

Change notice – Regulation 22

Interest holder	Tamboran B2 Pty Ltd	EMP Title	Beetaloo Sub-basin Shenandoah South E&A Program EMP		Unique EMP ID	TAM1-3	Mod #	2	Date	26 August 2024
Brief Description	Inclusion of additional acquisition of two new seismic lines under the Shenandoah South E&A Program EMP.									
Geospatial files included?	Yes									
Does the proposed change result in a new, or increased, or potential or actual environmental impact or risk?	If an INCREASE in the existing potential or actual environmental risk, is it provided for in the EMP?	Does the proposed change require additional mitigation measures to be included?	Has additional stakeholder engagement been conducted?	Does it require additional environmental performance standards and measurement criteria?	Does it affect compliances with Sacred Site Authority Certificates?	Does it affect current rehabilitation, weed, fire, wastewater, erosion and sediment control, spill or emergency response plans?	Will the environmental outcome continue to be achieved and will the impacts and risks be managed to ALARP and acceptable?			
No There are no new or increased environmental impacts or risks through the addition of the two new seismic lines. The activity will not result in any additional vegetation clearing with both lines being acquired on an existing access tracks. No vegetation clearing is required or proposed. The additional activity risk is considered low and acceptable.	N/A No increased impact or risk with sufficient controls outlined in the Shenandoah South E&A Program EMP.	No Existing mitigation measures are in place covering 2D seismic acquisition.	Yes Additional stakeholder engagement has occurred. Specifically, the Hayfield Shenandoah Station owners regarding the modification, with the activity covered under existing engagement with Traditional Owners	No Environmental performance standards within the existing approved EMP are sufficient.	No. Activity covered under the existing AAPA certificates C2024-030 and C2024-031.	Yes No specific changes to plans associated with TAM1-3 EMP. All plans remain valid and appropriate.	Yes. All environmental outcomes will be achieved under current TAM1-3 EMP with all impacts and risks managed to ALARP and acceptable.			
Additional contextual information	<p>Tamboran have identified the need for two additional 2D seismic lines in proximity to Shenandoah South 2 well pad.</p> <p>Description of the two seismic lines is as follows:</p> <ul style="list-style-type: none"> - Additional seismic line through Shenandoah South 2 well site (SS2 pad 2D line) – 1.66 km – noting survey will be located on the existing SS2 access track and pad with no clearing of vegetation required in the surrounding area. - Additional seismic line on existing access track - 5.4 km – no clearing of vegetation required. <p>These seismic lines are in addition to the original 2D seismic lines described in the Shenandoah South E&A Program EMP (TAM1-3).</p>									

