

INLAND RAIL PROJECT - NARRABRI TO NORTH STAR (N2NS)

SSI 7474 – 6 Monthly Construction Monitoring Report (October 2021 – April 2022)

Date:	26/05/2022
To:	Dominic Crinnion Director - Infrastructure Management Planning Services Level 17, 12 Darcy Street 4 Parramatta Square Parramatta NSW 2150
From:	Trans4m Rail Joint Venture 64 – 68 Balo Street Moree, NSW 2400
Project:	Inland Rail Narrabri to North Star SP1 (the “N2NS Project”)
Distribution:	Australian Rail Track Corporation (ARTC) N2NS Project Environmental Representative (Project ER) NSW Department of Planning and Environment (NSW DPE) NSW Environment Protection Authority (NSW EPA)
Attachments:	Attachment A: N2NS Project Water Usage Results Attachment B: Depositional Dust Gauge Monitoring Results Attachment C: Depositional Dust Gauge Monitoring Results (Certificate of Analysis) Attachment D: Airborne Air Quality (PM10) Monitoring Results Attachment E: DusTrak Calibration / Service Report Attachment F: Air Quality Monitoring Locations Attachment G: Noise Monitoring Results Attachment H: Noise Meter Calibration Certificate Attachment I: Noise Monitoring Locations

Construction works on the Narrabri to North Star SP1 Project (N2NS Project) commenced on the 10th April 2021 following the NSW Environment Protection Authority (NSW EPA) issuing the full Environment Protection Licence (EPL) on the 1st April and the Department of Planning, Industry and Environment (NSW DPIE) approving the Project’s Construction Environmental Management Plan (and Sub-Plans) on the 7th April 2021.

As detailed in the N2NS Project’s Condition of Approval (CoA) C14, the following Construction Monitoring Programs have been developed for the N2NS Project and are contained within the relevant Sub-Plans to the Construction Environmental Management Plan:

- Noise and Vibration Monitoring Program; as per Section 11 and Appendix E of the Construction Noise and Vibration Management Sub-Plan (CNVMP);
- Water Usage Monitoring Program; as per Section 7.2.1 of the Construction Soil and Water Management Sub-Plan (CSWMP);
- Air Quality Monitoring Program; as per Section 7.2.2 and Appendix D of the CSWMP; and



- Physical Condition of local roads Monitoring Program; as per Section 5 of the Construction Traffic, Transport and Access Management Sub-Plan (CTTAMP).

As required under CoA C20, this 6 Monthly Construction Monitoring Report has been prepared to summarise the results of these Construction Monitoring Programs.

The environmental works undertaken during this reporting period included the following:

- Preparation of environmental planning and management documentation, including but not limited to: CPESC Certified Erosion and Sediment Control Plans, Site Environmental Plans, Site Specific Flood Preparation Plans, Construction Noise and Vibration Impact Statements and Out of Hours Works Applications.
- Commencement of background environmental monitoring (i.e. noise, surface water and dust) within Stage 1 ahead of the upcoming possession.
- Establishment and maintenance of Erosion and Sediment Controls in accordance with the CPESC Certified Erosion and Sediment Control Plans within Stages 1, 2A, 2B and 3.
- Establishment of No-Go Zones and demarcation of the Construction Impact Zones (CIZ) through Stages 1, 2A, 2B and 3.
- Trapping and survey for Five-clawed Worm Skinks within Stage 1 and 2B.
- Installation of Five-clawed Worm Skink relocation hubs and areas of enhanced habitat in accordance with advice from DPE, ARTC and the Project's Ecologist.
- Pre-Clearance Surveys and spotter-catcher duties performed by suitably qualified Ecologists within Stages 1, 2A, 2B and 3.
- Vegetation clearing, slashing and weed management works through Stage 1, 2B and 3.
- Trans4m Rail Environmental Personnel undertook numerous environmental inspections during the reporting period, with no serious observations or major non-compliances identified. This included general Environmental / Sustainability Inspections, Pre and Post Rainfall Inspections and targeted inspections with the Project's CPESC, the Project's Ecologist and the Project's Environmental Representative (ER).
- Deposition Dust Gauge (DDG) Monitoring continued at 3 locations (Gurley Township, Laydown Pad 2 and Laydown Pad 4 (Moree)) during the reporting period with another 11 being deployed in Stages 1 and 3. Monitoring of these additional DDG's commenced during this period. In addition to this, airborne particulate (PM10) matter monitoring occurred at Croppa Creek during this reporting period.
- Construction-phase noise monitoring at sensitive receiver locations within Stage 3.
- Investigation and management of environmental incidents, complaints and events that occurred on the N2NS Project.

The environmental initiatives that occurred during this reporting period included:

- Facilitation of a Stage 2/3 Environmental Lessons Learnt Session (consisting of 2 Workshops), attended by T4MR personnel, ARTC personnel and the Project's Environmental Representative (ER). These lessons will be incorporated into the upcoming Stage 1 and 2B works.
- Creation of an *Environmental WhatsApp Group* for the N2NS Project to promote environmental awareness and improve communication within and between the Environmental and Construction Teams. Attendees of the WhatsApp Group includes; all members of the T4MR Environmental Team, all Supervisors and other key T4MR and ARTC personnel.
- Installation of a 4th Automated Weather Station (AWS) on the Project, located north of Bellata (Stage 1), ahead of the Stage 1 possession.
- Recruitment of an additional Environmental Field Labourer and additional plant and equipment.
- Increased site inspection frequency of the Project's CPESC.
- Rollout of a new incident, inspection and action Management Platform on the N2NS Project (SAI360 Based *Soteria*).

