



Report

Integrated Gas

BEETALOO BASIN GROUNDWATER MONITORING BORE INSTALLATION PROGRAM EP 76, EP 98 EP 117 Annual Environmental Performance Report

THE THREE WHATS

**What can go wrong?
What could cause it to go
wrong?
What can I do to prevent it?**

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Document Details

Document title	Beetaloo Basin Groundwater Monitoring Bore installation Program EP 76, EP 98 and EP 117 Annual Environmental Performance Report
EMPs Covered	Beetaloo Basin Groundwater Monitoring Bore Installation Program Velkerri 76 Beetaloo Basin Groundwater Monitoring Bore Installation Program EP98: Beetaloo Basin Groundwater Monitoring Bore Installation Program Kyalla 117
Permit	EP 76, EP98 and EP 117
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1	20/11/2020	Updated to address DEPWS comments		MK	TB
1.1	02/12/2020	Update to address DEPWS comments		MK	TB
1.2	17/12/2020	Update to address DEPWS comments		Mk	TB

Signature and certification

I hereby declare that the information provided in this annual environment performance report and accompanying documents is to the best of my/our knowledge, true and correct.	
Signature	
Name	Tracey Boyes
Position	General Management Beetaloo and Growth Assets
Date	17/12/2020

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1. Introduction

The Petroleum (Environment) Regulations 2016 (NT) include a requirement¹ for the interest holder to provide a report to the Minister on an annual basis that outlines the environmental performance of regulated activities. The Annual Environment Performance Report (AEPR) must include sufficient information to allow the Minister to assess whether the interest holder has met the environmental outcomes and environmental performance standards included in the approved Environment Management Plan (EMP). The report is to consider information required to be recorded, monitored or reported under the Petroleum (Environment) Regulations 2016 (NT) and any other law in force in the Northern Territory related to conduct of the regulated activity.

This AEPR covers the regulated activities approved under the following EMP's:

- Beetaloo Basin Groundwater Monitoring Bore Installation Program EP98 approved 22/11/2018
- Beetaloo Basin Groundwater Monitoring Bore Installation Program Kyalla 117 approved 10/12/2018
 - monitoring bore lease pad modification, submitted 19/02/2019
 - gravel pit modification submitted 28/06/2019
 - gravel pit modification submitted 11/07//2019.
- Beetaloo Basin Groundwater Monitoring Bore Installation Program Velkerri 76 approved 10/07/2019

The AEPR covers the following reporting periods:

- Beetaloo Basin Groundwater Monitoring Bore Installation Program EP98: 22/11/2018-21/11/2019
- Beetaloo Basin Groundwater Monitoring Bore Installation Program Kyalla 117 10/12/2018-09/12/2019
- Beetaloo Basin Groundwater Monitoring Bore Installation Program Velkerri 76 10/07/2019-09/07/2020

1.1 Acronyms and abbreviations

Table 1 summary of acronyms and abbreviations

Acronym	Definition
AAPA	Aboriginal Area Protection Authority
COP	Code of Practice: Onshore Petroleum Activities in the Northern Territory
DEPWS	The Department of Environment, Parks and Water Security
DITT	Department of Industry, Innovation and Trade
FTP	File Transfer Protocol
Ha	Hectare
OCIS	Origins Collective Intelligence System used for managing incident data
PER	Petroleum (Environment) Regulations

1.2 Background

The regulated activities that have been assessed under this AEPR are as follows:

¹ Petroleum (Environment) Regulations 2016 (NT) sch 1, item 11.

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- Groundwater Monitoring Bore Installation EP98
 - Construction of a single monitoring bore lease pad and access track
 - Drilling of a single Gum Ridge control groundwater monitoring bore
- Groundwater Monitoring Bore Installation Program EP 117
 - Construction of the control monitoring bore lease pad
 - Construction of the impact monitoring lease pad
 - Construction and maintenance of approximately 500m access tracks connecting the site to the existing pastoralist access track and between the monitoring bore lease pads
 - Construction and use of gravel pit A and Gravel Pit 3
 - Drilling of 3 control groundwater monitoring bores targeting the Anthony Lagoon (x2) and Gum ridge Formation (x1)
- Groundwater Monitoring Bore Installation Program EP 76
 - Construction of the control monitoring bore lease pad
 - Construction of the impact monitoring bore lease pad
 - Construction and maintenance of a 1500m access tracks connecting the site to the existing pastoralist access track and between the monitoring bore lease pads
 - Construction and use of gravel pit 7
 - Drilling of 2 control groundwater monitoring bores targeting the Anthony Lagoon (x1) and Gum Ridge (x1) formation.

A timeline of the activities is provided in Figure 1. A Location of the regulated activities is provided in Figure 2, Figure 3 and Figure 4.

