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Our ref: NTEPA2017/0002~0027
Your ref:

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

Dear Hon Justice Rachel Pepper

RE: HYDRAULIC FRACTURING INQUIRY – INFORMATION REQUEST REGARDING THE REGULATORY FRAMEWORK FOR THE MANAGEMENT OF SPILLS OF CHEMICALS AND WASTEWATER ASSOCIATED WITH HYDRAULIC FRACTURING

Thank you for your letter of 20 September 2017 regarding the above.

The Northern Territory Environment Protection Authority (NT EPA) is an independent statutory authority established under the *Northern Territory Environment Protection Authority Act* (NT EPA Act). The objectives of the NT EPA are set out in section 7 of the NT EPA Act and its functions in section 8 of that Act.

Its functions include those associated with environmental assessments as conferred under the *Environmental Assessment Act* (EA Act) and waste and pollution management as conferred under the *Waste Management and Pollution Control Act* (WMPC Act) and supporting subordinate legislation.

The NT EPA confines its response to these two pieces of legislation and appreciates the opportunity to provide further information to the Scientific Inquiry into Hydraulic Fracturing of Unconventional Reservoirs in the Northern Territory about its statutory powers, functions, policies and practices as they relate to the subject of the Inquiry.

Environmental impact assessment

The NT EPA's powers and functions to undertake environmental impact assessment are set out in the *Environmental Assessment Act* and the *Environmental Assessment Administrative Procedures* (EAAP; Procedures).

The objective of the Act is (section 4)

> "…to ensure, to the greatest extent practicable, that each matter affecting the environment which is, in the opinion of the NTEPA, a matter which could reasonably be considered to be capable of having a significant effect on the environment, is fully examined and taken into account in, and in relation to:

(a) the formulation of proposals;
(b) the carrying out of works and other projects;
(c) the negotiation, operation and enforcement of agreements and arrangements (including agreements and arrangements with, and with authorities of, the Commonwealth, the States and other Territories);
(d) the making of, or the participation in the making of, decisions and recommendations; and
(e) the incurring of expenditure,

by, or on behalf of a person, either alone or in association with another person."

The Act and Procedures do not define 'significant' which is a judgement of the NT EPA. To assist the NT EPA in making this judgement, and ensure consistency in its judgements, the NT EPA has adopted an interim internal guideline[1]. The guideline sets out the matters that the NT EPA should have regard to in determining whether or not the potential impacts of a proposal may be significant. These include:

- values (e.g. effects on conservation significant habitat or species), sensitivity and quality of the environment which is likely to be impacted
- extent (intensity, duration, magnitude, frequency and geographic footprint) of the likely impacts
- consequence of the likely impacts (or change)
- resilience of the environment to cope with the impacts or change
- cumulative impact with other actions
- level of confidence in the prediction of impacts and the success of proposed mitigation
- public concern about the likely effect of the proposed action on the environment.

In addition, the NT EPA has published a number of guidelines for proponents and Government agencies to assist those bodies to determine if a notice of intent[2] (NOI; the NT EPA's referral documentation) should be submitted to the NT EPA for a decision on whether or not assessment is required under the Act and Procedures.

It is the NT EPA's position, consistent with its legislative responsibilities, that where petroleum exploration or production activities may have a significant effect on the environment they should be referred to the NT EPA as NOIs for a decision under the Act and Procedures.

Each NOI is considered on its own merits in accordance with the Act and Procedures and in consideration of the Significant Effects Guideline. A number of onshore gas exploratory activities have been referred as NOIs to the NT EPA for consideration. To date those activities have not been considered by the NT EPA to have the potential for significant effects on the environment to the extent that they warrant environmental impact assessment under the EA Act; this does not mean that in the

[1] 'Environmental Assessment Guideline – Identification of significant effects on the environment' (Significant Effects Guideline)
[2] See for example, 'Environmental Assessment Guidelines – When a Notice of Intent is not required for onshore petroleum exploration or production proposals submitted under the *Petroleum Act*'

future an exploratory or production activity will not require such assessment. The NT EPA's decisions to date have reflected the specific exploratory activities that have been referred to it, the scale and duration of those activities, the nature of the receiving environment, as well as the proponent's proposed approach to its activities and its identified avoidance and mitigation measures.

At all times throughout this process, the NT EPA seeks specialist advice and input from relevant NT Government agencies to inform its decision-making. It may also seek advice from independent experts outside of the NT public sector.

