28 February 2020

Ms Sally Stromayr
Director Onshore Petroleum
Environment Division |
Department of Environment and Natural Resources
Level 1, Arnhemica House, 16 Parap Road, Parap NT 0820

Attention: Sandy Griffin and Linda Pugh

Dear Sally Stromayr

Revision of a part of an Environmental Management Plan: Beetaloo Basin Groundwater Monitoring Bore Installation Program Kyalla 117 N2.

Origin is writing to the department of Environment and Natural Resources (DENR) to request an amendment to the Beetaloo Basin Groundwater Monitoring Bore Installation Program - Kyalla 117 N2 Environmental Management Plan (referred to herein as the "EMP") NT-2050-15-MP-0017.

Origin is proposing to amend Table 2 of the EMP, to increase the approved disturbance limits for gravel A and Gravel pit 3. This increased in disturbance is required to access gravel to perform ongoing access track maintenance and repair activities to the Kyalla 117 N2 and Velkerri 76 S2 sites. The original gravel estimates for the access track were insufficient, as the soils encountered require significantly more gravel to be applied to ensure they are maintained in an operatable condition. The use of this gravel will ultimate reduce dust generation, increase safety and reduce the risk of vehicle accident.

This amendment also proposes to remove Gravel Pit 2 from the approval- which has not been disturbed and does not contain material quantities of gravel.

A map of the proposed additional minor scope is provided in Attachment 2.

The proposed changes will result in an increased project disturbance of 4.75 hectares, with the total disturbance for the gravel pits increasing from 4 hectares to 8.75 hectares. The total Kyalla 117 N2 activity disturbance will increase from 14.18 hectares to 18.93 hectares.

The Gravel Pit A location is characterised by Acacia low woodland/low open tussock grassland. The vegetation is sparse and requires limited removal of mature trees to extract the gravel. This vegetation community is considered regionally extensive and not subjected to extensive clearing. A land condition assessment summary of the site is provided in Attachment 1- Table 1

The area of gravel pit 3 is characterised by Acacia open forest/Acacia tall open shrubland/Chrysopogon (mixed) low open tussock grassland. This vegetation community is

considered regionally extensive and not subjected to extensive clearing. A land condition assessment summary of the site is provided in Attachment 1- Table 2.

The following information regarding the environmental, cultural and pastoralist aspects have been provided for your consideration.

Environment

- The risk profile is consistent with the existing activities within the approved EMP.
- The amendment of the gravel pit locations within the EMP does not result in material increase the level of risk or impacts associated with the activity. Clearing levels remain small, 0.00025% of Origin's tenure area. The change risk assessment is provided in Attachment 2.
- The proposed areas have been scouted and do not contain threatened flora and fauna.
- The vegetation communities proposed to be cleared are regionally extensive and not threatened.
- The proposed areas have been baselined and are free of weeds.
- The increased use of gravel will improve the condition of the road- which will reduce dust generation and reduce the risk of traffic accident. This will have a benefit to the vegetation communities adjacent to the access tracks through reduced dust exposure.
- The risk mitigation controls outlined in the existing EMP are identical and will not require any amendment to accommodate the additional scope.
- The activities are covered under the existing Erosion and Sediment Control Plan, Weed Management Plan and Emergency Response Plan
- The additional minor scope is sufficiently covered under the existing security titled *Agreement: Groundwater Monitoring Program Rehabilitation Provisions- Eight Groundwater monitoring bores located across EP 76, 98 and 117 as outlined in NT-2050-15-MP-0014, NT-2050-15-MP-0017 and NT-2050-15-MP-0018.* This security provision is extremely conservative ad has allowed for approximately $2.2million for water bore associated disturbances: including access tracks, water bore lease pads and gravel pits

- **Cultural Heritage:**
  - The proposed gravel pit location is covered by Origin's current AAPA Certificate C2020/03, with the appropriate NLC clearances obtained. AAPA clearance allows for up to 250x250m (6.25 hectares)

- **Stakeholder engagement:**
  - Stakeholder engagement regarding the additional Gravel pit has been undertaken with no questions raised. The taking of gravel is covered under the existing land access approval.