Table 1: Results and / or findings of the Construction Monitoring Programs

<p>Noise and Vibration Monitoring Program</p>	<p><u>Vibration Monitoring</u> Section 11.4 of the CNVMP and the Project’s <i>Environmental Protection Licence</i> (EPL) identifies various situations where vibration monitoring is or may be required on the N2NS Project. These situations typically include:</p> <ul style="list-style-type: none"> - Work activities with the potential to generate significant vibration levels where the vibration screening criteria is likely to be exceeded. NOTE: The minimum working distances (vibration screening criteria) are based upon the vibration objectives in Section 7.4.1 (CNVMP) for “sound structures” being 7.5mm/s peak component particle velocity and in Section 7.4.2 (CNVMP) for “unsound structures” (i.e. unsound heritage building) 2.5mm/s peak component particle velocity. These include a 32 tonne compactor, being the most vibration intensive plant proposed to be used on the Project, with an indicative minimum working distance of 10 metres for sound structures and 20 m for unsound structures. - Vibration generating activities that have the potential to impact on heritage items. - Works occurring where vibration sensitive locations occur within the minimum working distances for the N2NS Project. - Where determined by a vibration assessment and reported in the relevant CNVIS. - Where vibration related complaint(s) are received. - Where directed to undertake monitoring by an authorised officer of the EPA. <p>No vibration monitoring was triggered or undertaken during the reporting period.</p> <p><u>Noise Monitoring</u> Construction-phase noise monitoring occurred on the 11th Feb 2022 at 11 locations within Stage 3. This monitoring targeted 2 locations (the closest residential receiver and the Croppa Creek School) within the township of Croppa Creek and 9 other locations where sensitive residential receivers are located in close proximity to the construction alignment.</p> <p>This attended noise monitoring was undertaken in accordance with Sections 11.3.2 – 11.3.4 of the CNVMP, using a calibrated Level 1 Sound Level Meter (Rion NL-52) and performed by suitably qualified and trained Environmental Professionals.</p> <p>Refer to Appendix G, H and I for further information and calibration records.</p> <p>This monitoring identified the following:</p> <ul style="list-style-type: none"> - The construction phase monitoring within Stage 3 reported LA_{eq} (15MINS) ranging between 40.6dB to 70.7dB. The Noise Management Level (NML) adopted for the N2NS Project (40dB) was exceeded at all monitoring locations. - The observations and contemporaneous notes taken during the noise monitoring indicated that at some locations the operation
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	<p>of construction plant and equipment was the predominant noise source, whereas in other locations non-construction noise sources was the predominant noise source (i.e. birds, dog barking, non-Project related traffic and / or wind).</p> <ul style="list-style-type: none"> - No residential or other sensitive receivers (OSR) were reported to be highly noise affected, as defined by the Interim Construction Noise Guideline (ICNG, NSW Department of Environment and Climate Change, 2009), during the monitoring. <p>As per the ICNG, where an exceedance of the Project’s NML is related to construction activities, the following measures are to be implemented:</p> <ul style="list-style-type: none"> - <i>Apply all feasible and reasonable work practices to meet the noise affected level.</i> In this case the measures detailed in Section 10 of the N2NS Project’s CNVMP will continue to be implemented. In addition to this, work is currently being undertaken on the N2NS Project to reduce the idling times of all plant and equipment on the Project and reduce non-essential noise sources; and - <i>Inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.</i> The N2NS Project’s Community and Stakeholder Engagement Team notify, consult and inform all potentially impacted residential receivers and OSR prior to and during construction works occurring. Consultation works are being undertaken in accordance with the Project’s Community and Stakeholder Engagement Management Plan (CSEMP). <p>In addition to these requirements, construction phase noise monitoring will continue to occur on the project where construction noise is likely to affect residential and OSR.</p> <p>No construction related noise or vibration complaints were received during the period.</p>
<p>Water Usage Monitoring Program</p>	<p>Environmental monitoring, in particular that of construction water usage, has been conducted for the duration of the construction phase of the Project as required under CoA C14 (b) and RMM C7.2. As per the Inland Rail Construction Water Plan Narrabri to North Star (Golder Associates, January 2020) a total of approximately 1,215ML of construction water was estimated to be used for the construction of the N2NS Project. However, the strategies developed by Trans4m Rail suggest that this will be significantly reduced. The aforementioned SSI monitoring seeks to establish the water usage volume by measuring the water usage on the N2NS Project.</p> <p>Trans4m Rail’s construction water strategy has been modified since the commencement of the Project. Construction water was initially proposed to be sourced from municipal supplies (both potable and non-potable); however Trans4m Rail has since developed contracts with numerous landholders along the alignment for the purchase of local farm dam water. In addition, a substantial amount of captured stormwater (from numerous floods and rain events since the commencement of construction) has also been used during the construction process.</p>