To illustrate, the statement of reasons for the NT EPA's decision on the Origin Energy Resources Ltd (Origin) Amungee NW-1H hydraulic stimulation and well testing proposal is attached. In deciding that the proposal did not require assessment under the EA Act, the NT EPA considered the Environmental Plan referred by the then Department of Mines and Energy and further information provided by Origin at the request of the NT EPA. The NT EPA considered in detail the potential impacts of the proposal on groundwater and surface water and measures proposed to manage and monitor any impacts.

The statement of reasons clarifies that the NT EPA also considered the likely chemical composition of stimulation fluids to be used by Origin, as outlined in the referred Environmental Plan.

It should not be inferred from the fact that NOIs received to date have resulted in decisions that a PER or EIS level of assessment was not required, that the NT EPA has a policy position that such activities will never require assessment at these levels. This clarification is most important as the Inquiry Panel appears to have made this inference based on previous advice provided to it.

The NT EPA's 'Guideline for the Preparation of a Notice of Intent' provides proponents with advice about the minimum information that is required for the NT EPA to make a decision under the Act and Procedures about whether or not the proposed action will be subject to environmental impact assessment. The NT EPA requires sufficient information to make an informed decision.

The NT's current assessment system places responsibility for referring projects to the NT EPA on Ministers (in practice, agencies) and not the proponent[3]. Because of this, the NT EPA accepts as an NOI documentation that has been prepared for a separate and often different purpose; most commonly a Mining Management Plan prepared under the Mining Management Act, planning applications under the Planning Act and Environmental Management Plans prepared for onshore oil and gas activities. The extent to which the NT EPA may require additional information depends on the content of those documents and the capacity of the NT EPA to make an informed decision about the need for assessment based on those documents. If the NT EPA considers that it requires additional information, it will seek this directly from the proponent.

Once the NT EPA has determined that assessment is required, and the level of that assessment, currently a Public Environmental Report (PER) or an Environmental

[3] Some proponents will prepare an NOI and refer projects directly to the NT EPA but this is not a requirement of the NT system.

Impact Statement (EIS), the NT EPA develops and publishes Terms of Reference (TOR). As part of the TOR the NT EPA may request, or recommend, the proponent prepare an EMP to support the PER or draft EIS document. Again, the extent to which an EMP may be required is dependent on the nature of the potential environmental impacts and risks and the extent to which those impacts/risks can be minimised and mitigated through development and implementation of an EMP.

Where the NT EPA decides that a PER or EIS is not required for a particular oil and gas proposal, its powers in relation to the assessment of that activity is limited to the re-consideration of the potential significance of environmental impacts of the proposal following any alteration of the action that was the subject of the decision (refer clause 14A of the Procedures).

Notwithstanding this limitation, the NT EPA routinely provides advice and recommendations to Ministers and proponents about environmental management where it has considered an NOI and determined that assessment as a PER or EIS is not required. In practice the Department of Primary Industry and Resources considers that advice and those recommendations in making its decisions about granting a petroleum approval, including approving EMPs in accordance with the Petroleum (Environment) Regulations.

The NT EPA agrees that it would be preferable if its advice and recommendations of this nature were recognised more formally. The NT EPA's *'Roadmap for a Modern Environmental Regulatory Framework'* identified that a revised environmental impact assessment process should facilitate both single proposal assessments and strategic assessments; and that it should provide the NT EPA with the flexibility to determine the level of assessment based on the significance of potential impacts and risks. The NT EPA considers that the types of matters that are currently subject to this informal process could be formalised through a new, lower level assessment process. This would enhance the transparency and confidence of the NT EPA's assessment of proposals that do not warrant assessment at the higher PER or EIS level. It is certainly not the NT EPA's position that all activities should require impact assessment – there are some activities, such as those related to aerial surveys, which have minimal environmental impact (if any) and which can appropriately be managed outside of an environmental impact assessment process.

The NT EPA is pleased that Government is pursuing its environmental regulatory reform agenda. The existing environmental impact assessment framework is outdated and contains a number of weaknesses as outlined in the Roadmap. The NT EPA anticipates that through the reform program, the NT will create a system that provides greater clarity, certainty, transparency and timeliness.

Where possible within existing legislative limitations, the NT EPA is taking its own steps to provide greater certainty and transparency and improve timeliness. Since February 2017 the NT EPA has been publishing its decisions when it has decided that a proposal does not require assessment under the EA Act. The NT EPA is also implementing a new framework for environmental impact assessment that employs a factor and objectives approach similar to that used by the Western Australia Environmental Protection Authority. This will provide a more logical, consistent and systematic framework for impact assessment and related decision making.