Summary of change summary:

It is proposed that the existing Table 2 within the Kyalla 117 is updated to reflect the following table:

Table 2 of the Kyalla 117 N2 Groundwater Monitoring Bore EMP

Exploration Permit	Gravel Pit	Station	Zone*	Approx Easting	Approx Northing	Disturbance Area (ha)
EP117	Gravel Pit 1	Shenandoah	53	339880	8134770	0.25
EP117	Gravel Pit 3	Shenandoah East	53	362876	8134932	6.25
EP117	Gravel Pit A	Shenandoah	53	333798.5	8135069.1	2.25
Total Gravel Pit Disturbance Area for the activity (Ha)						**8.75ha**

If you require any further information, please do not hesitate to call me on 0467700565.

Kind Regards

Matt Kernke

Matt Kernke
Approvals Lead- Beetaloo and Growth Assets

Attachment 1- Land Condition Assessment

Table 1

Site ID	Gravel Pit 1	Habitat photos at central point of survey site (June 2019)
Location	-16°51'42.60”S, 133°26'23.88”E	 
Landform and soil	Lateritic plains and gently undulating rises. Gravelly lithosols, some shallow red and yellow earths; well drained.	
Habitat type	Acacia low woodland/*Eragrostis* (mixed) low open tussock grassland. Surrounded by *Acacia shirleyi* (Lancewood) and *Macropteranthes kekwickii* (Bullwaddy) forest.	
Vegetation Community	Acacia low woodland/low open tussock grassland This vegetation community is considered regionally extensive and not subjected to extensive clearing.	
Dominant flora species	Canopy dominated by a *Corymbia dichromophloia* (10%), *Erythrophleum chlorostachys*. Shrub layer including *Eucalyptus/Corymbia* regrowth, *Acacia lysiphloia* (Turpentine) *Terminalia canescens*, Ground layer dominated by *Triodia bitextura.*	 
Habitat condition	Habitat disturbed through evidence of recent grazing. Low numbers of hollow bearing trees and logs. The habitat contained low refuge opportunities due to the disturbed nature of the area. North of the proposed gravel pit consisted of Lancewood/Bullwaddy community. No evidence of weeds or feral animals during inspection.	**Additional Habitat Photos across survey site (June 2018)**

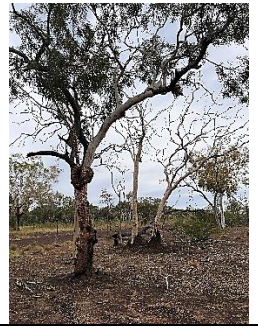
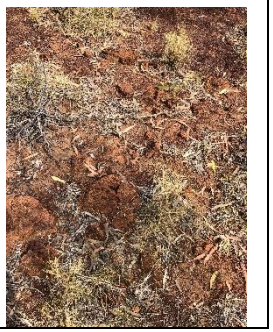
Site ID	Gravel Pit 1	Habitat photos at central point of survey site (June 2019)
Potential Listed Threatened Species	Grey Falcon, Northern Crested Shrike-tit, Gouldian Finch, Painted Honeyeater, Yellow-spotted Monitor. Consider low risk due to the proposed size of the disturbance and the condition of the surrounding habitat.	  