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Current EMP text	Amended EMP text
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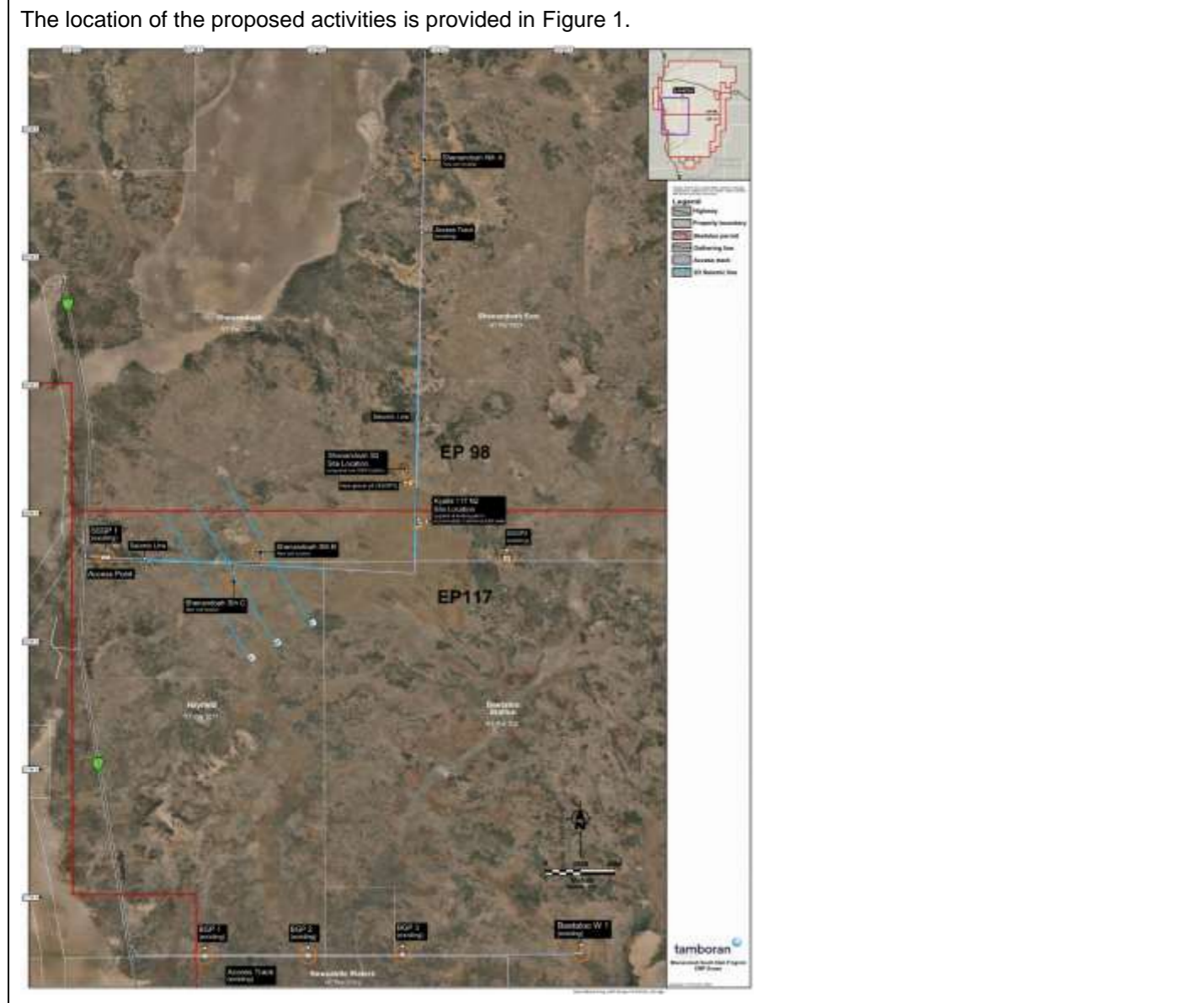
Executive Summary (pg. 1) & Section 1.1 Purpose (pg. 24)
 Activities proposed in this EMP include:

- **Seismic acquisition of a total of 77 km of 2D seismic (EP 98 and EP 117):**
 - Acquisition of 3 x 2D seismic surveys totalling approximately 38 km (19 ha disturbance) across EP 117 and 98.
 - Acquisition of an additional 39 km of 2D seismic along existing access tracks with no disturbance.