The NT EPA is aware that the Department of Environment and Natural Resources is proposing that the changes to the legislative framework enable the identification of different types of triggers for referring projects into the assessment process. It has referred to these as 'hard triggers' (i.e. triggers based on activity type or location) and Territory Environmental Objectives.

The NT EPA considers that as the independent assessment body providing advice to the NT Government about the environmental acceptability of proposals, it should be responsible for setting assessment triggers. Further, triggers should be based on the significance of potential environmental impacts and risks based on the NT EPA's Significance Guideline. The existing test, 'the potential for a significant effect on the environment' or similar, supported by additional or updated guidance and definition, is most appropriate as it enables the NT EPA to make risk-based and outcome-focussed decisions.

While the NT EPA recognises that triggers based on an activity type or location may provide additional confidence in the community, and appreciates the potential flexibility that may be provided by having these additional mechanisms for identifying proposals that should be referred for assessment, it is concerned that such triggers can fail to appropriately consider the specific impacts and risks of proposals and can become outdated with changes in technology and improvements in environmental knowledge. The NT EPA considers that triggers based on activities or locations should be used sparingly and cautiously.

Environmental management plans

Many NT Government agencies and the NT EPA use environmental management plans. It must be recognised that these may have different legislative bases and may be used in different ways. In the NT EPA's view, such plans are a universally recognised and appropriate tool where ongoing, active management and monitoring is needed to minimise and mitigate potential environmental impacts. In this respect the proper application of 'adaptive management' can be very important in securing the desired environmental outcomes in the face of uncertainty. The NT EPA has found the paper by J Lee, (2014) 31 EPLJ 251, to be most useful in this regard.

Firstly, the NT EPA understands that an environmental plan is required under the *Petroleum (Environment) Regulations* and that this forms part of the approval of an onshore gas or petroleum activity. The NT EPA has the power to review one of these plans as a NOI for the purposes of the environmental impact assessment process.

Secondly, the NT EPA may request the development of an environmental management plan within the assessment process. Development of draft plans at this stage is one way proponents are able to demonstrate that their proposed management measures can mitigate identified potential impacts. This assists the NT EPA to form a view about the likelihood of success and acceptability of proposed management practices and measures to meet the NT EPA's objectives and thus enable it to provide informed advice and recommendations to decision-making bodies about the overall environmental acceptability of the proposal.

Consideration of EMPs in the assessment process also provides approving agencies with an opportunity to provide advice about the appropriateness of the measures

proposed in those plans that may be required in the subsequent sectoral approval process. This can assist in streamlining approval processes. Irrespective of whether a draft EMP is developed during the assessment process, the NT EPA may recommend the development and implementation of an EMP in its assessment report to the Minister.

Thirdly, the NT EPA may require an environmental management plan where it directly regulates impacts on the environment; specifically where it issues a licence or approval under the WMPC Act.

As noted in its 'Guideline for the Preparation of an Environmental Management Plan', draft plans prepared during the assessment process may form the basis of a plan required under other legislation, including those plans required under onshore gas and petroleum legislation and mining legislation, and may require revision once the environmental assessment process is complete to accommodate other management measures or recommendations by the NT EPA.

As the NT EPA's environmental impact assessment informs an approval, but does not itself comprise an approval, the NT EPA does not consider that the development of a draft environmental management plan during the assessment process may result in plans inconsistent with their own conditions as raised in your letter. The draft plan developed during the assessment process would have no standing once a matter is approved under the relevant legislation and in accordance with conditions of that approval, which may include an EMP based on advice from the NT EPA.

Waste Management and Pollution Control Act

You have noted the current demarcation in regulatory responsibility that exists between activities that occur within a permit area and outside of a permit area and in particular the exemption at section 6(2) of the WMPC Act insofar as the Act relates to petroleum activities. I would clarify that the exemption only applies to the extent that spill related impacts are wholly confined within the land on which an approved (under relevant petroleum legislation) petroleum exploration or extraction activity is being carried out. Where a spill occurs on the land but impacts are experienced outside of that land, the NT EPA may enter the petroleum site in order to investigate and enforce the WMPC Act.