Table 2

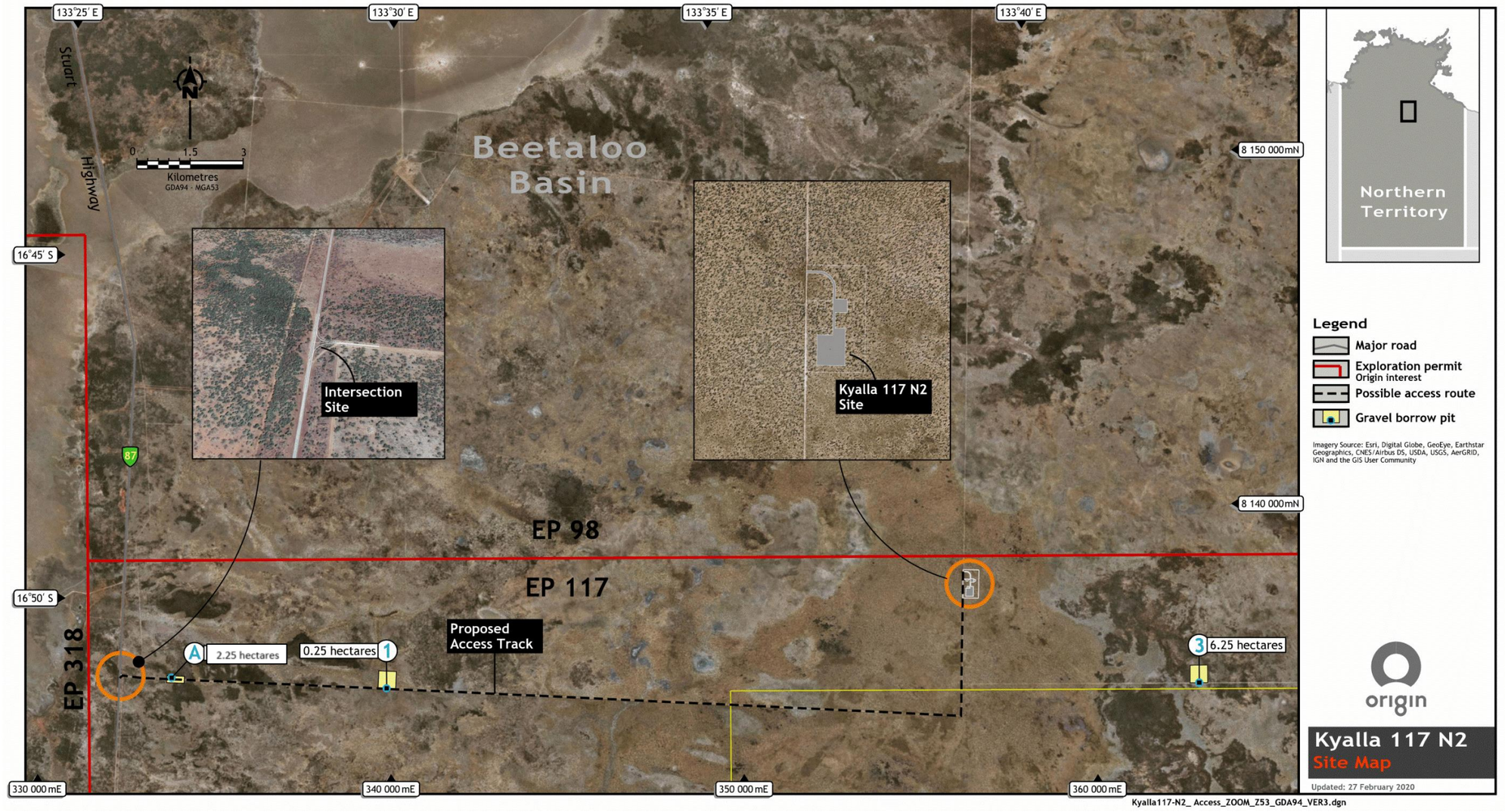
Site ID	Gravel Pit 3	Habitat photos at central point of survey site (June 2019)	
Location	-16°51'46.94”S, 133°42'41.44”E		
Landform and soil	Lateritic plains and gently undulating rises. Gravelly lithosols, some shallow red and yellow earths; well drained.		
Habitat type	*Corymbia* (mixed) open woodland / *Acacia shirleyi* forest/ open forest		
Vegetation Community	Mixed *Corymbia* sp. open woodland surrounded by *Acacia shirleyi* forest/ open forest with *Macropteranthes kekwickii* open shrubland over low open tussock grassland.		
Dominant flora species	Canopy dominated by a *Corymbia dichromophloia* (10%). Shrub layer including *Eucalyptus/Corymbia* regrowth, *Terminalia canescens*, *Calytrix exstipulata*, *Acacia neprima* Ground layer dominated by *Triodia bitextura.*		