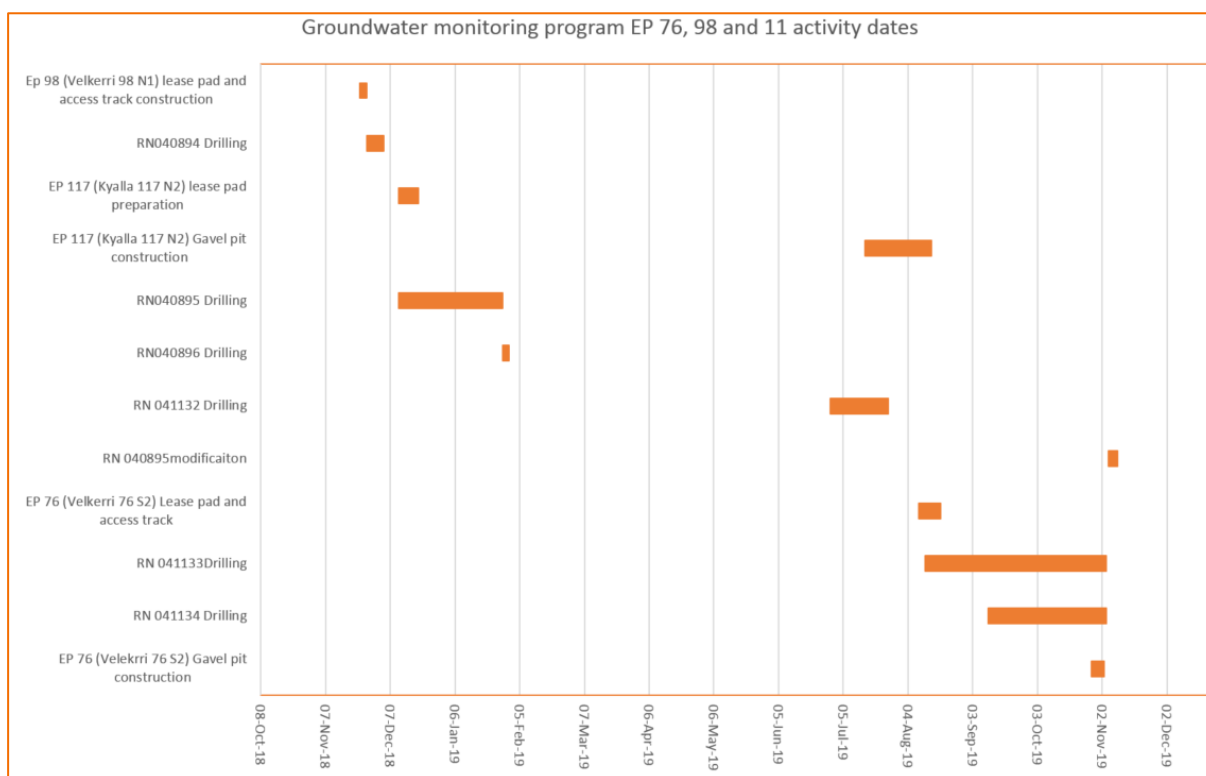


Figure 1 Gantt chart of activities completed under this AEPR

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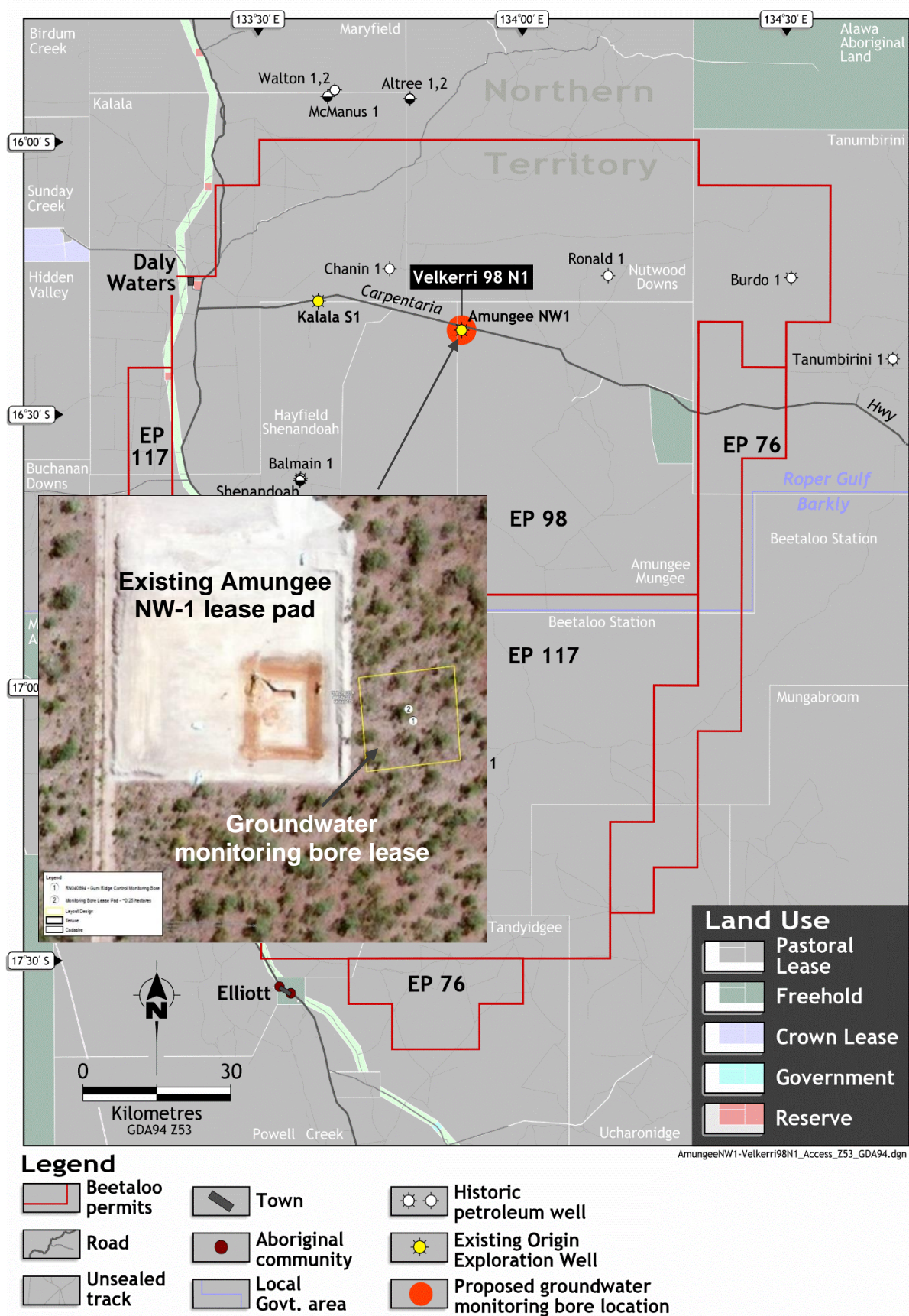


Figure 2 Amungee NW-1 Lease (Beetaloo Basin Groundwater Monitoring Bore installation Program EP 98)

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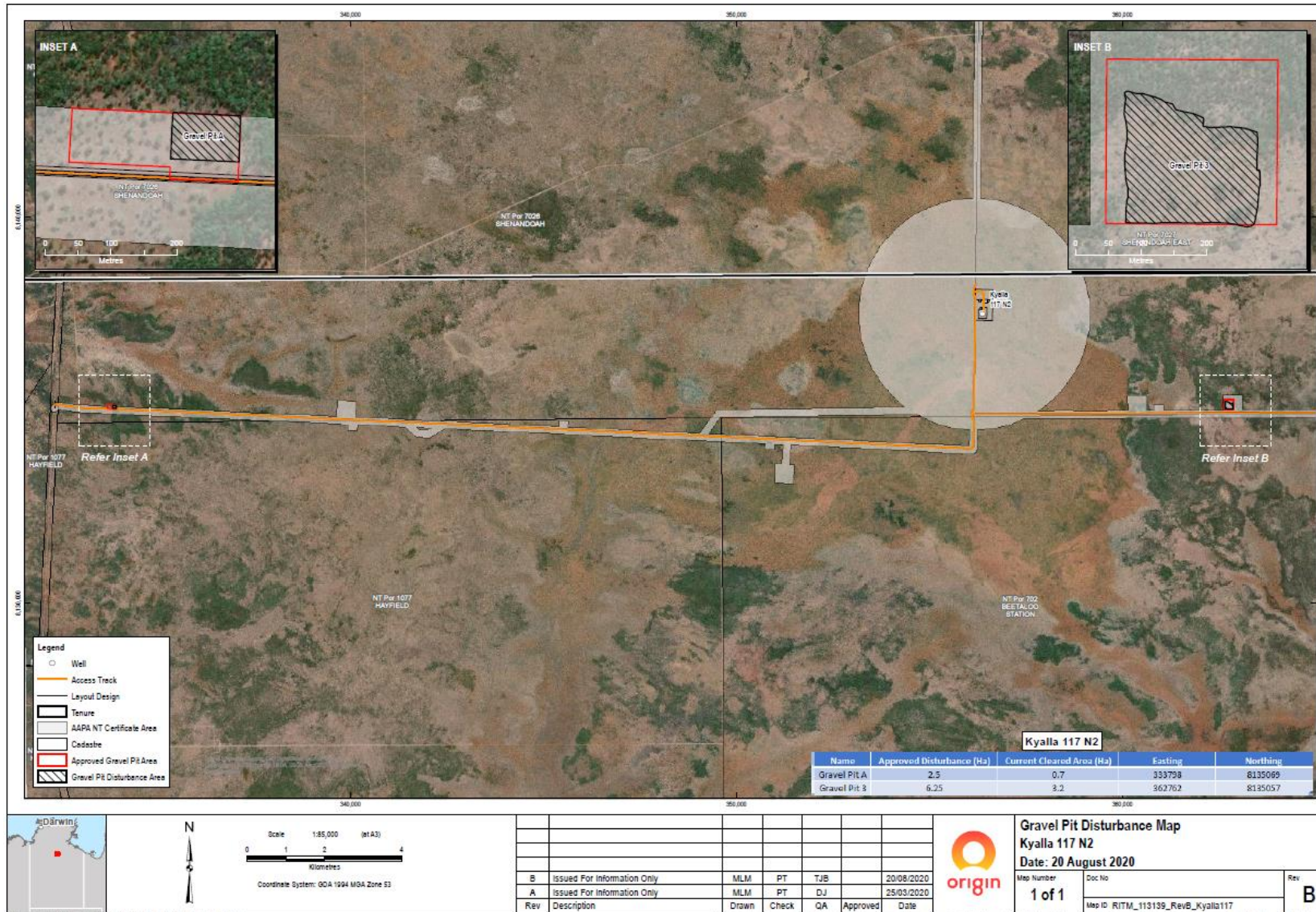


Figure 3 Beetaloo Basin Groundwater Monitoring Bore Installation Program Kyalla 117

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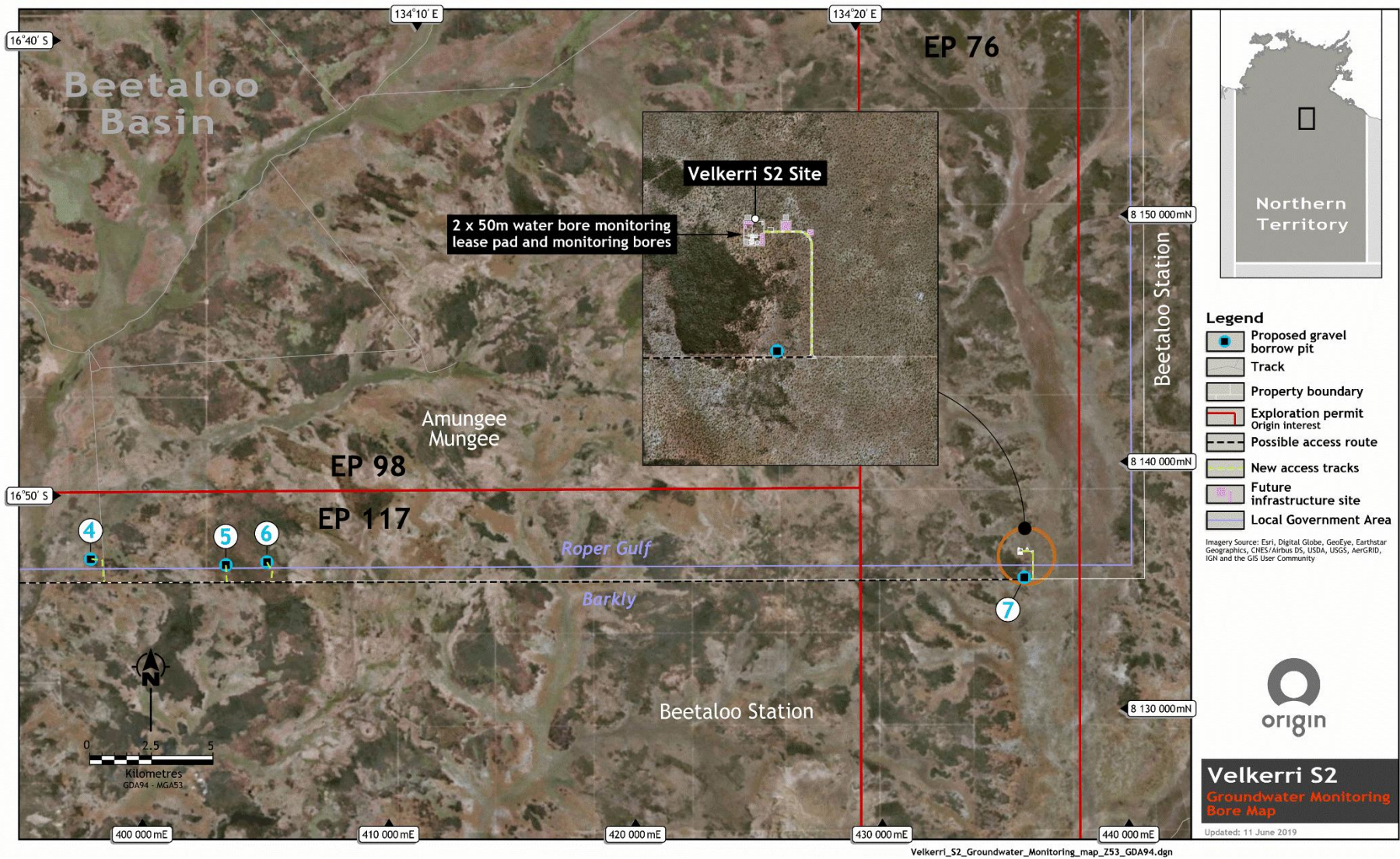