In determining whether or not to take action under the WMPC Act the NT EPA will be guided by its 'Compliance and Enforcement Policy' and would consider the extent of the impact, the likelihood of the risk or impact reoccurring, the extent to which the operator had taken steps to resolve the impact and the public interest in pursuing the matter. The actions of the primary regulator, the Department of Primary Industry and Resources, would also be considered[4].

The NT EPA agrees that demarcations based on tenure fail to provide an appropriate and consistent risk-based approach to managing environmental impacts. It also considers that it creates an 'uneven' playing field between different industry types that may be subject to different regulatory regimes. As identified in its

[4] In this regard the NT EPA is mindful of pursuing enforcement action under its legislation where it could be reasonably considered that a defendant had already been penalised for the same action under other legislation.

Roadmap, the NT EPA agrees that there should be a single environmental regulator with responsibility for the management of impacts from wastes and pollution.

Waste transport certificates

The NT EPA administers waste transport certificates in accordance with the NT Government's obligations under the *National Environment Protection (Movement of Controlled Waste between States and Territories) Measure*.

Waste transport certificates document the movement of wastes between states and territories. They are not a control tool; the control tool is the relevant licence or authorisation issued by a jurisdiction to allow the person or company to transport wastes.

In the NT, the transport of listed wastes (as specified in Schedule 2 of the *Waste Management and Pollution Control (Administration) Regulations*) requires a licence issued under the WMPC Act. Where appropriate, licences require spill management plans and emergency management procedures that would be applicable generally to the types of waste that the entity is authorised to collect and transport.

I would welcome the opportunity to meet with you to discuss these issues if you have further queries or if any of the above requires further explanation.

Yours sincerely

DR PAUL VOGEL
Chairman

3 October 2017

cc: Ms Joanne Townsend, Chief Executive Officer, Department of Environment and Natural Resources
cc: Mr Alister Trier, Chief Executive Officer, Department of Primary Industry and Resources

ntepa Northern Territory Environment Protection Authority

Statement of Reasons

ORIGIN ENERGY RESOURCES LIMITED – 2016 HYDRAULIC STIMULATION AND WELL TESTING PROGRAM – AMUNGEE NW-1H

PROJECT

On 15 July 2016, the Department of Mines and Energy referred an Environmental Plan (EP) for the Origin Energy Resources Ltd (Origin) 2016 hydraulic stimulation and well testing program to the Northern Territory Environment Protection Authority (NT EPA) for consideration under the *Environmental Assessment Act* (EA Act).

Further information was requested on 4 August 2016 to inform the NT EPA's decision. Origin responded to the further information request on 9 August 2016.

Origin Energy Resources Limited (Origin) intends to continue its exploration and testing program in the Beetaloo Basin to determine the potential for oil and gas in the region. As part of the program, Origin has conducted a drilling program and has drilled three wells including Amungee NW-1H. Origin intends to undertake hydraulic stimulation and testing of this one well (the Project).

The project site at Amungee NW-1H has been established and the well has been drilled. Aspects of the well operations including the preparation of the lease and access, drilling, casing and cementing of the well, camp, and well operation and monitoring were previously considered under the EA Act, with the NT EPA deciding that assessment was not required.

The Amungee NW-1H well site is within the Amungee Mungee pastoral lease adjacent to the Carpentaria Highway approximately 60 km east of Daly Waters.

The stimulation and testing program is designed to gather further information regarding the geology and involves diagnostic fracture injection tests along a horizontal well to determine the target formation parameters, vertical fracture stimulation of the target Velkerri Shale formation by perforating the cemented casing within selected intervals along the horizontal well and fracturing through pumping operations. Fluid and gas samples from flow back will be collected and analysed.

The clean-up flow (recovered stimulation fluid) would be directed to a flare tank or lined flare pit. Once the well begins to recover gas, the flow would be diverted and directed through a separator to separate the gas and fluids. Following flowback/testing, the recovered fluid would be transferred into lined ponds (flexiponds) and left to evaporate. Post-evaporation, residual solids, brines and pond liners would be removed and disposed of at an appropriately licensed waste disposal facility.

It is estimated that between 0.5 – 1.5 million litres (ML) of water from existing bores would be required per stage with stimulation of up to 10-12 stages proposed (up to 15 ML total). The final volume will depend on whether slickwater or cross-linked gel fracture fluid systems are used. Bore water will also be required for camp operations.

Origin intends to conduct hydraulic stimulation and completion activities between August and September 2016, with well testing to immediately follow and run from September to December. Following this, the well would be suspended.

