths between 2,000 m and 4,000 m below ground level. The exploration and appraisal program is expected to commence in 2023.

Table 2: Proposal content elements

Proposal element	Location / description	Maximum extent, capacity or range
Physical elements		
Clearing for wells, access tracks and accommodation camps	Figure 1	No more than 110 ha
Gas exploration wells	Figure 1	No more than 20 wells at 10 well sites
Operational elements		
Water abstraction for process water and camp supply	At each well site	Up to 100 ML per well via groundwater extraction bores
Gas exploration method	N/A	Unconventional (hydraulic fracture stimulation)
Well design	Figure 2 Figure 3	Vertical wells with horizontal HFS wellbore sections
Hydraulic fracture stimulation intervals	N/A	Up to 70 intervals per horizontal well

Water retention pond	At each well site	One pond per well site with a capacity of ~160,000 m^3, to hold raw bore water, then produced formation water evaporation
Well test flare pit	At each well site	One per well site. Based upon availability of equipment at the time of undertaking operations, there is the option for a flare stack to combust gas off the separator
Project life	N/A	7 years
Proposal elements with greenhouse gas emissions		
Construction elements:		
Scope 1	Vegetation clearing of up to 110 ha: 287 tCO_2-e Site preparation – diesel emissions: 54 tCO_2-e / well	
Scope 2	As the Proposal does not intend to import power from third parties, no Scope 2 emissions are expected.	
Scope 3	No Scope 3 emissions expected.	
Operation elements:		
Scope 1	<u>Diesel emissions:</u> Drilling operations: 857 tCO_2-e / well HFS operations: 1,382 tCO_2-e / well Site reinstatement: 54 tCO_2-e / well Transport (vehicles / rigs): 931 tCO_2-e / well Site power: 22 tCO_2-e / well (based on 90 days flaring) <u>Flaring emissions:</u> Gas: 44,620 tCO_2-e / well (based on 90 days flaring for 6 exploration wells), and 80,921 tCO_2-e / well (based on 90 days flaring for 14 appraisal wells) Condensate: 4,140 tCO_2-e / well (based on 90 days flaring for 6 exploration wells), and 7,507 tCO_2-e / well (based on 90 days flaring for 14 appraisal wells) <u>Fugitive emissions:</u> Drill cuttings: 30 tCO_2-e / well Waste water: 20 tCO_2-e / well *Further information regarding the Scope 1 GHG inventory is detailed in the Proposal's Environmental Review Document.*	
Scope 2	As the Proposal does not intend to import power from third parties, no Scope 2 emissions are expected.	

Scope 3	Although no Scope 3 emissions are expected, BNR may sell condensate collected during the well test program to third parties (if feasible) as a recommended GHG mitigation measure. By implementing this mitigation, BNR would avoid emissions associated with condensate flaring. The quantity of Scope 3 emissions associated with transporting and using condensate as a fuel was calculated on the basis that all condensate produced from a 90-day flaring period was captured and transported via Wyndham to Singapore where it was assumed to be processed and consumed.

Scope 3 Emissions per well	~60 days flaring	~90 days flaring
Condensate volume (bbl)	222,240	333,360
Condensate transport emissions (tCO_2-e)	13,952	20,928
Condensate consumption emissions (tCO_2-e)	91,571	137,356
Total Scope 3 emissions (tCO_2-e)	**105,523**	**158,284**

Rehabilitation

Once drilling and HFS activities are complete, cleared areas that are not required to support the maintenance of infrastructure will be progressively reinstated and rehabilitated to minimise environmental liability at the end of asset life. Topsoil is to be respread and rehabilitation sites actively monitored to ensure they meet the required completion criteria. Completion criteria will ensure that rehabilitation is conducted to enable long-term land use to continue.

Commissioning

The exploration and appraisal program is expected to commence in 2023.

Decommissioning

After completing the Proposal activities, and as required under the PGER Act, BNR will submit to DMIRS and implement a decommissioning EP.

Other elements which affect extent of effects on the environment

Proposal time*	Maximum project life	7 years
	Construction phase	Construction of the well sites, access tracks and camps are expected to be completed in the first year of the project. Phase 1 operations will also begin in the first year.
	Operations phase	Operations across the proposed well sites will be achieved one well site at a time, starting with Phase I exploration wells. Phase I operations are expected to take between 1 – 3 years. Should Phase I be successful, Phase II wells will then undergo operations one well at a time. Phase 2 operations are expected to take an additional 2 – 4 years.