Figure 4 Beetaloo Basin Groundwater Monitoring Bore Installation Program Velkerri 76

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1.3 Contents of Performance Report

This AEPR describes the environmental performance of Origin by evaluation of the following:

1. compliance with Ministerial approval conditions, for each EMP
2. compliance with each environmental outcome and environmental performance standard within the approved EMP's
3. compliance with reporting requirements in accordance with the Code and Regulations
4. all recordable and reportable incidents, including root cause analysis and related corrective actions to prevent re-occurrence
5. findings of all regulatory inspections and audits and related actions to address any findings.

1.4 Assessment of compliance

Table 2 shows the compliance status indicators used in this AEPR which have been defined by the Department of Environment, Parks and Water Security (DEPWS).

Table 2 Compliance Descriptors

Indicator	Description
Compliant	Compliant with requirement for entire 12-month reporting period
Partially Compliant	Compliant with requirement for most of year, short periods of non-compliance
Not Compliant	Interest holder did not comply with the requirement during the reporting period
Not Applicable	Requirement not applicable during the reporting period

1.5 Evidence of compliance

The following sources of evidence are used to demonstrate compliance:

1. internal tracking of compliance by Origin Energy through:
 - internal assurance audits, observations and incident reporting
 - Routine inspections, as committed to in the EMP/s, as follows:
 - i. Pre and post wet season weed inspections completed 4-6 June 2019 and 22-25 October 2019
 - ii. Pre and post site stability inspections (completed during routine construction superintendent inspections) with maintenance actioned as required
 - iii. Weekly inspection and monitoring by site supervisors for operational control effectiveness
 - Internal formal annual audits of compliance, as follows:
 - i. Annual assurance of activities completed on the 04/09/2019 by Project Manager
2. outcomes from regulatory inspection/s conducted by the Department of Environment and Natural Resources (DEPWS), Petroleum Operations
3. recordable and reportable incident reports submitted to DEPWS Petroleum Operations
4. reports provided to DEPWS, the Department of Primary Industry and Resources (DPIR) and other government agencies.

2. Demonstration of Compliance

2.1 Ministerial Condition compliance

Table 3 demonstrates Origin's compliance with Ministerial EMP approval conditions.

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Table 3 Ministerial condition summary table

No	Ministerial condition	Compliance Status	Evidence
Beetaloo Basin Groundwater Monitoring Bore Installation Program EP98			
2a	Water monitoring bores will be drilled and constructed by a water bore driller licensed under the Water Act and in accordance with the current version of the Minimum Construction Requirements for Water bores in Australia	Compliant	Water bore drilled by Allwell, with licenced driller DL0157. A statement of bore was submitted to the NT Water Resources division of DEPWS by Allwell drilling upon completion of the bore.
2b	The groundwater bore installation must be completed within 12 months from the date of this approval.	Compliant	A statement of bore was submitted to the NT Water Resources division of DEPWS by Allwell drilling upon completion of the bore. The Statement of bore demonstrates the drilling of bore was completed within the required timeframe.
Beetaloo Basin Groundwater Monitoring Bore Installation Program Kyalla 117			
2a	Water monitoring bores will be drilled and constructed by a water bore driller licensed under the Water Act and in accordance with the current version of the Minimum Construction Requirements for Water bores in Australia	Partially compliant	Water bores drilled by Allwell, with licenced driller DL0157. A statement of bore was submitted to the NT Water Resources division of DEPWS by Allwell drilling upon completion of RN040895. DEPWS identified discrepancies in the formation pick, which resulted in Origin modifying the bore to align with DEPWS's interpretation of the underlying formations. The Statement of bore and modification permits demonstrates the bores are compliant with the Minimum Construction Requirements for Water bores in Australia.
2b	The groundwater bore installation must be completed within 12 months from the date of this approval.	Compliant	A statement of bore was submitted for each bore to the NT Water Resources division of DEPWS by Allwell drilling post bore completion. The Statement of bore demonstrates the drilling of the control monitoring bores were completed within the 12-month period. Impact bores were completed under the Kyalla 117 N2-1 Drilling, stimulation and well testing EMP. The statement of bore for each.
Beetaloo Basin Groundwater Monitoring Bore Installation Program- Velkerri 76			
2a	Water monitoring bores will be drilled and constructed by a water bore driller licensed under the Water Act and in accordance with	Compliant	Water bores drilled by Allwell, with licenced driller DL0157.

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No	Ministerial condition	Compliance Status	Evidence
	the current version of the Minimum Construction Requirements for Water bores in Australia		A statement of bore was submitted to the NT Water Resources division of DEPWS by Allwell drilling upon completion of the bore.
2b	The groundwater bore installation must be completed within 12 months from the date of this approval.	Compliant	A statement of bore was submitted to the NT Water Resources division of DEPWS by Allwell drilling upon completion of the bore. The Statement of bore demonstrates the drilling of bore was completed within the required timeframe.

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2.2 Environmental outcomes and performance standards

Table 4 provides a systematic overview of Origin Energy’s compliance with the environmental outcomes and environmental performance standards within the approved EMP/s.

Table 4 Environmental outcome and performance standard compliance summary

Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
Beetaloo Basin Groundwater Monitoring Bore Installation Program EP98				
1	<ul style="list-style-type: none"> Minimise disturbance to land and land use (including soils and terrain, flora and fauna). Protection of waterways. Avoid site contamination and remediate land areas disturbed by water bore drilling activities, including contaminated land. Optimise (in order of most to least preferable) waste avoidance, reduction, reuse, recycling, treatment and disposal and remove and disposal of regulated waste as soon as practicable to a licensed waste disposal facility or recycling facility. 	<ul style="list-style-type: none"> Land disturbance restricted to approved, scouted area. 	Compliant	<ul style="list-style-type: none"> Approved clearance area of 0.31 hectares, with site inspection confirming approximate arial extent complies with limits The disturbance area is within the scouted area covered by the Land Condition Assessment and within the AAPA approved area. This has been confirmed through site inspections.
2	<ul style="list-style-type: none"> Minimise impacts to groundwater and maintain surface and groundwater values. Minimise erosion and sedimentation of waters as a result of water bore drilling activities. 	<ul style="list-style-type: none"> Areas left uncontaminated, safe, stable and non-polluting 	Compliant	<ul style="list-style-type: none"> Area inspected by Origin staff post-activity close out confirming all waste removed and erosion and sediment controls in place. Inspection of site is undertaken at least every 28 days to identify any site stability/defect issues. Contracts are in place to perform maintenance, with email correspondence / billing and periodic site visits by Origin staff confirm maintenance is occurring.
3	<ul style="list-style-type: none"> Minimise disturbance to land and land use (including soils and terrain, flora and fauna). Protection of waterways. Avoid site contamination and remediate land areas disturbed by water bore drilling activities, including contaminated land. Optimise (in order of most to least preferable) waste avoidance, reduction, reuse, recycling, treatment and disposal and remove and disposal of regulated waste as soon as practicable to a licensed waste disposal facility or recycling facility. 	<ul style="list-style-type: none"> No unacceptable risk or long-lasting change to surface and/or groundwater resources (quantity and quality). 	Compliant	<ul style="list-style-type: none"> Groundwater monitoring results collected from monitoring bores and submitted to DEPWS periodically. Monitoring bore results confirm the encountered water quality is