CONSULTATION

The EP and further information have been reviewed as a notification under the EA Act in consultation with Northern Territory Government (NTG) advisory bodies, as required by clause 8(1) of the Environmental Assessment Administrative Procedures.

JUSTIFICATION

There was insufficient information in the EP to enable the NT EPA to make a decision under the EA Act. The key issue identified was the uncertainty regarding the potential for contamination of groundwater aquifers and surface water through leaks and spills based on:

- lack of baseline groundwater and surface water information
- lack of sufficient detail on management measures for potential impacts
- lack of a monitoring program.

Generally, information regarding management of other potential impacts and risks such as weed management and erosion and sediment control was also identified by NT Government agencies as deficient.

The NT EPA requested further information and met with Origin to discuss the information presented. As well as acknowledging the deficiencies and providing the required information, Origin amended its proposal to ensure more certainty by committing to the hydraulic stimulation and testing of only the Amingee NW-1H well, which was completed in accordance with previous approvals.

In making its decision whether to assess the proposal the NT EPA considered the values of the environment, the nature and extent of the likely impacts, the management measures and procedures proposed by the Proponent, and standards against which the proposal could be assessed.

Accordingly, the NT EPA considers that the small scale, exploratory proposal is unlikely to have a significant effect on the environment. The NT EPA considers that the potential impacts associated with the proposal can be mitigated by the Proponent in accordance with its EP and associated documentation, with the regulatory oversight of the Department of Mines and Energy (DME).

Groundwater

Approximately 15 million litres (ML) of water is required for the proposal. The proponent has two groundwater bores to source the required amount within the Cambrian Limestone Aquifer (CLA). The Georgina Basin, within which the CLA is bedded, is estimated to have a sustainable yield of approximately 100 000 ML per annum. Consequently, the NT EPA is of the view that it is unlikely that the proposed groundwater abstraction would result in any significant impact on the environment or other groundwater users.

Cross-flow contamination of the regional groundwater aquifer from fracturing activities in the target formation was considered in the EP and determined by Origin to be of medium risk. The target geological formation is the Velkerri Shale. Unlike the coal seam gas hydraulic fracturing operations in eastern Australia, the targets for hydraulic fracturing in the current proposal are significantly deeper and therefore further from groundwater aquifers that are utilised for water supply. There is a large vertical separation distance between the target formation in this proposal and the utilised aquifer, the CLA, including approximately 1600 m of mixed impermeable and permeable rock formations. This exceeds the expected propagation distance for fractures. These intermediate rock layers are expected to act as a containment barrier to limit vertical fracture height growth within the target formation and prevent impacts on overlying aquifers.

The distance of high quality cement around the casing annulus between the formation and shallower lithologies (as determined by cement bond logs) provides confidence that leakage between formations through the well itself is also unlikely. The well will be pressure tested above the maximum fracture stimulation pressure prior to hydraulic stimulation to ensure integrity during the activity. Additionally, previous testing of the geological formations indicates that existing faults that could be intersected to induce leakage between formations and aquifers are likely to be absent.

Having considered these factors, the NT EPA is of the view that the risk of impacts on the hydrogeological function of the shallow aquifers from the hydraulic stimulation is low.

The risk of contamination of shallow aquifers from surface spills and leaks at the well site was of concern. Origin's risk assessment during the drilling campaign determined this risk to be low due to the depth to the CLA, retention properties of subsurface clay layers, spill volumes, timeframe for spill containment / remediation and existing controls. The assessment did not appear to take into account the depth to the shallow aquifer and there remains some uncertainty regarding the potential contamination from drill sumps. However, drilling has been completed and there have been no reports of spills or leaks of drilling muds/fluids at the site. Any impacts to underlying soils and the perched aquifer are likely to be localised and constrained by the limited volumes of materials in the sumps.

Stimulation fluids may be utilised. The likely chemical composition of fluids is outlined in the EP, which confirms that no fluids or additives used will contain BTEX (benzene, toluene, ethylbenzene and xylene). Origin will disclose the final composition of fluids and additives to DME prior to commencing activities and this will be made available on the DME website.