	<p>The current water usage for construction on the Project is:</p> <table border="1" data-bbox="625 369 1254 472"> <tr> <td>Potable Water</td> <td>16,481.4KL</td> </tr> <tr> <td>Non-Potable Water</td> <td>124,250.4KL</td> </tr> <tr> <td>Total Water Use</td> <td>140,731.8KL</td> </tr> </table> <p>The non-potable water is utilised for dust suppression, lime slacking and compaction and although at the outset of the project potable water was also used for these purposes it is now primarily used for on-site amenities only.</p> <p>The output is collated from water cart data, which outlines a number of aspects regarding the water usage including: the provider, the load volume, the source or origin of the water, the number of loads and the final destination and use of the water. This information is further separated based on whether water is potable or non-potable and individual entries are recorded for each provider to ascertain any trends that may be occurring.</p> <p>Whilst the data collection occurs on a daily basis this information is also collated on a monthly basis to be reported against baseline data to ARTC. Furthermore, this monthly data is analysed to see emerging trends within the Project for water usage and determine if any additional mitigation measures are required. The data so far reveals an overwhelming usage of non-potable water as opposed to potable water primarily due to the significant rainfall experienced throughout the region.</p> <p>The results of this monitoring are provided in Attachment A.</p>	Potable Water	16,481.4KL	Non-Potable Water	124,250.4KL	Total Water Use	140,731.8KL
Potable Water	16,481.4KL						
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Total Water Use	140,731.8KL						
<p>Air Quality Physical</p>	<p>Depositional Dust Gauges (DDGs) were established at 3 locations on the N2NS project in February 2021 in accordance with the Depositional Dust Monitoring Procedure in the Project’s CSWMP. The intent of the gauges were to capture background air quality (deposited dust) prior to construction activities commencing and throughout the construction process. A further 6 DDG’s were installed in Stage 3 in December 2021 and another 5 DDG’s in Stages 1 and 3 in February / March 2022. The Gurley DDG was decommissioned in March 2022 due to the completion of works in the area.</p> <p>The locations of these DDGs were selected based on the requirements of Appendix D of the Project’s CSWMP, the <i>A/NZS3580.1.1:2007: Methods for sampling and analysis of ambient air, Part 1.1: Guide to siting air monitoring equipment</i> and the EPL for the Project. The locational criteria considered during the selection of the monitoring locations included:</p> <ul style="list-style-type: none"> - General dust catchment areas along the alignment A based on the scale and nature of the construction activities occurring in the area and the density, location and proximity of surrounding sensitive receivers. - The local meteorological data and wind roses provided in the Project EIS. - The selected DDG locations considered representative of the surrounding locations, taking into account all environmentally sensitive areas in the receiving environment. 						



	<p>Locations were selected to avoid the following (where possible):</p> <ul style="list-style-type: none"> - Where airflow is restricted, such as behind trees or structures. DDG's should have a minimum clear sky angle of 120°. - Surrounding and / or overhanging objects that might alter the dust deposition rate, such as leafy vegetation, buildings and other structures. - Interference that may occur from surrounding land uses i.e. farming, industry or unsealed access roads, etc. - Locations that are visible and accessible by the public to avoid DDGs being tampered with. <p>Monitoring locations have also been selected based on the requirements of the Project's EPL. EPL Condition P1.1, states that depositional dust monitoring must be undertaken "Adjacent to the most affected sensitive receivers nearby construction works".</p> <p>NOTE: The DDG locations selected on the Project comply with the locational criteria detailed above with the exception of the interference criteria. The entire N2NS alignment is in close proximity (typically <200m) to surrounding land uses (i.e. large scale intensive agriculture) that may interfere with the results. In addition to this, the DDG established adjacent Crooble Road is in close proximity to the unsealed Crooble Road. This location was selected as it's adjacent 2 sensitive receivers on Crooble Road as per the EPL (Condition P1.1) requirement.</p> <p>The adopted air quality criteria for depositional dust gauge monitoring is shown below:</p> <table border="1" data-bbox="587 1178 1385 1279"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Criteria</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Dust Deposition^c</td> <td rowspan="2">Annual</td> <td>2 g/m²/month^a</td> </tr> <tr> <td>4 g/m²/month^b</td> </tr> </tbody> </table> <p>a. Maximum increase in deposited dust level. b. Maximum total deposited dust level. c. Dust is assessed as insoluble solids as defined by AS 3580.10.1-1991 (AM-19).</p> <p>The full results and locations of the DDG monitoring are provided in Attachment B, C and F.</p> <p>The DDG monitoring during this period identified the following:</p> <ul style="list-style-type: none"> - The annual average dust deposition rate for all monitoring locations was <4g/m²/month with the exception of the Crooble, Croppa Creek, Croppa Creek-North Star Road Level Crossing and Edgeroi monitoring locations. NOTE: 12 months of data not available for these DDGs. - The monthly depositional dust rates recorded during the monitoring period were typically less than 4g/m²/month across most monitoring locations and most monitoring periods. The exception of this included; <ol style="list-style-type: none"> 1. Crooble (Jan 2022 (7.9g/m²/month) and Feb 2022 (7.1g/m²/month)); 2. Croppa Creek (Apr 2022 – 15.4g/m²/month); 3. Croppa / North Star Intersection (Feb 2022 – 13.2g/m²/month); and 	Pollutant	Averaging period	Criteria	Dust Deposition ^c	Annual	2 g/m ² /month ^a	4 g/m ² /month ^b
Pollutant	Averaging period	Criteria						
Dust Deposition ^c	Annual	2 g/m ² /month ^a						
		4 g/m ² /month ^b						