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
				consistent with the expected Gum Ridge water quality.
4		<ul style="list-style-type: none"> No release of site stormwater or wastewater exceeding baseline surface water quality 	Compliant	<ul style="list-style-type: none"> Stormwater retained onsite as the monitoring bore lease is surrounded by topsoil stockpiles minimising stormwater release. No wastewater generated No incidents relating to releases of wastewater to surface water recorded in Origin's incident management system.
5		<ul style="list-style-type: none"> No long-lasting change in soil and surface water quality from base line conditions. 	Compliant	<ul style="list-style-type: none"> No incidents of soil contamination or releases to surface water recorded in Origin's incident management system.
6		<ul style="list-style-type: none"> Stream and creek crossings disturbance minimised. 	Compliant	<ul style="list-style-type: none"> No clearing in waterways has occurred. Disturbance located in approved area adjacent to existing lease pad.
7	<ul style="list-style-type: none"> Minimise disturbance to flora and fauna. Minimise disturbance to sensitive areas. 	<ul style="list-style-type: none"> Monitoring bore lease located to minimise impacts to fauna habitat and sensitive vegetation. 	Compliant	<ul style="list-style-type: none"> Disturbance located in approved area adjacent to existing lease pad.
8		<ul style="list-style-type: none"> No native fauna impacts (injury or fatality) reported in OCIS during civil and water bore drilling related activities 	Compliant	<ul style="list-style-type: none"> No incidents recorded fauna mortalities during groundwater monitoring bore activities recorded in Origin's incident management system.
9		<ul style="list-style-type: none"> Security bond maintained until such time DPIR is satisfied remediation of site. 	Compliant	<ul style="list-style-type: none"> Security bond submitted to DPIR and approved 19/11/2018
10		<ul style="list-style-type: none"> No loss of sensitive vegetation resulting from Origin's activities. 	Compliant	<ul style="list-style-type: none"> No clearing in waterways has occurred. Disturbance located in

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
				approved area adjacent to existing lease pad.
11	<ul style="list-style-type: none"> Avoid the introduction of weeds Avoid the spread of existing weeds 	<ul style="list-style-type: none"> No introduction or spread of declared weeds resulting from Origins activities. 	Compliant	<ul style="list-style-type: none"> 6 monthly weed inspections completed in consultation with DEPWS. No weeds identified in constructed water monitoring lease area. Annual weed report submitted to DEPWS Weeds branch 20/01/2020. Summary of weed controls implemented submitted to DEPWS on 26/08/20 Assurance checks completed on equipment mobilised to site.
12	<ul style="list-style-type: none"> To minimise impacts on soil, surface water, groundwater, sensitive habitat and air quality. 	<ul style="list-style-type: none"> Waste registers maintained for the duration of the project. . 	Compliant	<ul style="list-style-type: none"> Waste data provided to Origin as a party of monthly HSE reports. No material listed waste produced during water bore drilling activity, with no equipment maintenance activities completed onsite. Any incidental listed waste (such as oily rags, batteries etc. that is of insufficient quantity for a listed waste contractor to be engaged) is backloaded Darwin and removed by the contractor's listed waste service provider once volumes are sufficient..
13	<ul style="list-style-type: none"> To minimise creation of food sources or habitat for pest species. To minimise waste generation through reduce, reuse, recycle programs. 	<ul style="list-style-type: none"> Pest species not encouraged to the site. 	Compliant	<ul style="list-style-type: none"> All workers located at Daly Waters. No observations or incidents of wild dogs, pigs or other pest species frequenting the site recorded in Origin's incident management system.
14		<ul style="list-style-type: none"> The absence of wastes remaining on site at completion of operations (i.e. general rubbish, waste 	Compliant	<ul style="list-style-type: none"> Area inspected by Origin staff post activity close out confirming all

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
		chemicals, workshop wastes including oily rags, containers etc.).		waste removed and erosion and sediment controls in place. <ul style="list-style-type: none"> Task observations completed by site supervisors
15	<ul style="list-style-type: none"> Minimise environmental nuisance due to dust for sensitive receptors resulting from Origin's activities. Minimise greenhouse gas emissions. 	<ul style="list-style-type: none"> Minimal complaints regarding dust/air quality. 	Compliant	<ul style="list-style-type: none"> Dust suppression utilised as confirmed in daily activity reports Task observations completed by site supervisors No pastoralist complaints recorded during activity recorded in Origin's incident management system.
16		<ul style="list-style-type: none"> Amicable resolution of complaints 	Not Applicable	<ul style="list-style-type: none"> No pastoralist complaints recorded during activity recorded in Origin's incident management system.
17	<ul style="list-style-type: none"> Minimise the environmental nuisance for sensitive receivers as a result of civil and water bore activities, including Tourist visual amenity. 	<ul style="list-style-type: none"> Minimal nuisance-related complaints received from sensitive receptors, including landowners 	Compliant	<ul style="list-style-type: none"> Dust suppression utilised as confirmed in daily activity reports Task observations completed by site supervisors regarding dust and noise impacts/hazards No pastoralist complaints recorded during activity recorded in Origin's incident management system.
18		<ul style="list-style-type: none"> Amicable resolution of complaints. 	Not Applicable	<ul style="list-style-type: none"> No pastoralist complaints recorded during activity recorded in Origin's incident management system.
19	<ul style="list-style-type: none"> Minimise the risk of causing bushfires from Origin's activities. To minimise impacts on environmental habitat and fauna, soil erosion, impacts on stakeholders, impacts on culturally 	<ul style="list-style-type: none"> Successful fire management will be indicated by having no uncontrolled fires occurring as a result of civil works and water bore drilling activities. 	Compliant	<ul style="list-style-type: none"> No uncontrolled fires observed resulting from Origin's activities recorded in Origin's incident management system.

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
	<p>significant sites, public infrastructure and community lands.</p> <ul style="list-style-type: none"> To ensure proper health and safety plan for activities. To prevent accidental fire risk and ensure safe storage of chemicals to prevent fire damage 			
20	<ul style="list-style-type: none"> To avoid disturbance of or damage to Aboriginal or cultural heritage artefacts or Sacred Sites. To minimise impacts upon or disruption to activities of Indigenous stakeholders in culturally significant areas. To ensure adequate background information and training is provided to employees and contractors working in culturally significant areas. To ensure that the health and safety of exploration workers and the community is not compromised through management of cultural and environmental awareness. 	<ul style="list-style-type: none"> No incidences of disturbance of archaeological sites or sites of cultural significance, or if disturbance is required, an application to disturb is submitted and approved prior to disturbance 	Compliant	<ul style="list-style-type: none"> Disturbance located in AAPA approved area adjacent to existing lease pad.
21	<ul style="list-style-type: none"> Minimise impacts upon environmental values of the local community. Minimise impacts on cultural heritage. · Minimise safety risks to the public and other third parties. Maintain and enhance partnerships with the local community, including using local contractors. 	<ul style="list-style-type: none"> No unresolved reasonable complaints. · An overall social and economic benefit as compared to perceived adverse impacts as derived from consultations with community advisory groups 	Compliant	<ul style="list-style-type: none"> No complaints received from the determined Traditional Owners. recorded in Origin's incident management system. All works completed by local NT businesses (Arnhem Earth Moving and Allwell drilling. Local Aboriginal contractors used for ongoing site inspections and maintenance.
22		<ul style="list-style-type: none"> High level of satisfaction with complaint outcomes and 	Compliant	<ul style="list-style-type: none"> No complaints received from the determined Traditional Owners

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
		complaint resolution processes.		recorded in Origin's incident management system.
23		<ul style="list-style-type: none"> Where suitable, include Aboriginal employment in the proposed program. 	Compliant	<ul style="list-style-type: none"> Local Aboriginal contractors used for ongoing site inspections and maintenance.
Beetaloo Basin Groundwater Monitoring Bore Installation Program Kyalla 117				
1	<ul style="list-style-type: none"> Minimise disturbance to land and land use (including soils and terrain, flora and fauna). Protection of waterways. Avoid site contamination and remediate land areas disturbed by water bore drilling activities, including contaminated land. Optimise (in order of most to least preferable) waste avoidance, reduction, reuse, recycling, treatment and disposal and remove and disposal of regulated waste as soon as practicable to a licensed waste disposal facility or recycling facility. Return disturbed areas to a stable condition such that they are returned to a condition as close as practicable to the surrounding area (or pre-disturbance state) within an acceptable time frame. 	<ul style="list-style-type: none"> Land disturbance equal to or less than planned. 	Partially Compliant	<ul style="list-style-type: none"> Approved clearing levels were increased from 1.86ha to 6.86ha via modifications under PER regulation 22 to accommodate additional lease pad disturbance and gravel pit disturbance. Total clearing levels for the Kyalla 117 N2 site were estimated at 5.26 lower than approved limits. This was confirmed through survey program completed May 2020. A recordable incident observed during the reporting period, with clearing for impact monitoring bore lease above the estimate for the lease pads, but within total approved clearing levels and within approved area for the water monitoring bore activity.
2		<ul style="list-style-type: none"> Minimum incidences of erosion and sedimentation occurring. 	Compliant	<ul style="list-style-type: none"> No material incidents of erosion and sediment control identified or recorded in Origin's incident management system. Task observations completed by site supervisors identifying erosion and sediment hazards and controls