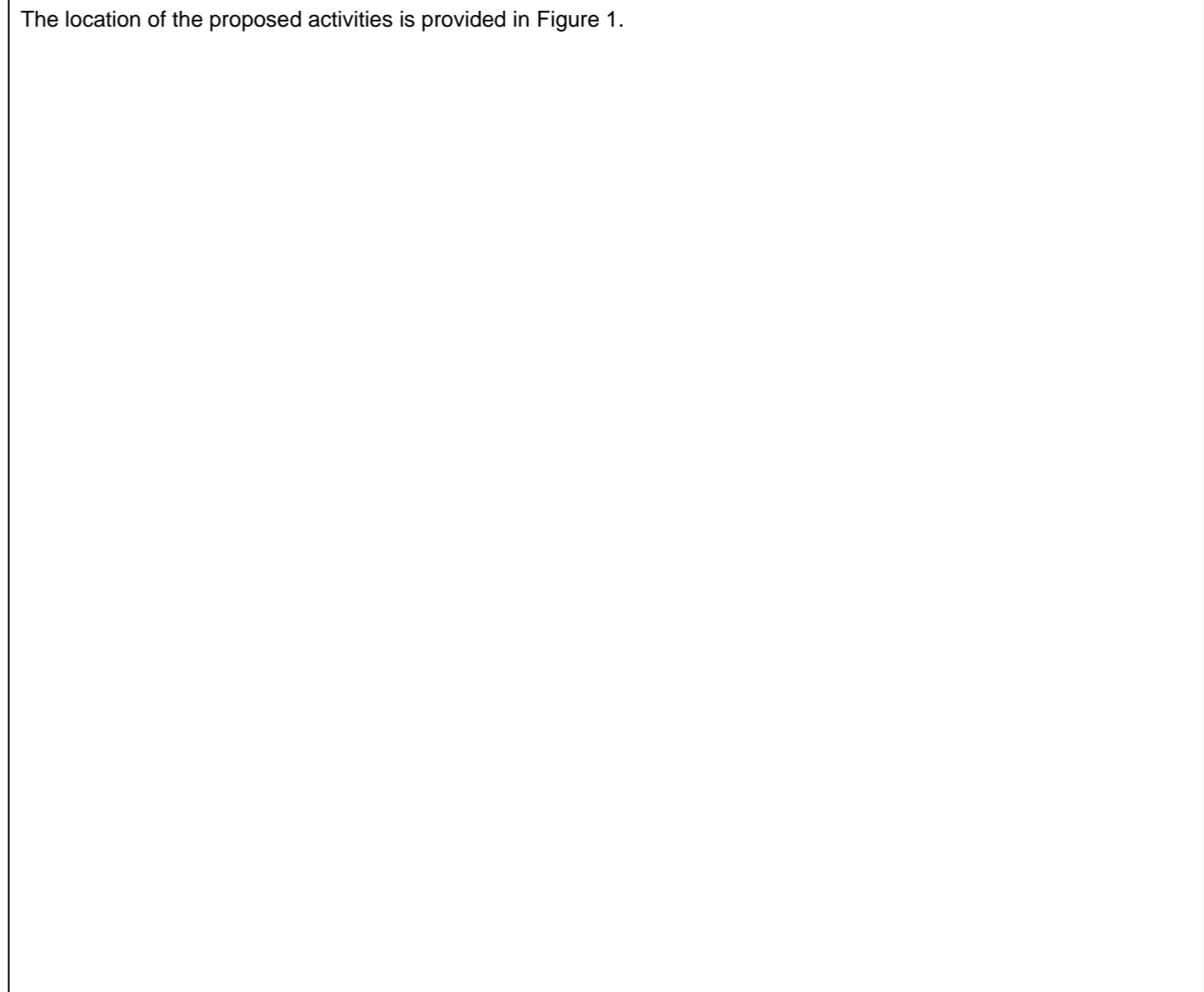
Executive Summary (pg. 1) & Section 1.1 Purpose (pg. 24)
 Activities proposed in this EMP include:

- **Seismic acquisition of a total of 84.06 km of 2D seismic (EP 98 and EP 117):**
 - Acquisition of 3 x 2D seismic surveys totalling approximately 38 km (19 ha disturbance) across EP 117 and 98.
 - Acquisition of a new 2D seismic survey totalling 0.63 km on Shenandoah South 2 access track in EP 98, with no clearing.
 - Acquisition of original 39 km and additional 5.4 km of 2D seismic along existing access tracks with no disturbance.

Location of the regulated activities (Executive summary pg. 2 & 3 and section 3.3.2 pg. 44)
 The location of the proposed activities is provided in Figure 1.