	<p>4. Wongabindie, Edgeroi and Tookey Creek DDGs reported 4.4, 4.3 and 4.8g/m²/month, respectively for the month of April 2022.</p> <ul style="list-style-type: none"> - All DDG locations where exceedances were reported are subject to interference from surrounding land uses (large scale agriculture occurring within 200m of the monitoring location) and these timeframes align with harvest season (Wheat and sorghum harvest season from October to December and the cotton harvest season from February – May). Regardless, following the exceedances identified above, the below actions have been taken: <ol style="list-style-type: none"> 1. Additional dust management measures (i.e. increased watercarts and stabilisation of exposed soils) have been undertaken at these (and other) locations on-site. 2. DDG monitoring to continue at these locations, including the deployment of the Dustrak at Croppa Creek. NOTE: Further assessment will be undertaken to determine if the current Crooble DDG location is suitable as its located directly adjacent to an unsealed local road, or a more suitable alternative location is available. The NSW EPA will be consulted if the Project proposes to relocate this DDG. - A lab non-compliance was also reported with the DDG monitoring at 3 locations (i.e. Pad 2, Pad 4 and Gurley), whereby the typical exposure period of 30 days (+/- 2 days) was exceeded. A breakdown in communications between Project personnel resulted in these DDGs remaining on-site for longer than the stipulated exposure period. To ensure this does not occur again, additional T4MR Environmental Resources have been onboarded and additional training provided and clarity regarding allocation of tasks has occurred. <p>Airborne Particulate Matter (PM10) monitoring commenced during a previous reporting period (27th September 2021). The photometer was established at Croppa Creek with the intent of capturing background air quality data prior to bulk earthworks commencing in the area (due to commence in Nov 2021).</p> <p>The adopted pollutant criteria for PM10 monitoring on the N2NS Project is detailed below.</p> <table border="1" data-bbox="587 1568 1385 1635"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Criteria¹</th> </tr> </thead> <tbody> <tr> <td>PM10</td> <td>24 Hours</td> <td>50 µg/m³</td> </tr> </tbody> </table> <p>1. Based on the Air NEPM and the Approved Methods</p> <p>During the reporting period, PM10 monitoring continued at Croppa Creek. During the monitoring the following PM10 concentrations were observed:</p> <p>Monitoring event 1: 19/01/2022 (12:11pm) – 05/02/2022 (18:36pm); the average (24hr rolling average) PM10 concentration recorded was <50µg/m³ with the maximum PM10 concentration recorded being 168 µg/m³. The photometer ceased monitoring on the 05/02/2022, reporting “flow issues”. The filter was removed, cleaned and the meter re-deployed for further monitoring.</p>	Pollutant	Averaging period	Criteria ¹	PM10	24 Hours	50 µg/m ³
Pollutant	Averaging period	Criteria ¹					
PM10	24 Hours	50 µg/m ³					



	<p>Monitoring event 2: 13/02/2022 (11:29am) – 14/02/2022 (4:44am); the average (24hr rolling average) PM10 concentration recorded was <math><50\mu\text{g}/\text{m}^3</math> with the maximum PM10 concentration recorded being 43 $\mu\text{g}/\text{m}^3$. Again, the meter ceased monitoring reporting “flow issues”. The meter was returned to the supplier for troubleshooting (Service Report attached). The meter has been returned to site and deployed to Croppa Creek for further monitoring.</p> <p>During this reporting period, the EPA has amended the licence to include dust deposition monitoring requirements (EPA Notice Number – 1618218). This aligns licence monitoring requirements with the monitoring approach identified in the Project’s Air Quality Monitoring Program. The results of the depositional dust gauge monitoring is included in Attachment B.</p>
<p>Local Road Condition Monitoring Report</p>	<p>During the reporting period, the condition of local roads were surveyed on the following occasions:</p> <p><u>December 2021:</u></p> <ul style="list-style-type: none"> - 7th, 9th and 10th Dec 2021 – Newell Highway - 12th Dec 2021 – Gwydir Highway (incl. side roads) - 14th Dec 2021 – Newell Highway (Narrabri Shire Council) - 16th Dec – Local Roads <p><u>January 2022:</u></p> <ul style="list-style-type: none"> - 12th, 13th, 14th, 16th and 18th Jan 2022 - Level Crossings Local Roads - 7th Jan 2022 – Newell Hwy (NB and SB), Gurley to Croppa Moree Road - 8th, 9th and 10th Jan 2022 – Stage 3 Local Roads - 11th and 28th Jan 2022 – Newell Hwy (NB and SB) – Stage 1 - 15th Jan 2022 – Penneys Lane to Bobbiwa South (Newell Hwy) - 19th Jan 2022 - Newell Hwy (NB and SB) – Stage 1 (Post Rain Event) - 30th Jan 2022 – Stage 1 (Bellata Roads) - 31st Jan 2021 – Pavement Investigation and SB OSOM <p><u>February 2022:</u></p> <ul style="list-style-type: none"> - 1st Feb 2022 – Level Crossings local roads - 2nd Feb 2022 – Stage 2 Drive Through - 3rd and 5th Feb 2022 – Stage 1 Drive Through - 4th Feb 2022 – Level Crossing (Buckie Road) - 6th Feb 2022 – Pad 2 - 7th Feb 2022 –Level Crossings (Buckie Road) - 8th Feb 2022 – MPSC Joint Delap Drive Through - 9th Feb 2022 – Pad 2 & Stage 1 (NB and SB) - 18th Feb 2022 – Stage 1 and 2 Drive Through - 19th Feb 2022 – Pad 2 Signage Install and Spray Seal - 20th Feb 2022 – Milguy Level Crossing - 21st Feb 2022 – Stage 3 Level Crossing and Locals Roads - 22nd and 23rd Feb 2022 – Stage 1 and 2 (NB and SB) Drive Through - 22nd Feb 2022 – Pad 2 New Alignment and Road Furniture - 24th Feb 2022 – Gwydir Hwy and Buckie Road - 25th Feb 2022 – Post 20mm rain event drive through - 26th Feb 2022 – Stage 3 Drive Through - 27th Feb 2022 – Stage 1 and 2 Drive Through