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
				<ul style="list-style-type: none"> • Observation data available identifying maintenance required for minor erosion works. • Contractor maintenance requests confirm maintenance of site completed
3		<ul style="list-style-type: none"> • Areas left safe, stable and non-polluting 	Compliant	<ul style="list-style-type: none"> • Area is currently operational and has been incorporated into the main Kyalla 117 N2 lease pad with no material incidents of erosion identified beyond normal operations.
4	<ul style="list-style-type: none"> • Minimise impacts to groundwater and maintain surface and groundwater values. • Minimise erosion and sedimentation of waters as a result of water bore drilling activities 	<ul style="list-style-type: none"> • No unacceptable risk or long-lasting change to surface and/or groundwater resources (quantity and quality). 	Compliant	<ul style="list-style-type: none"> • Water quality data is provided to DEPWS Quarterly, with the latest results submitted on the 17 of July 2020. • Water quality data does not indicate any material changes in water quality or level from water monitoring bore installation activities.
5		<ul style="list-style-type: none"> • No release of site stormwater or wastewater exceeding baseline surface water quality 	Compliant	<ul style="list-style-type: none"> • The Kyalla 117 Site is fully bunded with no offsite releases of stormwater recorded from the groundwater monitoring bore leases
6		<ul style="list-style-type: none"> • No long-lasting change in soil and surface water quality from base line conditions. 	Compliant	<ul style="list-style-type: none"> • No incidents of spills or soil contamination or releases to surface water resulting from water bore drilling activities recorded in Origin's incident management system.
7		<ul style="list-style-type: none"> • Stream and creek crossings disturbance minimised. 	Compliant	<ul style="list-style-type: none"> • N/A no construction in stream crossings

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
8	<ul style="list-style-type: none"> Minimise disturbance to flora and fauna. Minimise disturbance to sensitive areas. 	<ul style="list-style-type: none"> Monitoring bore lease located to minimise impacts to fauna habitat and sensitive vegetation 	Compliant	<ul style="list-style-type: none"> Monitoring bores located within scouted areas covered under the Land Condition Assessment. The surrounding vegetation communities are regionally extensive (Open Corymbia Eucalypt woodland) with no impacts to sensitive flora or fauna recorded.
9		<ul style="list-style-type: none"> No native fauna impacts (injury or fatality) reported in OCIS during civil and water bore drilling related activities. 	Compliant	<ul style="list-style-type: none"> No incidents of fauna mortality associated with water bore drilling activities recorded in Origin's incident management system.
10		<ul style="list-style-type: none"> Security bond maintained until such time DPIR is satisfied remediation of site. 	Compliant	<ul style="list-style-type: none"> Security bond submitted to DPIR 19/11/2018. Security bond is in place.
11		<ul style="list-style-type: none"> No loss of sensitive vegetation resulting from Origin's activities. 	Compliant	<ul style="list-style-type: none"> Monitoring bores located within scouted areas covered under the Land Condition Assessment. The surrounding vegetation communities are regionally extensive (Open Corymbia Eucalypt woodland) with no impacts to sensitive flora or fauna recorded.
12	<ul style="list-style-type: none"> Avoid the introduction of weeds Avoid the spread of existing weeds 	<ul style="list-style-type: none"> No introduction or spread of declared weeds resulting from Origins activities 	Compliant	<ul style="list-style-type: none"> 6 monthly weed surveys completed. Kyalla 117 N2 site is free of weeds. Annual weed monitoring report provided to DEPWS weed branch 20/01/2020. A summary of how weed prevention measures were implemented was submitted to DEPWS on 26/08/2020
13	<ul style="list-style-type: none"> To minimise impacts on soil, surface water, groundwater, sensitive habitat and air quality. 	<ul style="list-style-type: none"> The absence of wastes remaining on site at completion of operations (i.e. general rubbish, waste chemicals, workshop 	Compliant	<ul style="list-style-type: none"> All rubbish from the site has been removed, with the site incorporated into the larger Kyalla 117 N2 lease.

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
	<ul style="list-style-type: none"> To minimise creation of food sources or habitat for pest species. To minimise waste generation through reduce, reuse, recycle programs. 	wastes including oily rags, containers etc.).		<ul style="list-style-type: none"> Kyalla 117 N2 demobilisation checklist completed to confirm no un-approved disposal of waste onsite No material listed waste produced during water bore drilling activity, with no equipment maintenance activities completed onsite. Any incidental listed waste (such as oily rags, batteries etc. that is of insufficient quantity for a listed waste contractor to be engaged) is backloaded Darwin and removed by the contractor's listed waste service provider once volumes are sufficient..
14		<ul style="list-style-type: none"> Waste registers maintained for the duration of the project 	Compliant	<ul style="list-style-type: none"> Waste data reported to Origin in monthly HSE reports. No material listed waste produced during water bore drilling activity, with no equipment maintenance activities completed onsite. Any incidental listed waste (such as oily rags, batteries etc. that is of insufficient quantity for a listed waste contractor to be engaged) is backloaded Darwin and removed by the contractor's listed waste service provider once volumes are sufficient..
15		<ul style="list-style-type: none"> Pest species not encouraged to the site. 	Compliant	<ul style="list-style-type: none"> No incidents or observations recorded of wild dogs, cats, pigs or other pest species being present in the vicinity of Origin's activities recorded in Origin's incident management system.

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
16	<ul style="list-style-type: none"> Minimise environmental nuisance due to dust for sensitive receptors resulting from Origin's activities. Minimise greenhouse gas emissions 	<ul style="list-style-type: none"> Minimal complaints regarding dust/air quality. 	Compliant	<ul style="list-style-type: none"> Task observations completed by site supervisors identifying erosion and sediment hazards and controls No complaints received regarding dust/air quality from this activity recorded in Origin's incident management system.
17		<ul style="list-style-type: none"> Amicable resolution of complaints 	Not Applicable	<ul style="list-style-type: none"> No complaints received regarding dust/air quality from this activity recorded in Origin's incident management system.
18	<ul style="list-style-type: none"> Minimise the environmental nuisance for sensitive receivers as a result of civil and water bore activities, including Tourist visual amenity 	<ul style="list-style-type: none"> Minimal nuisance-related complaints received from sensitive receptors, including landowners 	Compliant	<ul style="list-style-type: none"> Task observations completed by site supervisors identifying erosion and sediment hazards and controls No complaints received regarding dust/air quality from this activity recorded in Origin's incident management system.
19		<ul style="list-style-type: none"> Amicable resolution of complaints 	Compliant	<ul style="list-style-type: none"> No complaints received regarding dust/air quality from this activity recorded in Origin's incident management system.
20	<ul style="list-style-type: none"> Minimise the risk of causing bushfires from Origin's activities. To minimise impacts on environmental habitat and fauna, soil erosion, impacts on stakeholders, impacts on culturally significant sites, public infrastructure and community lands. To ensure proper health and safety plan for activities. To prevent accidental fire risk and ensure safe storage of chemicals to prevent fire damage. 	<ul style="list-style-type: none"> Successful fire management will be indicated by having no uncontrolled fires occurring as a result of civil works and water bore drilling activities. 	Compliant	<ul style="list-style-type: none"> No incidents of fire resulting from groundwater monitoring bore installation recorded in Origin's incident management system.

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
21	<ul style="list-style-type: none"> To avoid disturbance of or damage to Aboriginal or cultural heritage artefacts or Sacred Sites. To minimise impacts upon or disruption to activities of Indigenous stakeholders in culturally significant areas. To ensure adequate background information and training is provided to employees and contractors working in culturally significant areas. To ensure that the health and safety of exploration workers and the community is not compromised through management of cultural and environmental awareness. 	<ul style="list-style-type: none"> No incidences of disturbance of archaeological sites or sites of cultural significance, or if disturbance is required, an application to disturb is submitted and approved prior to disturbance 	Compliant	<ul style="list-style-type: none"> All activities undertaken within AAPA approved areas
22	<ul style="list-style-type: none"> Minimise impacts upon environmental values of the local community. Minimise impacts on cultural heritage. Minimise safety risks to the public and other third parties. 	<ul style="list-style-type: none"> An absence of issues arising, which have the potential to affect the work program, is a good indication of successful communications 	Compliant	<ul style="list-style-type: none"> No complaints received from local community or determined Traditional Owners recorded in Origin's incident management system.
23	<ul style="list-style-type: none"> Maintain and enhance partnerships with the local community, including using local contractors 	<ul style="list-style-type: none"> No unresolved reasonable complaints 	Compliant	<ul style="list-style-type: none"> No complaints received from local community or determined Traditional Owners recorded in Origin's incident management system.
24		<ul style="list-style-type: none"> An overall social and economic benefit as compared to perceived adverse impacts as derived from consultations with community advisory groups 	Compliant	<ul style="list-style-type: none"> All monitoring bore drilling and civil construction activities completed by local NT companies.
25		<ul style="list-style-type: none"> High level of satisfaction with complaint outcomes 	Not Applicable	<ul style="list-style-type: none"> No complaints received from local community or determined Traditional Owners recorded in