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Current EMP text

Figure 1: Location of new lease pads, gravel pit (SSGP3), proposed seismic and existing Kyalla 117 N2 and Beetaloo W-1 infrastructure

Amended EMP text

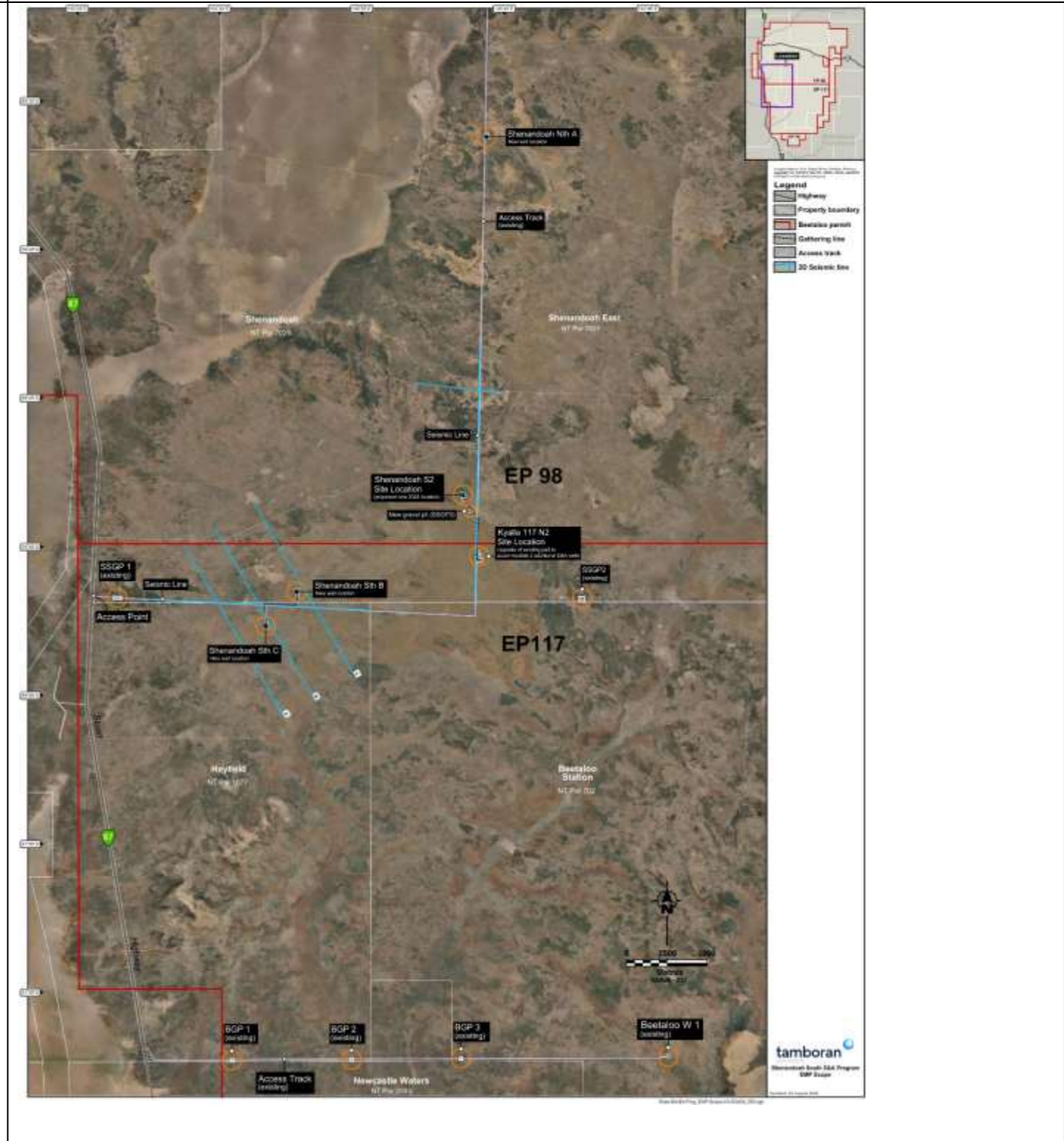


Figure 2: Location of new lease pads, gravel pit (SSGP3), proposed seismic and existing Kyalla 117 N2 and Beetaloo W-1 infrastructure

Section 3 Description of regulated activities (Pg. 36)

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Current EMP text	Amended EMP text
<ul style="list-style-type: none"> Collection of approximately 77km (19 ha disturbance) of 2D seismic survey on EP 98 and EP 117 to support the evaluation of the underlying shale resources in the vicinity of the proposed exploration sites (Figure 6). 	<ul style="list-style-type: none"> Collection of approximately 83.03 km (19 ha disturbance) of 2D seismic survey on EP 98 and EP 117 to support the evaluation of the underlying shale resources in the vicinity of the proposed exploration sites (Figure 6).