	<ul style="list-style-type: none"> - 28th Feb 2022 – Stage 1 and 2 TfNSW Surveillance Officer (Joint Inspection) - 28th Feb 2022 – Buckie Rd and Croppa Moree Road <p><u>March 2022:</u></p> <ul style="list-style-type: none"> - 1st Mar 2022 – Stage 1 and Stage 2 Drive Through - 2nd Mar 2022 – Stage 1 and 2 – Busways Pick up Locations - 12th Mar 2022 – ARTC Monthly Traffic Management Inspection - 12th Mar 2022 – Stage 3 Roadside Mowing - 13th Mar 2022 – Calimpa Rd Traffic Changes - 19th Mar 2022 – Ten Mile Creek Newell Highway - 22nd Mar 2022 – Calimpa, Croppa Moree Rd and RAS Boards Drive Through - 14th Mar 2022 – Quarry Delap Inspection (Narrabri and Gunnedah Shires) - 16th Mar 2022 – Narrabri Gazetted and Local Roads - 16th Mar 2022 – MPSC Monthly Drive Through (Stage 3) - 13th Mar 2022 – Gwydir Shire Pavements Drive Through - 18th Mar 2022 – Newell Highway (Penneys to Edgeroi) NB and SB - 23rd Mar 2022 – Newell Highway (Stage 1 - NB and SB) <p><u>April 2022:</u></p> <ul style="list-style-type: none"> - 1st Apr 2022 – Gurley and Stage 1 - 2nd and 3rd Apr 2022 – Tapscott Rd to Narrabri (Newell Highway) – NB and SB - 4th 5th, 6th, 8th and 9th Apr 2022 - Stage 1 (Newell Hwy, SB and NB) Drive Through - 9th Apr 2022 – Alternative Route Drive Through - 10th – 13th Stage 1 (Newell Hwy, SB and NB) Drive Through - 10th April 2022 – Calimpa and Poppinguy Rds – Drive Through - 22nd – 27th Apr and 29th Apr 2022 - Stage 1 (Newell Hwy, SB and NB) Drive Through - 28th Apr 2022 – Stage 1 and 2 Newell Highway NB and SB – joint T4MR and TfNSW Inspection - 30th Apr – Stage 3 Sealed and Unsealed Roads <p>These surveys identified the following comments, actions or observations:</p> <ul style="list-style-type: none"> - 16 Mar 2022 Joint Inspection – MPSC identified rectification works required on a Causeway on Wongabindie Rd. This is currently being assessed by the project to determine if this damage is project related. - 16 Mar 2022 Joint Inspection – MPSC requested information if T4MR trucks are using Gil Gil Creek Road as shoving (and general deterioration) occurring at a number of locations on Gil Gil Creek Road. This has been assessed and this damaged has been determined not to be project related. - 16 Mar 2022 Joint Inspection - Long-term signage around the MPSC LGA need to be raised. This action has occurred as requested. - 8 Feb 2022 Joint Inspection – MPSC identified corrugations along Wongabindie Rd, from Back Pally Rd to Calimpa Rd. T4MR are monitoring the condition of this as agreed with MPSC.
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	- 8 Feb 2022 Joint Inspection – MPSC identified two (2) soft spots on Calimpa Rd, east of Wongabindie Rd. T4MR are monitoring the condition of this as agreed with MPSC.
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The environmental focus for the next reporting period includes:

- Preparation of secondary approvals and other environmental documents for mobilisation into Stage 1, Stage 2B and Stage 2D for the current possession.
- Establishment of environmental controls i.e. demarcation of the Project's Construction Impact Zone, Erosion and Sediment Controls, Five-Clawed Worm Skink relocation locations, etc in Stage 1 and 2B.
- Review and update of the Project's Sub-Plans, including, but not limited to the Construction Heritage Management Sub-Plan, Construction Flood and Emergency Management Sub-Plan and the Construction Noise and Vibration Management Sub-Plan.

Please don't hesitate to contact me should you have any further questions in relation to this matter.