Site ID	Gravel Pit 3	Habitat photos at central point of survey site (June 2019)
Habitat condition	Habitat disturbed through evidence of recent grazing and previous fire through area. Low numbers of hollow bearing trees and logs. The habitat contained low refuge opportunities due to the disturbed nature of the area. North of the proposed gravel pit consisted of Lancewood/Bullwaddy vegetation community. No evidence of weeds or feral animals during inspection.	 
Potential Listed Threatened Species	Grey Falcon, Northern Crested Shrike-tit, Gouldian Finch, Painted Honeyeater, Yellow-spotted Monitor. Consider low risk due to the proposed size of the disturbance and the condition of the surrounding habitat.	**Additional Habitat Photos across survey site (June 2018)**   

Attachment 2 Main risks assessed as a part of change

Environmental Factor	Risk Description	Risk Source	Unmitigated consequence (COP implemented)	Risk mitigation Measures		Residual Risk Rating			Risk justification statement
				Codes of Practice	Site specific risk mitigation measures	Consequence	Likelihood	Risk Rating	
Terrestrial Ecology	Additional clearing causes material impact to the quality and viability of terrestrial ecosystems of the area	Increased in Gravel pit disturbance from 4 hectares to 8.75 hectares.	Low	A.3.5	• Ecological scouting has been completed on all areas •All areas of proposed clearing are regionally extensive, are unlikely to contain threatened flora and fauna • The disturbance area requested has been minimised • Pits located to avoid clearing vegetation (where possible) • The area will be rehabilitated	1	1	Low	The risk rating of low is reflective of the small scale of the increased disturbance level, with all vegetation to be cleared regionally extensive and not threatened. The additional 4.75 hectares is small, representing 0.00025% of the broader OE 1,8500,000 hectare tenure area. The availability of habitat in the area means the loss through clearing is unlikely to have a material impacts on ecological function.
	Cumulative impact of increased disturbance on regional ecosystems	Total OE disturbance from Kyalla 117 N2 and Velkerri 76 S2 increased from 26.18 to 35.93 hectares (includes proposed additional Kyalla 117 N2 and Velkerri 76 S2 gravel disturbance of 9.75Ha)	Low	A.3.6	• Gravelling and forming access tracks will reduce dust emissions- decreasing disturbance on adjacent vegetation communities through dust generation • All areas of proposed clearing are regionally extensive, are unlikely to contain threatened flora and fauna • The broader area has (relative to the total area) a small amount of existing clearing- largely restricted to fencelines and firebreaks (no broad scale clearing	1	1	Low	The risk rating of low is reflective of the small scale of the increased disturbance level, with all vegetation to be cleared regionally extensive and not threatened. The additional 4.75 hectares is small, representing 0.00025% of the broader OE 1,8500,000 hectare tenure area. Broad clearing in the area is low, with clearing restricted to fence lines and fire breaks for pastoral activities. The availability of habitat in the area means the loss through clearing is unlikely to have a material impacts on ecological function
Soils	Erosion and sediment releases	Clearing results in increased erosion and sediment release	Low	A3.4	•Pits are designed and constructed to allow water to flow inwards (into the pit)- reducing the potential for erosion and offsite releases of sediment •Existing erosion and sediment control plan in place with •Erosion and sediment controls to be deployed including using cleared vegetation	1	3	Low	Gravel pits invariably involve the removal of material to create a working pit. Topsoil will be stripped and place around the pit with cleared veg

Environmental Factor	Risk Description	Risk Source	Unmitigated consequence (COP implemented)	Risk mitigation Measures		Residual Risk Rating			Risk justification statement
				Codes of Practice	Site specific risk mitigation measures	Consequence	Likelihood	Risk Rating	
					to reduce runoff velocity and stabilise areas surrounding pit				
Cultural Heritage	Impacts on cultural Heritage	Clear for gravel extraction impacts a sacred site	Low	PER	All proposed activities are covered under the existing AAPA certificate 2020/003- with disturbance approved up to 6.25 hectares.	1	1	Low	All proposed activities are covered under the existing AAPA certificate 2020/003- with disturbance approved up to 6.25 hectares. The AAPA certificate indemnifies OE form any impacts to sacred sites within cleared areas.



Attachment 3- Map of Proposed Area