<p>Description of the activity (Table 1, pg 8) & Section 3.1 Activity Summary (Table 9, pg. 40)</p> <p>Table 1: Description of the proposed new exploration and appraisal activities for the Shenandoah South E&A program, including 2D seismic acquisition</p>	<p>Description of the activity (Table 1, pg 8) & Section 3.1 Activity Summary (Table 9, pg. 40)</p> <p>Table 1: Description of the proposed new exploration and appraisal activities for the Shenandoah South E&A program, including 2D seismic acquisition</p>
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Activity	Parameter	Description
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Seismic acquisition	~ 38 km (19.0 ha disturbance) ~ 39 km along existing access tracks (no additional disturbance)	<ul style="list-style-type: none"> Seismic program to use 2 energy sources to evaluate optimal energy source type: vibroseis and seismic charges Civil construction of 3 x 2D seismic lines: Clearing of approximately 38 km of seismic lines with a 5 m cleared track width. Seismic lines to be weaved through vegetation to a path of least resistance. Slashing can be utilised in otherwise untraversable vegetation. Deviations in lines must be constructed in a way that is accessible by equipment/vehicles such as heavy-rigid body trucks (minimum 15 m turning radius). A small turning circle to be constructed at the end of each seismic line to allow equipment and vehicles to exit. A 250 m buffer /deviation from either side of the centreline pre-plot data where required to avoid any unsuitable terrain or obstacles. Estimated maximum surface disturbance of 19.0 ha, noting that all efforts will be deployed to avoid clearing. Estimated groundwater use ~0.5 – 1.0 ML. Construction of 2 fenced areas 12 m(L) x 9 m (W) for explosive storage magazines (AS2187) along cleared lines: Fenced areas to be constructed as per AS1725. Gates minimum 4 m opening. Surface within the magazine storage area to be smooth and free of debris, loose zones and soft spots. Surface compaction ≥ 100 kPa. Shot hole drilling for 400 x 20 m depth holes @ 80 mm – 100 mm OD at a shot hole interval of 60 m. Low disturbance node deployment. Seismic acquisition, including vibroseis deployment, charge detonation and data collection. Rehabilitation of cleared lines and shot holes by respreading any windrowed soil and reinstating vegetation from stockpiled area back across the seismic line.

Activity	Parameter	Description
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Seismic acquisition	~ 38 km (19.0 disturbance) ~ 45.03 km along existing access tracks (no additional disturbance)	<ul style="list-style-type: none"> Seismic program to use 2 energy sources to evaluate optimal energy source type: vibroseis and seismic charges Civil construction of 3 x 2D seismic lines: Clearing of approximately 38 km of seismic lines with a 5 m cleared track width. Seismic lines to be weaved through vegetation to a path of least resistance. Slashing can be utilised in otherwise untraversable vegetation. Deviations in lines must be constructed in a way that is accessible by equipment/vehicles such as heavy-rigid body trucks (minimum 15 m turning radius). A small turning circle to be constructed at the end of each seismic line to allow equipment and vehicles to exit. A 250 m buffer /deviation from either side of the centreline pre-plot data where required to avoid any unsuitable terrain or obstacles. Estimated maximum surface disturbance of 19 ha, noting that all efforts will be deployed to avoid clearing. Estimated groundwater use ~0.5 – 1.0 ML. Construction of 2 fenced areas 12 m(L) x 9 m (W) for explosive storage magazines (AS2187) along cleared lines: Fenced areas to be constructed as per AS1725. Gates minimum 4 m opening. Surface within the magazine storage area to be smooth and free of debris, loose zones and soft spots. Surface compaction ≥ 100 kPa. Shot hole drilling for 400 x 20 m depth holes @ 80 mm – 100 mm OD at a shot hole interval of 60 m. Low disturbance node deployment. Seismic acquisition, including vibroseis deployment, charge detonation and data collection. Rehabilitation of cleared lines and shot holes by respreading any windrowed soil and reinstating vegetation from stockpiled area back across the seismic line.