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
		and complaint resolution processes.		Origin's incident management system.
26		<ul style="list-style-type: none"> Where suitable, include Aboriginal employment in the proposed program. 	Compliant	<ul style="list-style-type: none"> Aboriginal employment was a criteria utilised as part of the civil contract tender process. Local aboriginal contractors with 100% aboriginal employees are used for all inspections and ongoing maintenance.
Beetaloo Basin Groundwater Monitoring Bore Installation Program- Velkerri 76				
1	<ul style="list-style-type: none"> Minimise disturbance to land and land use (including soils and terrain, flora and fauna). Protection of waterways. Avoid site contamination and remediate land areas disturbed by water bore drilling activities, including contaminated land. Optimise (in order of most to least preferable) waste avoidance, reduction, reuse, recycling, treatment and disposal and remove and disposal of regulated waste as soon as practicable to a licensed waste disposal facility or recycling facility. 	<ul style="list-style-type: none"> Land disturbance equal to or less than planned. 	Compliant	<ul style="list-style-type: none"> Areas of disturbance surveyed and pegged prior to clearing Total clearing levels for the Velkerri 76 S2 site were estimated at 2.7ha, lower than the 17.9hectare approved limit. Disturbance confirmed through onsite surveying completed in May 2020.
2	<ul style="list-style-type: none"> Return disturbed areas to a stable condition such that they are returned to a condition as close as practicable to the surrounding area (or pre-disturbance state) within an acceptable time frame. 	<ul style="list-style-type: none"> Minimum incidences of erosion and sedimentation occurring. 	Compliant	<ul style="list-style-type: none"> No material incidents of erosion and sediment control identified or recorded in Origin's incident management system. Task observations completed by site supervisors identifying erosion and sediment hazards and controls Observation data available identifying maintenance required for minor erosion works.

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
3		<ul style="list-style-type: none"> Areas left safe, stable and non-polluting 	Compliant	<ul style="list-style-type: none"> Area has been incorporated into the main Velkerri 76 S2 N2 lease pad with no material incidents of erosion identified beyond normal operations.
4	<ul style="list-style-type: none"> Minimise impacts to groundwater and maintain surface and groundwater values. Minimise erosion and sedimentation of waters as a result of water bore drilling activities 	<ul style="list-style-type: none"> Water usage for civils and water bore drilling below 15.5ML 	Compliant	<ul style="list-style-type: none"> Water use for the groundwater monitoring bore installation program was estimated at 0.5ML. the remainder of water was used under the Civil construction EMP which is outside of the scope of this AEPR. Water was sourced from the Kyalla 117 Gum Ridge control bore RN41132, with all water take metered and reported to DEPWS.
5		<ul style="list-style-type: none"> No unacceptable decline in groundwater resources, as defined as a sustained (12 month+) drawdown of greater than 1m measured at the extraction point 	Compliant	<ul style="list-style-type: none"> Control monitoring bores installed and appropriately developed. Water quality data is provided to DEPWS Quarterly, with the latest results submitted on the 17 of July 2020. Groundwater extraction has not commenced from the bores onsite, other than for bore development work Groundwater levels recorded during monitoring do not indicate any

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
				material changes in water quality or level from water monitoring bore installation activities.
6		<ul style="list-style-type: none"> No release of site stormwater or wastewater exceeding baseline surface water quality 	Compliant	<ul style="list-style-type: none"> No releases offsite as the Velkerri 76 S2 site is fully bunded with all onsite stormwater retained within the sediment basin onsite. Wet season inspections undertaken via helicopter did not identify releases from the sediment basin
7		<ul style="list-style-type: none"> No long-lasting change in soil and surface water quality from baseline conditions. 	Compliant	<ul style="list-style-type: none"> No incidents observed of spills or soil contamination or releases to surface water resulting from water bore drilling activities recorded in Origin's incident management system.
8		<ul style="list-style-type: none"> Stream and creek crossings disturbance minimised. 	Compliant	<ul style="list-style-type: none"> No construction in stream and creek crossings undertaken
9	<ul style="list-style-type: none"> Minimise disturbance to flora and fauna. Minimise disturbance to sensitive areas. 	<ul style="list-style-type: none"> Monitoring bore lease located to minimise impacts to fauna habitat and sensitive vegetation 	Compliant	<ul style="list-style-type: none"> Monitoring bores located within scouted areas covered under the Land Condition Assessment. The surrounding vegetation communities are regionally extensive (Open Corymbia Eucalypt woodland) with no impacts to sensitive flora or fauna recorded.

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
10		<ul style="list-style-type: none"> No native fauna impacts (injury or fatality) reported in OCIS during civil and water bore drilling related activities. 	Compliant	<ul style="list-style-type: none"> No incidents of fauna mortality associated with water bore drilling activities recorded in Origin's incident management system.
11		<ul style="list-style-type: none"> Security bond maintained until such time DPIR is satisfied remediation of site. 	Compliant	<ul style="list-style-type: none"> Security bond submitted to DPIR 19/11/2018. Security bond is in place.
12		<ul style="list-style-type: none"> No loss of sensitive vegetation resulting from Origin's activities. 	Compliant	<ul style="list-style-type: none"> Monitoring bores located within scouted areas covered under the Land Condition Assessment. The surrounding vegetation communities are regionally extensive (Open Corymbia Eucalypt woodland) with no impacts to sensitive flora or fauna recorded.
13	<ul style="list-style-type: none"> Avoid the introduction of weeds Avoid the spread of existing weeds 	<ul style="list-style-type: none"> No introduction or spread of declared weeds resulting from Origins activities 	Compliant	<ul style="list-style-type: none"> 6 monthly weed surveys completed. No weeds have been identified on the Velkerri 76 S2 water bore lease pads. Annual weed monitoring report provided to DEPWS on the 20/01/2020. A summary of how weed prevention measures were implemented was provided to DEPWS on the 26/-8/2020.
14	<ul style="list-style-type: none"> To minimise impacts on soil, surface water, groundwater, sensitive habitat and air quality. To minimise creation of food sources or habitat for pest species. 	<ul style="list-style-type: none"> The absence of wastes remaining on site at completion of operations (i.e. general rubbish, waste chemicals, workshop wastes including oily rags, containers etc.). 	Compliant	<ul style="list-style-type: none"> All rubbish from the site was removed at the completion of water bore drilling, with the site incorporated into the larger Velkerri 76 S2 lease. Velkerri 76 S2 demobilisation checklist completed

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
15	<ul style="list-style-type: none"> To minimise waste generation through reduce, reuse, recycle programs. 	<ul style="list-style-type: none"> Waste registers maintained for the duration of the project 	Compliant	<ul style="list-style-type: none"> Waste data reported to Origin in monthly HSE reports. No material listed waste produced during water bore drilling activity, with no equipment maintenance activities completed onsite. Any incidental listed waste (such as oily rags, batteries etc. that is of insufficient quantity for a listed waste contractor to be engaged) is backloaded Darwin and removed by the contractor's listed waste service provider once volumes are sufficient..
16		<ul style="list-style-type: none"> Pest species not encouraged to the site. 	Compliant	<ul style="list-style-type: none"> No incidents or observations recorded of wild dogs, cats, pigs or other pest species being present in the vicinity of Origin's activities recorded in Origin's incident management system.
17	<ul style="list-style-type: none"> Minimise environmental nuisance due to dust for sensitive receptors resulting from Origin's activities. Minimise greenhouse gas emissions 	<ul style="list-style-type: none"> Minimal complaints regarding dust/air quality. 	Compliant	<ul style="list-style-type: none"> No complaints received regarding dust/air quality from this activities recorded in Origin's incident management system.
18		<ul style="list-style-type: none"> Amicable resolution of complaints 	Not Applicable	<ul style="list-style-type: none"> No complaints received regarding dust/air quality from this activity recorded in Origin's incident management system.

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
19	<ul style="list-style-type: none"> Minimise the environmental nuisance for sensitive receivers as a result of civil and water bore activities, including Tourist visual amenity 	<ul style="list-style-type: none"> Minimal nuisance-related complaints received from sensitive receptors, including landowners 	Compliant	<ul style="list-style-type: none"> No complaints received regarding dust/air quality from this activity recorded in Origin's incident management system.
		<ul style="list-style-type: none"> Amicable resolution of complaints 	Not applicable	<ul style="list-style-type: none"> No complaints received regarding dust/air quality from this activity recorded in Origin's incident management system.
20	<ul style="list-style-type: none"> Minimise the risk of causing bushfires from Origin's activities. To minimise impacts on environmental habitat and fauna, soil erosion, impacts on stakeholders, impacts on culturally significant sites, public infrastructure and community lands. To ensure proper health and safety plan for activities. To prevent accidental fire risk and ensure safe storage of chemicals to prevent fire damage. 	<ul style="list-style-type: none"> Successful fire management will be indicated by having no uncontrolled fires occurring as a result of civil works and water bore drilling activities. 	Compliant	<ul style="list-style-type: none"> No incidents of fire resulting from groundwater monitoring bore installation recorded in Origin's incident management system.
21	<ul style="list-style-type: none"> To avoid disturbance of or damage to Aboriginal or cultural heritage artefacts or Sacred Sites. To minimise impacts upon or disruption to activities of Indigenous stakeholders in culturally significant areas. To ensure adequate background information and training is provided to employees and contractors working in culturally significant areas. 	<ul style="list-style-type: none"> No incidences of disturbance of archaeological sites or sites of cultural significance, or if disturbance is required, an application to disturb is submitted and approved prior to disturbance 	Compliant	<ul style="list-style-type: none"> All activities undertaken within AAPA approved areas