Yours sincerely

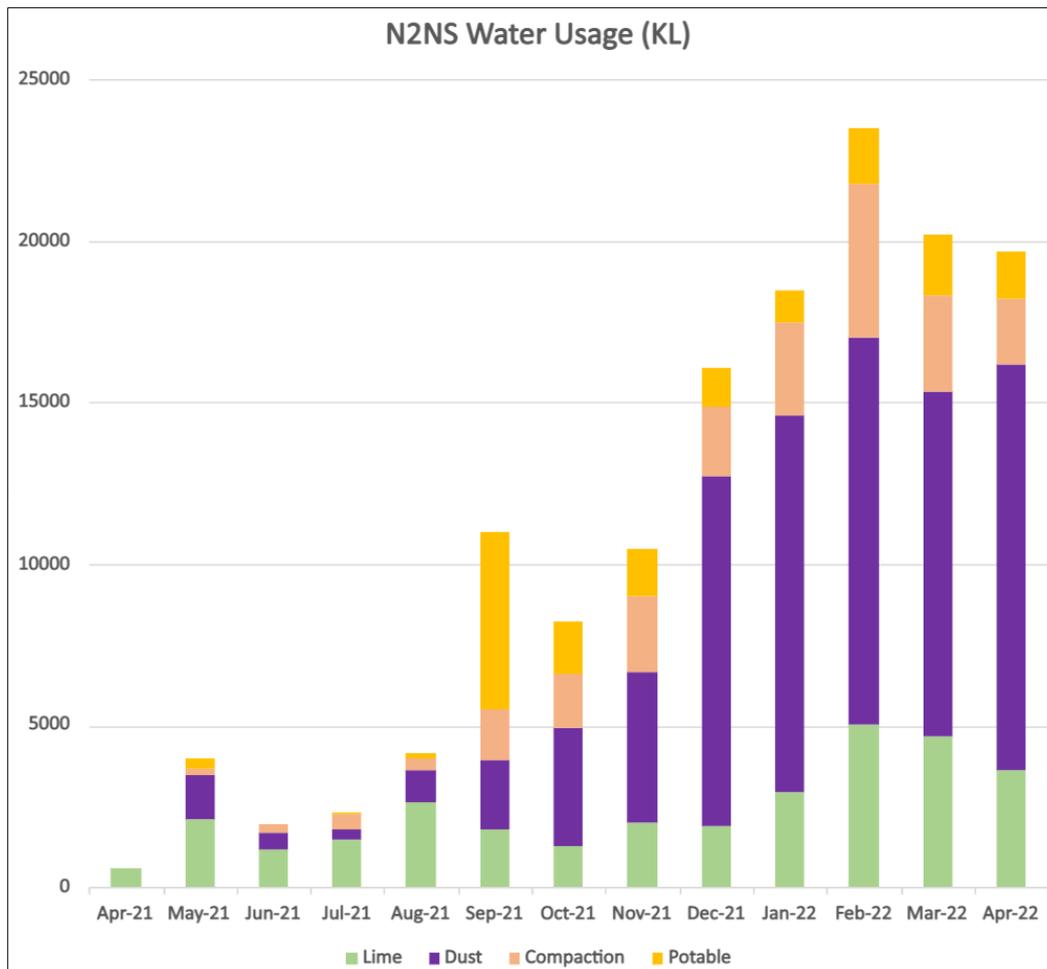
A handwritten signature in black ink that reads "Pippa Donaldson".

Pippa Donaldson (Adam Playne (pp))
Manager Environment and Sustainability
Trans4m Rail

ATTACHMENTS

Attachment A: N2NS Project Water Usage Results

Water Usage (KL)					
Month	Lime	Dust	Compaction	Potable	Total
Apr-21	598	0	0	0	598
May-21	2099.5	1334.5	234	320	3988
Jun-21	1144	523	286	0	1953
Jul-21	1495	273	496	59	2323
Aug-21	2604	1005	364	173.4	4146.4
Sep-21	1802	2128	1595	5482	11007
Oct-21	1262	3636	1698	1648	8244
Nov-21	1993	4653	2344	1467	10457
Dec-21	1887	10812.25	2161.75	1210.5	16071.5
Jan-22	2919	11689	2904	993.5	18505.5
Feb-22	5019	12005	4756	1735.5	23515.5
Mar-22	4677.3	10647.8	2989.3	1906	20220.4
Apr-22	3592	12560.5	2063.5	1486.5	19702.5



Attachment B: Depositional Dust Gauge Monitoring Results

Monitoring Period	PAD 2	PAD 4	Gurley	Crooble	Croppa Creek	Croppa / North Star Int.	North Star	Royden Road	Milguy	Wongabindi	Spring Creek	Edgeroi	Tookey Creek	Pan Creek
Units	Total Insoluble Matter (g/m ² /month)													
Criteria	4 g/m ² /month													
Feb-21	0.3	4.4	1.1	-	-	-	-	-	-	-	-	-	-	-
Mar-21	0.7	0.4	0.5	-	-	-	-	-	-	-	-	-	-	-
Apr-21	2.0	1.6	0.8	-	-	-	-	-	-	-	-	-	-	-
May-21	0.4	1.0	0.5	-	-	-	-	-	-	-	-	-	-	-
Jun-21	1.3	0.5	1.2	-	-	-	-	-	-	-	-	-	-	-
Jul-21	1.0	0.2	0.2	-	-	-	-	-	-	-	-	-	-	-
Aug-21				-	-	-	-	-	-	-	-	-	-	-
Sep-21	1.5	2.9	0.8	-	-	-	-	-	-	-	-	-	-	-
Oct-21				-	-	-	-	-	-	-	-	-	-	-
Nov-21				-	-	-	-	-	-	-	-	-	-	-
Dec-21	0.7	1.0	0.5	1.9	0.1	2.1	4.0	2.1	1.2	-	-	-	-	-
Jan-22	0.7	0.8	0.5	7.9	1.6	0.3	1.6	0.3	0.9	-	-	-	-	-
Feb-22	0.8	0.7	1.2	7.1	2.2	13.2	2.4	3.1	1.4	1.4	-	-	-	-
Mar-22	0.5	0.8	Decom.	4.7	4.0	4.7	2.2	1.2	1.5	5.4	3.6	3.8	2.5	1.8
Apr-22	0.2	0.4	Decom.	3.6	15.4	2.3	1.1	0.7	0.9	4.4	2.4	4.3	4.8	1.0
Annual Average	0.8	1.2	0.7	5.0	4.7	4.5	2.3	1.5	1.2	3.7	3.0	4.1	3.7	1.4