	Decommissioning phase	Infrastructure to be maintained or reinstated should it no longer be required during the operations phase of the Proposal. All assets will be decommissioned where a field management plan approved under the Petroleum and Geothermal Energy (Resource Management and Administration) Regulations 2015 does not consider the assets in the plan for future field development. This will ensure that direct environmental impacts from future activities are minimised to the smallest practicable extent.

** Proponents should only provide realistic timeframes to avoid unnecessary change to proposal applications at referral (section 38C), assessment (section 43A) or post assessment (section 45C).*

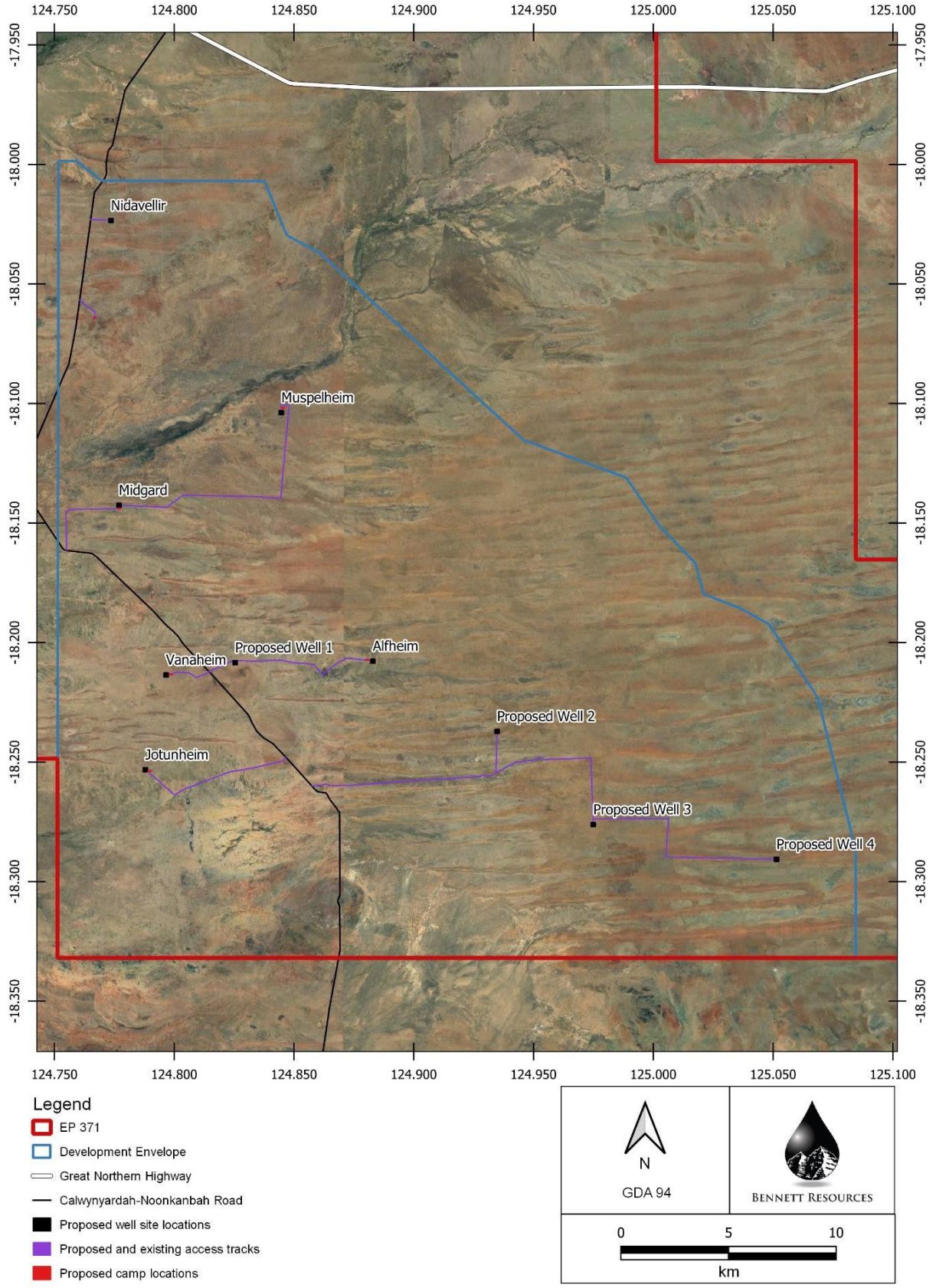

Figure 1 Proposed well site locations

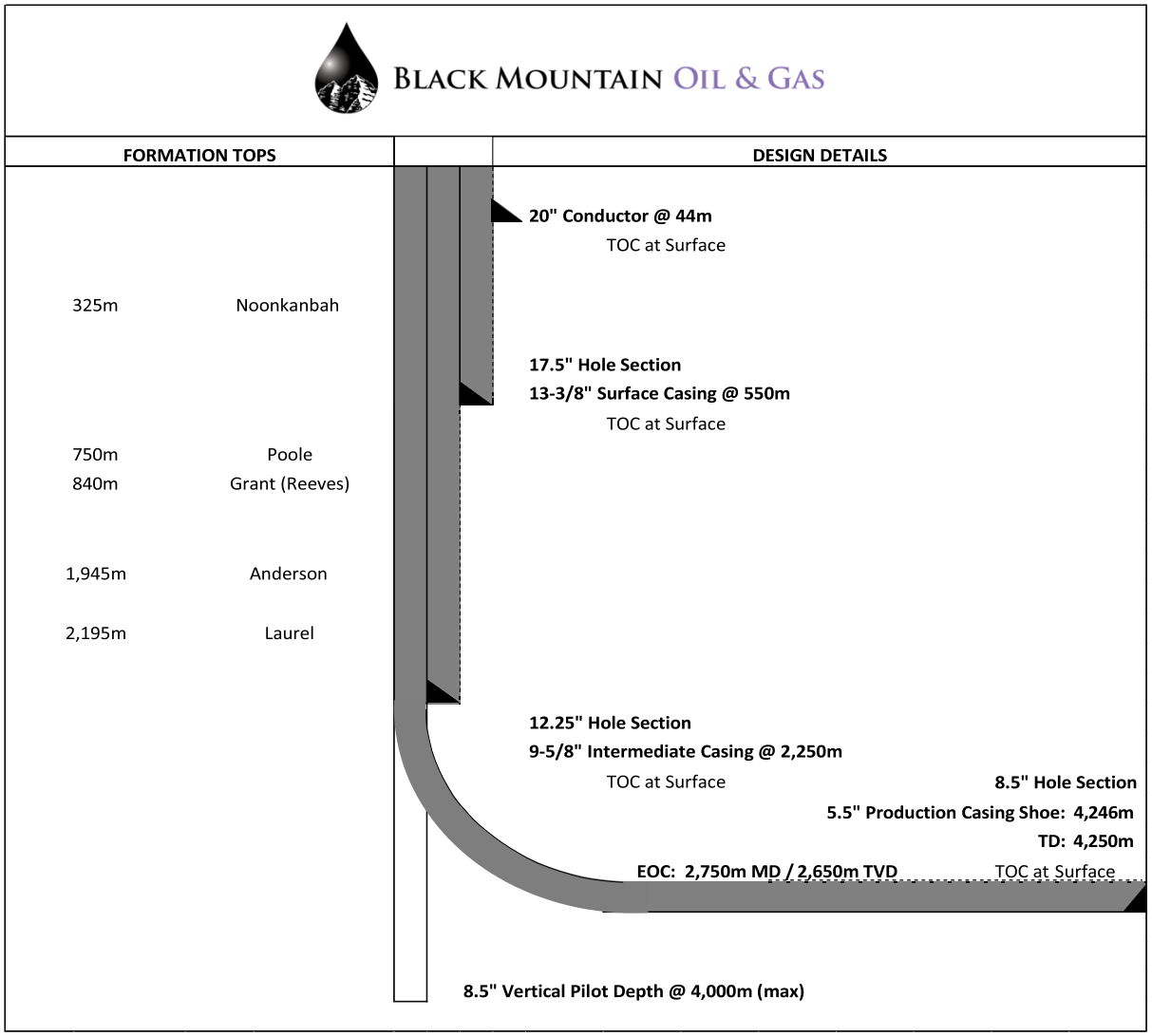

Figure 2 BNR Phase I indicative well design

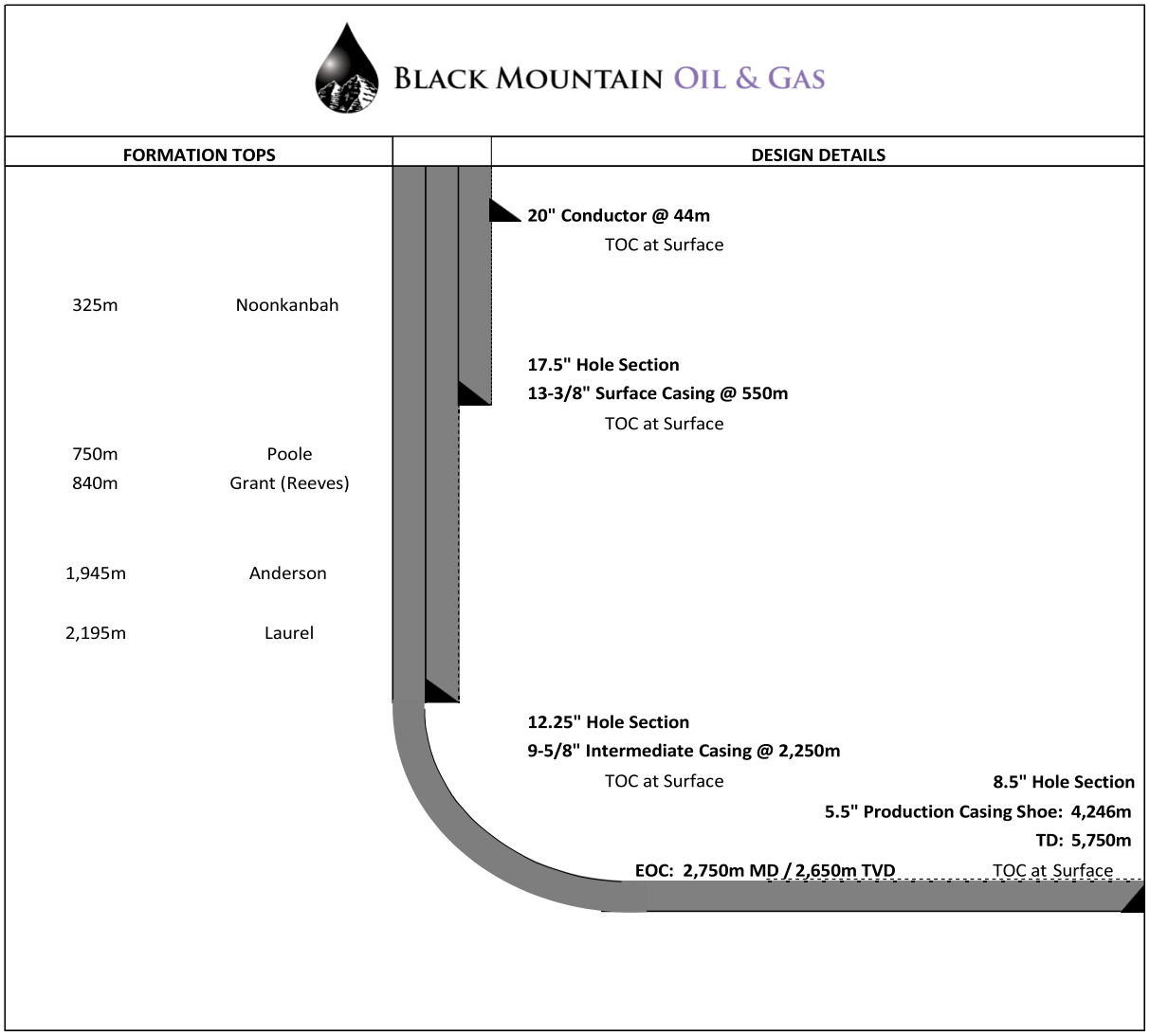

Figure 3 BNR Phase 2 indicative well design