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
	<ul style="list-style-type: none"> To ensure that the health and safety of exploration workers and the community is not compromised through management of cultural and environmental awareness. 			
22	<ul style="list-style-type: none"> Minimise impacts upon environmental values of the local community. Minimise impacts on cultural heritage. Minimise safety risks to the public and other third parties. 	<ul style="list-style-type: none"> An absence of issues arising, which have the potential to affect the work program, is a good indication of successful communications 	Compliant	<ul style="list-style-type: none"> No complaints received from local community or determined Traditional Owners recorded in Origin's incident management system.
23	<ul style="list-style-type: none"> Maintain and enhance partnerships with the local community, including using local contractors 	<ul style="list-style-type: none"> No unresolved reasonable complaints 	Compliant	<ul style="list-style-type: none"> No complaints received from local community or determined Traditional Owners recorded in Origin's incident management system.
24		<ul style="list-style-type: none"> An overall social and economic benefit as compared to perceived adverse impacts as derived from consultations with community advisory groups 	Compliant	<ul style="list-style-type: none"> All monitoring bore drilling and civil construction activities completed by local NT companies.
25		<ul style="list-style-type: none"> High level of satisfaction with complaint outcomes and complaint resolution processes. 	Compliant	<ul style="list-style-type: none"> No complaints received from local community or determined Traditional Owners recorded in Origin's incident management system.
26		<ul style="list-style-type: none"> Where suitable, include Aboriginal employment in the proposed program. 	Compliant	<ul style="list-style-type: none"> Aboriginal employment criteria utilised as part of the civil contract tender process. Local aboriginal contractors with 100% aboriginal employees are

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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
				used for all inspections and ongoing maintenance.

2.3 Mandatory reporting requirements

Table 5 demonstrates Origin Energy's compliance with reporting requirements in the Code of Practice: Onshore Petroleum Activities in the Northern Territory (Code of Practice). The activities associate with the Beetaloo Basin Groundwater Monitoring Bore Installation Program EP98 and Beetaloo Basin Groundwater Monitoring Bore Installation Program Kyalla 117 were approved before the Code of Practice and are therefore no applicable. The Code of Practice is only applicable to the Beetaloo Basin Groundwater Monitoring Bore Installation Program Velkerri 76 program.

Table 6 demonstrates Origin's compliance with reporting requirements under the Petroleum (Environment) Regulations 2016 (NT) schedule 1, item 11(2), which requires all information required to be recorded, monitored or reported has been provided. Where relevant, Origin Energy confirms that all records, monitoring or required reporting under the Petroleum (Environment) Regulations 2016 (NT)² has been provided to DEPWS or the relevant NTG agency. This table summarised compliance for all three of Origin's EMP's covered under this AEPR.

Table 5 summary of Code of Practice (COP) mandatory reporting requirements

No#	Reference	Requirement	Compliance Status	Evidence
1	COP A.3.5	Geospatial information depicting areas cleared is to be provided to the Minister.	Compliant	<ul style="list-style-type: none"> Velkerri 76 disturbance imagery provided to DEPWS FTP site on the 18/06/2020.
2	COP A.3.6 (b)	Weed management plan developed as part of the EMP must provide for ongoing weed monitoring.	Compliant	<ul style="list-style-type: none"> Weed management plan developed, with 6 monthly weed monitoring completed. Weed management plan submitted to DEPWS 15/11/2018 Annual weed monitoring report submitted to DEPWS on 20/01/2020

² Petroleum (Environment) Regulations 2016 (NT) sch 1, item 11(2).

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No#	Reference	Requirement	Compliance Status	Evidence
3	COP A.3.7(a)vi	The fire management plan developed as part of the EMP must provide for annual fire mapping to monitor changes to fire frequency in the relevant areas.	Compliant	<ul style="list-style-type: none"> Fire management plan implemented. Annual fire mapping provided to DEPWS on 26/08/2020
4	COP A.3.9(c) COP A.3.9(e)	The rehabilitation plan developed as part of the EMP requires progressive rehabilitation of significantly disturbed land which is required to commence no longer than 12 months following the cessation of activities on the land. It also requires regular maintenance and annual monitoring of rehabilitated areas.	Compliant	<p>Rehabilitation management plan developed and submitted to DEPWS 17/04/2020</p> <p>The rehabilitation requirements are not applicable as all sites remain operational, with rehabilitation activities not undertaken to date.</p>
5	COP B.4.13.2(c)	<p>As a minimum, the following must be recorded and reported for each stage (where a stage in this context means all fluids pumped at a particular depth interval):</p> <p>a) total volume of hydraulic fracturing fluid pumped,</p> <p>b) quality of water used (tested for analytes in section C.8 of this Code. Analyses do not need to be repeated if the same water source is used for multiple stages) and</p> <p>typical and maximum concentrations of chemicals or other substances used.</p>	Not Applicable	Not Applicable to the scope of the EMP's as no exploration well drilling or hydraulic fracture stimulation activities completed.
6	COP B.4.13.2(k)iv	Where venting is the only technically feasible option for managing produced gas, the technical considerations preventing the use of the recovered gas must be recorded and included in the operator's annual report.	Not Applicable	Not Applicable to the scope of the EMP's as no exploration well drilling or hydraulic fracture stimulation activities completed.
7	COP B.4.14.2(c)	All new barriers or new well operating envelopes must be verified and clearly documented and reported by submission	Not Applicable	Not Applicable to the scope of the EMP's as no exploration well drilling or hydraulic fracture stimulation activities completed.

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No#	Reference	Requirement	Compliance Status	Evidence
		of an updated well barrier integrity validation (WBIV) report to DPIR.		
8	COP B.4.15.2(j)	Complete and accurate records of the entire decommissioning procedure must be kept, with these records submitted as part of the legislative reporting requirements for the decommissioning of petroleum wells.	Not Applicable	Not Applicable to the scope of the EMP's as no exploration well drilling or hydraulic fracture stimulation activities completed.
9	COP B.4.17.2(d)	Any guidelines published by the Northern Territory Government from time to time relating to reporting and data submission, and groundwater monitoring data standards must be followed.	Compliant	All water monitoring bore completion reports have been submitted to DEPWS, including initial water quality data post completion.
10	COP C.3(e)	The components of the wastewater management framework, include: Monitor, manage and report in accordance with the Wastewater Management Plan and Spill Management Plan.	Not Applicable	Not Applicable to the scope of the EMP's as no wastewater from exploration well drilling or hydraulic fracture stimulation activities produced.
11	COP C.6.1(d)	Wastewater tracking documentation must be reported to the Minister at least annually in accordance with the framework provided in the EMP.	Not Applicable	Not Applicable to the scope of the EMP's as no wastewater from exploration well drilling or hydraulic fracture stimulation activities produced.
12	COP C.7.1(d)ii	Wastewater Management Plan must include a program for monitoring and reporting against the effectiveness of the measures for the mitigation of interaction with wildlife, stock and human receptors with wastewater.	Not Applicable	Not Applicable to the scope of the EMP's as no wastewater from exploration well drilling or hydraulic fracture stimulation activities produced.
13	COP D.4.3.2(f)	A written report detailing the levels of methane measured, the duration of the unusual readings and the results of the investigation (including remedial actions) must be submitted within one month of the significantly higher-level methane event being detected.	Not Applicable	Not Applicable to the scope of the EMP's.

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No#	Reference	Requirement	Compliance Status	Evidence
14	COP D.5.9.2(c)	Emissions from exploration, well construction (including during flowback) and workovers must be measured and reports submitted.	Not Applicable	Not Applicable to the scope of the EMP's as no exploration well drilling or hydraulic fracture stimulation activities completed.
15	COP D.5.9.3(a)	Where natural gas is vented or flared at a gas processing or other downstream facility, emissions must be estimated and reported.	Not Applicable	Not Applicable to the scope of the EMP's as no exploration well drilling or hydraulic fracture stimulation activities completed.
17	COP D.6.2(a)	Reports of baseline assessments must be submitted at the conclusion of each field campaign.	Not Applicable	Not Applicable to the scope of the EMP's. CSIRO completed baseline assessments through DITT.
18	COP D.6.2(b)	Emissions reporting must be in accordance with Section D.5.6. Emissions associated with venting and flaring as described in Section D.5.9 must be provided separately to the Northern Territory Government in accordance with this Code.	Not Applicable	Not Applicable to the scope of the EMP's as no exploration well drilling or hydraulic fracture stimulation activities completed

Table 6 Other mandatory Reporting requirements

No#	Reference	Requirement	Compliance Status	Evidence
1	PER Reg 14	A current EMP remains in force until the interest holder notifies the Minister the activity is no longer being carried out and all of the environmental outcomes and obligations under the plan have been met, and the Minister advises the interest holder the notice is accepted and the plan ceases to be in force.	Compliant	All EMP's are still in force and have approximately 3.5 years remaining before the next review.
2	PER Reg 33	DEPWS is notified of reportable incidents within 2 hours of the interest holder becoming aware of the incident, or within 2 hours of the incident occurring.	Not Applicable	No reportable incidents have been recorded.