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Current EMP text					Amended EMP text				

Section 3.3.2, Table 10 (pg. 45)

Table 10: Location and disturbance summary of infrastructure on EP 117 and EP 98

Infrastructure	EP	Zone*	Easting (approx.)	Northing (approx.)	Existing disturbance (ha)	New proposed disturbance (ha)	Total disturbance (ha)
Kyalla 117 N2: lease pad, access track(s) and associated infrastructure ²	117	53	356379.72	8137498.48	11.65	4.30	15.95
Kyalla 117: gravel pit SSGP1 (former gravel pit A)	117	52	333877.96	8135080.04	2.50	-	2.50
Kyalla 117: gravel pit SSGP2 (former gravel pit 3)	117	53	362753.93	8135089.25	6.25	-	6.25
Shenandoah S2: lease pad, access track and associated infrastructure	98	53	355291	8140676	-	29.50	29.50
Shenandoah S2: gravel pit SSGP3	98	53	355823.97	8140510.08	5.00	5.00	5.00
Shenandoah S B: lease pad, access track(s), laydown and associated infrastructure	117	53	345035	8135464	-	23.30	23.30
Shenandoah S C: lease pad, access track(s) and associated infrastructure	117	53	343471	8133330	-	17.30	17.30
Gathering line: Kyalla 117 N2 to/from Shenandoah S2 (start to end)	117 & 98	53	356274 355060	8137505 8140071	-	4.50	4.50
Gathering line: Shenandoah S B to / from Shenandoah S C (start to end)	117	53	345035 343442	8135461 8133331	-	4.11	4.11
Shenandoah NA: lease pad, camp pad, access track(s) and associated infrastructure	98	53	356687	8163762	-	12.00	12.00
Beetaloo W: lease pad, camp pad, access track(s)	117	53	368276.05	8106695.96	4.60	-	4.60

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Kyalla 117: gravel pit SSGP1 (former gravel pit A)	117	52	333877.96	8135080.04	2.50	-	2.50
Kyalla 117: gravel pit SSGP2 (former gravel pit 3)	117	53	362753.93	8135089.25	6.25	-	6.25
Shenandoah S2: lease pad, access track and associated infrastructure	98	53	355291	8140676	-	29.50	29.50
Shenandoah S2: gravel pit SSGP3	98	53	355823.97	8140510.08	5.00	5.00	5.00
Shenandoah S B: lease pad, access track(s), laydown and associated infrastructure	117	53	345035	8135464	-	23.30	23.30
Shenandoah S C: lease pad, access track(s) and associated infrastructure	117	53	343471	8133330	-	17.30	17.30
Gathering line: Kyalla 117 N2 to/from Shenandoah S2 (start to end)	117 & 98	53	356274 355060	8137505 8140071	-	4.50	4.50
Gathering line: Shenandoah S B to / from Shenandoah S C (start to end)	117	53	345035 343442	8135461 8133331	-	4.11	4.11
Shenandoah NA: lease pad, camp pad, access track(s) and associated infrastructure	98	53	356687	8163762	-	12.00	12.00
Beetaloo W: lease pad, camp pad, access track(s)	117	53	368276.05	8106695.96	4.60	-	4.60

² The combined disturbance approved under the *Beetaloo Basin Kyalla 117 N2 Civil Construction EP117 EMP*, approved 6 June 2019 and *Beetaloo Basin groundwater monitoring bore installation program – Kyalla 117 EMP*, approved 10 December 2018, excluding gravel pit disturbance listed separately.