Pollutant	Averaging period	Criteria
Dust Deposition ^c		2 g/m ² /month ^a
	Annual	4 g/m ² /month ^b

a. Maximum increase in deposited dust level.
b. Maximum total deposited dust level 4.
c. Dust is assessed as insoluble solids as defined by AS 3580.10.1-1991 (AM-19).
Underlined data is non-compliant with typical exposure period of 30 +/- 2 days as per AS3580.10.1



Attachment C: Depositional Dust Gauge Monitoring Results (Certificate of Analysis)

CERTIFICATE OF ANALYSIS

Work Order	: EB2203848	Page	: 1 of 5
Client	: Trans 4 M Rail Joint Venture	Laboratory	: Environmental Division Brisbane
Contact	: Kristian Hancock	Contact	: Customer Services EB
Address	: 64-68 Balo Street Moree 2400	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Narrabri 2 North Star	Date Samples Received	: 10-Feb-2022 10:20
Order number	: ----	Date Analysis Commenced	: 16-Feb-2022
C-O-C number	: ----	Issue Date	: 25-Mar-2022 14:03
Sampler	: Luke Trickett		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 12		
No. of samples analysed	: 12		



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This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Thomas Regan	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Dust Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no 1656.
- Sampling Period: 001-009 (31/12/21-01/02/22), 010-012 (09/08/21-01/12/21)
- Sample exposure period for 010-012 is 114 days which is outside the typical exposure period of 30 +/- 2 days as per AS3580.10.1.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.



Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST**
 (Matrix: **AIR**)

				Sample ID	Crooble	Pad 4	Pad 2	Gurley	Croppa CK town
				Sampling date / time	01-Feb-2022 00:00				
Compound	CAS Number	LOR	Unit		EB2203848-001	EB2203848-002	EB2203848-003	EB2203848-004	EB2203848-005
					Result	Result	Result	Result	Result
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m ² .month		7.9	0.8	0.7	0.5	1.6
Total Insoluble Matter (mg)	----	2	mg		149	16	14	10	31



Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST**
 (Matrix: **AIR**)

				Sample ID	CH 755.7	North Star	Roydon Rd	Milguy	Pad 4
				Sampling date / time	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Dec-2021 00:00
Compound	CAS Number	LOR	Unit		EB2203848-006	EB2203848-007	EB2203848-008	EB2203848-009	EB2203848-010
				Result	Result	Result	Result	Result	Result
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m ² .month		0.3	1.6	0.3	0.9	2.9
Total Insoluble Matter (mg)	----	2	mg		6	30	5	17	197



Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST**
 (Matrix: **AIR**)

				Sample ID		Gurley	Pad 2	----	----	----
				Sampling date / time		01-Dec-2021 00:00	01-Dec-2021 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2203848-011	EB2203848-012	-----	-----	-----	-----	-----
				Result	Result	----	----	----	----	----
EA141: Total Insoluble Matter										
Total Insoluble Matter	----	0.1	g/m ² .month	0.8	1.5	----	----	----	----	----
Total Insoluble Matter (mg)	----	2	mg	52	100	----	----	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(AIR) EA141: Total Insoluble Matter

CERTIFICATE OF ANALYSIS

Work Order : EN2200546 Client : Trans 4 M Rail Joint Venture Contact : Kristian Hancock Address : 1087 Siganto Dr Helensvale 4212 Telephone : ---- Project : Narrabri 2 North Star Order number : ---- C-O-C number : ---- Sampler : Luke Trickett Site : ---- Quote number : EN/333 No. of samples received : 10 No. of samples analysed : 10	Page : 1 of 4 Laboratory : Environmental Division Newcastle Contact : Address : 5/585 Maitland Road Mayfield West NSW Australia 2304 Telephone : +61 2 4014 2500 Date Samples Received : 20-Jan-2022 14:00 Date Analysis Commenced : 24-Jan-2022 Issue Date : 25-Mar-2022 14:58
--	--



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Signatories

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<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Thomas Regan	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in g/m².mth as sampling data was provided by the client.
- Sample exposure period for 005 - 007 is 27 days which is outside the typical exposure period of 30 +/- 2 days as per AS3580.10.1.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.



Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST**
 (Matrix: **AIR**)

				Sample ID		Crooble	Pad 4	Pad 2	Gurley	Croppa CK Town
						01/12/21 - 31/12/21	01/12/21 - 31/12/21	01/12/21 - 31/12/21	01/12/21 - 31/12/21	25/11/21 - 22/12/21
				Sampling date / time		31-Dec-2021 00:00	31-Dec-2021 00:00	31-Dec-2021 00:00	31-Dec-2021 00:00	22-Dec-2021 00:00
Compound	CAS Number	LOR	Unit	EN2200546-001	EN2200546-002	EN2200546-003	EN2200546-004	EN2200546-005		
				Result	Result	Result	Result	Result		
EA141: Total Insoluble Matter										
Total Insoluble Matter	----	0.1	g/m ² .month	1.9	1.0	0.7	0.5	0.1		
Total Insoluble Matter (mg)	----	2	mg	34	18	12	8	<2		



Analytical Results

Sub-Matrix: DEPOSITIONAL DUST
 (Matrix: AIR)