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		A written report must be provided within 24 hours if the initial report was made orally.		
3	PER Reg 34	<p>Reports on reportable incidents are to be provided to DEPWS as soon as practicable and within 72 hours of the event occurring.</p> <p>A final report must be provided to DEPWS within 30 days after remediation/clean-up of the affected area.</p>	Not Applicable	No reportable incidents have been recorded.
4	PER Reg 35	A written report of all recordable incidents must be provided to DEPWS not later than 15 days after the 90 day reporting period (unless otherwise agreed).	Partial compliance	<p>Quarterly recordable incidents reports were provided as follows:</p> <ul style="list-style-type: none"> • Q1 2019 No recordable incidents occurred during reporting period and no written report provided. Incident discussions were included in weekly operations meeting with DEPWS. • Q2 2019 Quarterly incident report provided 24/06/2020 • Q3 2019 No recordable incidents occurred during reporting period and no written report provided. Incident discussions were included in weekly operations meeting with DEPWS • Q4 2019 No recordable incidents occurred during reporting period and no written report provided. Incident discussions were included in weekly operations meeting with DEPWS. • Q1 2020 report provided 17/03/2020, with recordable incident summary provided in the monthly report • Q2 2020 report provided 17/06/2020
5	PER Reg 37A	A report about flowback fluid from hydraulic fracturing must be provided to the Minister within 6 months of the flowback occurring.	Not Applicable	Not Applicable to the scope of the EMP's as no exploration well drilling or hydraulic fracture stimulation activities completed.

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6	PER Reg 37B	A report about produced water from hydraulic fracturing must be provided to the Minister within 6 months of the produced water being extracted.	Not Applicable	Not Applicable to the scope of the EMP's as no exploration well drilling or hydraulic fracture stimulation activities completed.
7	PER Schedule 1, item 9(2)	Interest holders are required to conduct future engagement with stakeholders, in accordance with the description in the EMP.	Compliant	<ul style="list-style-type: none"> Land access agreements are in place covering all current and future activities. Engagement with each stakeholder is undertaken on a monthly basis, or at a higher/lower frequency depending on the level of activity being completed onsite.
8	Schedule 1, item 12	Interest holder must notify the Minister, occupier of the land and owner of the land on which the activity is to be carried out before commencement of activity.	Compliant	<p>The regulated activity commenced on:</p> <ul style="list-style-type: none"> Beetaloo Basin Groundwater Monitoring Bore Installation Program EP98- 23/11/2018 Beetaloo Basin Groundwater Monitoring Bore Installation Program Kyalla 117- 11/12/2018 <p>Persons were notified as follows:</p> <ul style="list-style-type: none"> Minister – verbal via weekly DPIR meeting 23/11/2018 (Origin was also in direct conversation with department on a daily basis) Pastoralist – Amungee- 08/11/2018 via email. Pastoralist- Hayfield- 06/11/2018- Via email and telephone
9	Environment Protection Act 2019 (NT) div 8	Duty to notify the NT EPA as soon as practicable but within 24 hours of any incident which occurs which causes or threatens to cause material or significant environmental harm	Not Applicable	No incidents which could cause or threaten to cause material or significant environmental harm occurred during reporting period.
10	Waste Management and Pollution	Duty to notify the NT EPA as soon as practicable but within 24 hours of any incident which occurs which causes or	Not Applicable	No incidents which could cause or threaten to cause material or significant environmental harm occurred during reporting period.

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	Control Act 1998 (NT) s 14	threatens to cause pollution resulting in material or significant environmental harm		
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3. Summary of Compliance

3.1 Overview of Compliance

Table 7 to Table 9 provide a summary of the results of the compliance assessment against each of the EMP compliance requirements.

Table 7 Compliance Summary Groundwater monitoring bore installation program EP 98

Compliance Indicator	Number	Percentage
Compliant	26	74%
Partially Compliant	1	3%
Not Compliant	0	0%
Not Applicable	8	13%

Table 8 Compliance summary Groundwater monitoring bore installation program EP 117

Compliance Indicator	Number	Percentage
Compliant	29	72.5%
Partially Compliant	3	7.5%
Not Compliant	0	0%
Not Applicable	8	20%

Table 9 Compliance summary Groundwater monitoring bore installation program EP 76

Compliance Indicator	Number	Percentage
Compliant	35	62.5%
Partially Compliant	1	2%
Not Compliant	0	0%
Not Applicable	20	36%

3.2 Overview of Items Found Not Compliant or Partially Compliant

The following sections describe:

- the specific compliance requirements not met for the reporting period
- an analysis of the possible potential environmental harm or impact to environmental values resulting from non-compliance or partial compliance, using multiple lines of evidence
- a summary of the corrective actions already implemented, and further actions still required, as applicable, to ensure compliance is fully achieved in the future.

3.2.1 Ministerial Approval conditions

3.2.1.1 Description

Groundwater monitoring bore RN040895 was drilled and completed as a Gum Ridge Monitoring bore. A statement of bore was submitted to the NT Water Resources division of DEPWS by Allwell drilling upon completion of drilling. DEPWS identified discrepancies in the formation pick, with the bottom section of the Anthony Lagoon formation included in the Gum Ridge bore completion. This triggered a partial non-compliance

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against Ministerial condition 2 of the Beetaloo Basin Groundwater Monitoring Bore Installation Program Kyalla 117 approval notice.

3.2.1.2 Analysis of Potential environmental harm or Impact

There was a potential for the two formations to become interconnected, however no environmental harm or impact occurred based upon the following:

- The water quality and groundwater level of the Anthony Lagoon and Gum Ridge is similar, with no driving head present to cause significant groundwater movement between the formations.
- Water quality monitoring results did not detect any changes in groundwater quality or level at either the Anthony Lagoon formation or Gum ridge

3.2.1.3 Corrective Actions

The investigation found that the formation pick was done by a qualified hydrogeologist based on their interpretation of the confining layer at the site. The following corrective actions were implemented:

- Origin modified RN040895 in consultation with DEPWS to isolate the two formations.
- Additional controls were implemented, including:
 - the requirement to engage DEPWS to validate the formation pick prior to bore completion.
 - utilising a pilot hole through the entire formation for all new sites to obtain a full understanding of the lithology before confirming completion picks.

3.2.2 Environmental Performance Standards

3.2.2.1 Description

One partial non-compliance with an environmental performance standard was observed during the reporting period for the Groundwater Monitoring Bore Installation program EP 117 EMP. It was identified that clearing for the groundwater monitoring impact monitoring bore lease pad was above the total clearing estimates for the specific activity. The activity was included in the EMP, however the disturbance for the impact monitoring bore lease pad was erroneously not included in the EMP clearing table. This error was not identified during Work Instruction development or when a decision was made to clear the impact monitoring bore lease pad.

3.2.2.2 Analysis of Potential environmental harm or Impact

The clearing levels for monitoring bore lease pads were within the total approved clearing limits of the EMP (i.e. the overall clearing level that covered lease pads and access tracks), with the partial non-compliance determined to be administrative in nature.

3.2.2.3 Corrective Actions

The following corrective actions were implemented:

- Work Instruction process has been integrated into the project delivery process to ensure that approved construction scope is clearly communicated, and multiple hold points are articulated prior to construction occurring.
- Higher resolution maps, and survey and pegging guidelines have been added to the work program to provide clarity to field teams of approved construction scope.
- Dual sign offs by designated company representatives (Origin and contractor) are required to move beyond hold points within the work programme to increase the level of activity assurance.

3.2.3 Regulatory Reporting

3.2.3.1 Description

A partial non-compliance with the PER regulation 35 occurred during the reporting period for all EMP's covered under the AEPR, with recordable incident reports not submitted on Q1 2019, Q2 2019 and Q4 2019.

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3.2.3.2 Analysis of Potential environmental harm or Impact

No potential environmental harm or impact, with this partial non-compliance being of administrative nature. Recordable incident reports were provided when recordable incidents had occurred.

3.2.3.3 Corrective Actions

The quarterly recordable incident reports will be prepared quarterly, with a task added to the project schedule to track the delivery of recordable incident summary reports.

3.3 Application of Lessons Learned Across Origin's Onshore Interests

In addition to the corrective actions discussed in section 2.2 of this report, the following additional lessons learned have been imported into Origin's forward exploration program:

- The daily task observation checklist during civil construction activities was valuable in demonstrating compliance with the various EMP obligations. The observation checklist will continue to be utilised and expanded to increase the detail of information included in the inspections.
- Contractors are providing routine waste tracking data, however waste certificates were only sent to Origin upon request. This has made demonstrating compliance with waste tracking requirements difficult, as there is sometimes a long period between Origin requests and receiving the required evidence. Origin is working with its service providers to collect waste tracking and disposal certificates as they are generated. This will allow Origin to access information more readily to demonstrate compliance.