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Current EMP text							Amended EMP text											
and associated infrastructure							and associated infrastructure											
Beetaloo W: gravel pit BGP1	117	53	341183.95	8106346.05	0.50	-	0.50	Beetaloo W: gravel pit BGP1	117	53	341183.95	8106346.05	0.50	-	0.50			
Beetaloo W: gravel pit BGP2	117	53	348618.29	8106405.96	0.50	-	0.50	Beetaloo W: gravel pit BGP2	117	53	348618.29	8106405.96	0.50	-	0.50			
Beetaloo W: gravel pit BGP3	117	53	355401.32	8106544.53	0.25	-	0.25	Beetaloo W: gravel pit BGP3	117	53	355401.32	8106544.53	0.25	-	0.25			
Seismic: Shenandoah South Line A (13.00 km)**	117	53	337174.05 346089.96	337174.05 8128616.75	-	6.50	6.50	Seismic: Shenandoah South Line A (13.00 km)**	117	53	337174.05 346089.96	337174.05 8128616.75	-	6.50	6.50			
Seismic: Shenandoah South Line B (12.50 km)**	98 & 117	53	341094.69 349560.21	341094.69 8131483.21	-	6.50	6.50	Seismic: Shenandoah South Line B (12.50 km)**	98 & 117	53	341094.69 349560.21	341094.69 8131483.21	-	6.50	6.50			
Seismic: Shenandoah South Line C (12.50 km)**	98 & 117	53	338588.93 347420.93	338588.93 8129410.23	-	6.25	6.25	Seismic: Shenandoah South Line C (12.50 km)**	98 & 117	53	338588.93 347420.93	338588.93 8129410.23	-	6.25	6.25			
Seismic: Shenandoah access track(s) seismic line(s) (39.00 km)**	98 & 117	53	332988 356365	332988 8150204	-	-	-	Seismic: Shenandoah South 2 Well Site Seismic Line (0.63 km)	98	53	355597.53 355080.83	8141451.8 8141716.61	-	-	-			
Total clearing (ha)					26.25	119.01	145.26	Seismic: Shenandoah access track(s) seismic line(s) (39.00 km)**	98 & 117	53	332988.00 356365.00	332988.00 8150204.00	-	-	-			
*Universal Transverse Mercator (UTM) geographic coordinate system is Geocentric Datum of Australia (GDA) 94. **Footprint area for 2D seismic based on 5 m wide seismic lines.													Total clearing (ha)			26.25	119.01	145.26
*Universal Transverse Mercator (UTM) geographic coordinate system is Geocentric Datum of Australia (GDA) 94. **Footprint area for 2D seismic based on 5 m wide seismic lines.													*Universal Transverse Mercator (UTM) geographic coordinate system is Geocentric Datum of Australia (GDA) 94. **Footprint area for 2D seismic based on 5 m wide seismic lines.					
Section 3.4 Seismic survey (pg. 51) Approximately 77 km of 2D seismic acquisition will be completed (Figure 8), comprising:							Section 3.4 Seismic survey (pg. 51) Approximately 83.03 km of 2D seismic acquisition will be completed (Figure 8), comprising:											
<ul style="list-style-type: none"> 39.66 km of 2D seismic acquisition in the vicinity of the Shenandoah SB and SC lease pads: <ul style="list-style-type: none"> Line A – 13.0 km (6.50 ha) Line B – 12.5 km (6.25 ha) Line C – 12.5 km (6.25 ha) 39 km of 2D seismic acquisition will occur along existing access tracks. <p>The seismic survey will involve a maximum ground disturbance of up to 19.0 ha (Table 10). The actual vegetation clearing level is likely to be significantly lower through the deployment of clearance avoidance measures. The cumulative impact of surface disturbance across EPs is discussed further in section 3.6.4.</p>							<ul style="list-style-type: none"> 38.00 km of 2D seismic acquisition in the vicinity of the Shenandoah SB and SC lease pads: <ul style="list-style-type: none"> Line A – 13.0 km (6.50 ha) Line B – 12.5 km (6.25 ha) Line C – 12.5 km (6.25 ha) Shenandoah South 2 Seismic Line – 0.63 km 44.4 km of 2D seismic acquisition will occur along existing access tracks. <p>The seismic survey will involve a maximum ground disturbance of up to 19.0 ha (Table 10). The actual vegetation clearing level is likely to be significantly lower through the deployment of clearance avoidance measures. The cumulative impact of surface disturbance across EPs is discussed further in section 3.6.4.</p>											