During hydraulic stimulation activities, flowback fluids would be directed to a double-lined flexi-pond with capacity to contain the maximum volumes of expected flowback from the formation and an additional 0.5 m freeboard. The flexipond has been tested for leaks using clean water and flexiponds are equipped with fluid level indicators for ongoing monitoring. Solids returned in flowback (including proppants) would be filtered from the fluids and diverted to the drill sump. Origin expects only a small amount of sand proppant to return (< 5 m^3) and would manage pressure drop on flowback to minimise this volume. The sand is handled in the same manner as drill cuttings or other solid drilling waste; it is contained in the drill sump, any residual fluids evaporated and then the sump covered with 750 mm of earth. Any residual impacts from sand proppants in sumps are likely to be relatively constrained within the footprint of the well pad and the water monitoring program should confirm this.

Origin has undertaken baseline assessment of all water bores within 10 km of the well location, and provided individual bore reports to the landowner and Department of Land Resource Management in 2015. In addition, Origin funded a third party to collect baseline data from water supply bores on Amungee Mungee to underpin make-good obligations should they arise. Shallow bores in the perched aquifer were also assessed.

Origin has prepared a groundwater monitoring plan to detect potential impacts associated with exploration activities, including hydraulic stimulation, to water quality and water levels in the vicinity of Amungee NW-1H. Analytes to be monitored are included in the plan and are considered appropriate. The monitoring plan indicates that there are five water bores that would be monitored within 500 m distance of the well, including two Amungee NW-1 water supply bores and three shallow aquifer bores. The closest CLA and perched aquifer bores are approximately 115 m and 160 m from the well site respectively.

The NT EPA is satisfied that the potential impacts and risks to groundwater are likely to be minimal and can be managed through measures proposed in the EP and Groundwater Monitoring Plan.

Surface water

Origin concluded that risks to surface water from fluid spills and leaks were low based largely on the seasonal rainfall patterns and the proposed timing of activities.

The risk of spills from flexiponds is considered low. Total flexipond capacity at the well site, including 0.5 m of freeboard, has been designed to exceed the 72 hour, 1 in 100 year average recurrence intensity rainfall event of 370.8mm, which is calculated from BOM Daly Waters historical rainfall Intensity-Frequency-Duration data. In the absence of active management and unseasonal rainfall, overflows are therefore considered unlikely.

In the event that freeboard was exceeded, operators have been instructed to transfer fluid between the flexiponds to maintain freeboard, or fluids would be removed from the site via water hauling trucks and transported in accordance with approved procedures in the EP. While the well site is adjacent to the Carpentaria Highway and full year access for water hauling trucks is expected, in the event that access roads became impassable, Amungee NW-1H well would be shut in (pumping stopped and well closed).

Following evaporation of flexiponds, waste fluids, residual solids, brines and pond liners would be removed and disposed of at an appropriately licensed waste disposal facility. While naturally occurring radioactive materials are not expected to be generated during the program, these will be tested for and, if present, managed under appropriate authority.

Baseline surface water quality data were considered insufficient to determine impacts to surface water in the event of a spill or leak. Origin maintained that the availability of surface water data was reflective of the seasons under which works were proposed to be undertaken and could only be obtained where surface water was present. Previous intense events at the site had not led to the presence of surface water. Origin has committed to collecting baseline samples opportunistically. In the event of a spill or leak during rain, sampling of any water present would occur upstream and downstream of the spill. In the event of a severe rain event where surface water accumulates, Origin has committed to 'shutting in' the well to terminate any fluid production from the well.

The NT EPA considers that the risks to surface water can be minimised by ensuring hydraulic fracture stimulation occurs in the Dry season. Potential impacts can be mitigated through the implementation of management measures included in Origin's EP, response to further information and operating procedures.

Other potential impacts and risks

The NT EPA considers that the potential impacts and risks associated with erosion and sediment control and weeds, as well as biodiversity, social and heritage aspects, are largely associated with the site access, vegetation clearing, ground disturbance and works undertaken as part of the previously approved drilling program for Amungee NW-1H. Any further potential for impacts can be adequately managed through the implementation of measures included in Origin's EP.

The NT EPA considers that the environmental impacts and risks associated with the Project are not significant and that the Project does not require assessment under the EA Act.

DECISION

The environmental significance of the 2016 hydraulic stimulation and well testing program (Amungee NW-1H) is such that a public environmental report or an environmental impact statement is not necessary and, subject to clause 14A of the Environmental Assessment Administrative Procedures, the administrative procedures are at end with respect to the proposed action.

DR BILL FREELAND

CHAIR

NORTHERN TERRITORY ENVIRONMENT PROTECTION AUTHORITY

17 AUGUST 2016