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Section 3.4 Seismic Survey (pg. 52)



Figure 8: Proposed 2D seismic acquisition

Section 3.4 Seismic Survey (pg. 52)

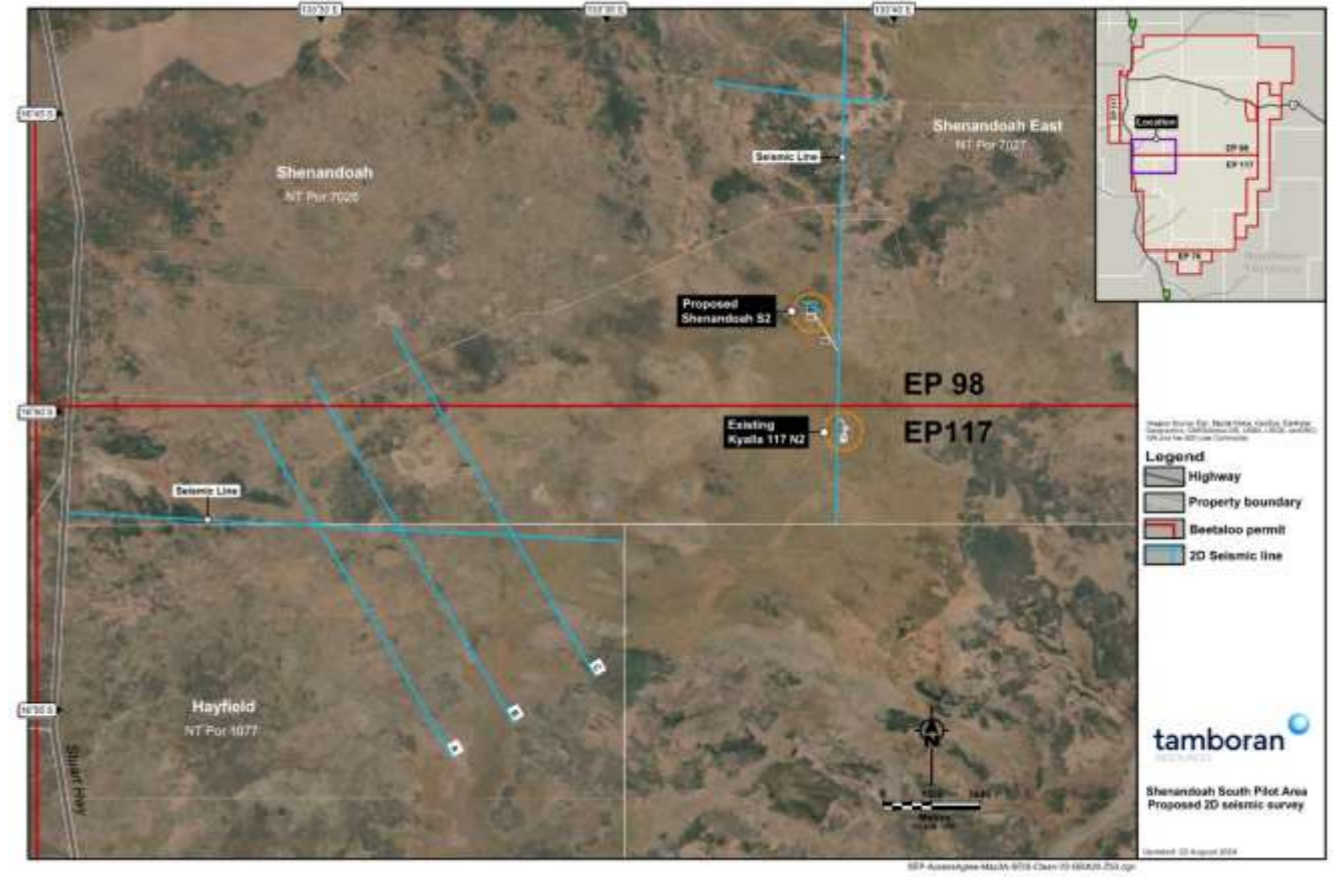


Figure 8: Proposed 2D seismic acquisition