Sample ID

				CH 755.7 25/11/21 - 22/12/21	North Star 25/11/21 - 22/12/21	Croppa CK township 01/12/21 - 31/12/21	Roydon Rd 01/12/21 - 31/12/21	Milguy 01/12/21 - 31/12/21
Sampling date / time				22-Dec-2021 00:00	22-Dec-2021 00:00	31-Dec-2021 00:00	31-Dec-2021 00:00	31-Dec-2021 00:00
Compound	CAS Number	LOR	Unit	EN2200546-006	EN2200546-007	EN2200546-008	EN2200546-009	EN2200546-010
				Result	Result	Result	Result	Result
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m ² .month	2.1	4.0	1.7	2.1	1.2
Total Insoluble Matter (mg)	----	2	mg	33	64	30	37	21

CERTIFICATE OF ANALYSIS

Work Order : EN2201884 Client : Trans 4 M Rail Joint Venture Contact : Pippa Donaldson Address : 64-68 Balo Street Moree 2400 Telephone : ---- Project : Narrabri 2 North Star Order number : ---- C-O-C number : ---- Sampler : Maggie Wilton Site : ---- Quote number : EN/333 No. of samples received : 10 No. of samples analysed : 10	Page : 1 of 4 Laboratory : Environmental Division Newcastle Contact : Address : 5/585 Maitland Road Mayfield West NSW Australia 2304 Telephone : +61 2 4014 2500 Date Samples Received : 04-Mar-2022 10:20 Date Analysis Commenced : 07-Mar-2022 Issue Date : 25-Mar-2022 15:04
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<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Thomas Regan	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW



General Comments

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LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in g/m².mth as sampling data was provided by the client.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.



Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST**
 (Matrix: **AIR**)

Sample ID

				Crooble 01/02/22 - 01/03/22	Pad 4 01/02/22 - 01/03/22	Gurley Bridge Pad 2 01/02/22 - 01/03/22	Gurley 01/02/22 - 01/03/22	Croppa town 01/02/22 - 01/03/22
Sampling date / time				01-Mar-2022 00:00	01-Mar-2022 00:00	01-Mar-2022 00:00	01-Mar-2022 00:00	01-Mar-2022 00:00
Compound	CAS Number	LOR	Unit	EN2201884-001	EN2201884-002	EN2201884-003	EN2201884-004	EN2201884-005
				Result	Result	Result	Result	Result
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m ² .month	7.1	0.7	0.8	1.2	2.2
Total Insoluble Matter (mg)	----	2	mg	117	11	13	19	36



Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST**
 (Matrix: **AIR**)

Sample ID

			Croppa Northstar Cross 01/02/22 - 01/03/22	North Star town 01/02/22 - 01/03/22	Roydon Rd 01/02/22 - 01/03/22	Milguy silo's 01/02/22 - 01/03/22	Wongabindi 01/02/22 - 01/03/22	
<i>Sampling date / time</i>			01-Mar-2022 00:00	01-Mar-2022 00:00	01-Mar-2022 00:00	01-Mar-2022 00:00	01-Mar-2022 00:00	
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	EN2201884-006	EN2201884-007	EN2201884-008	EN2201884-009	EN2201884-010
				Result	Result	Result	Result	Result
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m ² .month	13.2	2.4	3.1	1.4	1.4
Total Insoluble Matter (mg)	----	2	mg	217	39	51	23	23

CERTIFICATE OF ANALYSIS

Work Order	: EN2203587	Page	: 1 of 5
Client	: Trans 4 M Rail Joint Venture	Laboratory	: Environmental Division Newcastle
Contact	: Pippa Donaldson	Contact	:
Address	: 64-68 Balo Street Moree 2400	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: ----	Telephone	: +61 2 4014 2500
Project	: Narrabri 2 North Star	Date Samples Received	: 19-Apr-2022 16:05
Order number	: ----	Date Analysis Commenced	: 26-Apr-2022
C-O-C number	: ----	Issue Date	: 27-May-2022 11:56
Sampler	: Maggie Wilton		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 13		
No. of samples analysed	: 13		



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<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Jennifer Targett	Quality Coordinator	Newcastle - Inorganics, Mayfield West, NSW



General Comments

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~ = Indicates an estimated value.

- Analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in g/m².mth as sampling data was provided by the client.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.



Analytical Results

Sub-Matrix: DUST
 (Matrix: AIR)

Sample ID

				Pad 2 01/03/22 - 01/04/22	Pad 4 01/03/22 - 01/04/22	Croppa Creek Town 01/03/22 - 31/03/22	Crooble 01/03/22 - 31/03/22	Milguy Silos 01/03/22 - 31/03/22
Sampling date / time				01-Apr-2022 00:00	01-Apr-2022 00:00	31-Mar-2022 00:00	31-Mar-2022 00:00	31-Mar-2022 00:00
Compound	CAS Number	LOR	Unit	EN2203587-001	EN2203587-002	EN2203587-003	EN2203587-004	EN2203587-005
				Result	Result	Result	Result	Result
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m ² .month	0.5	0.8	4.0	4.7	1.5
Total Insoluble Matter (mg)	----	2	mg	9	15	73	85	27



Analytical Results

Sub-Matrix: DUST
 (Matrix: AIR)

Sample ID

				Wongabindie Rd 01/03/22 - 31/03/22	Roydon Rd 01/03/22 - 31/03/22	North Star Township 01/03/22 - 31/03/22	Croppa North Star Rd 01/03/22 - 01/04/22	CH593.38 (Edgeroi) 01/03/22 - 01/04/22
Sampling date / time				31-Mar-2022 00:00	31-Mar-2022 00:00	31-Mar-2022 00:00	01-Apr-2022 00:00	01-Apr-2022 00:00
Compound	CAS Number	LOR	Unit	EN2203587-006	EN2203587-007	EN2203587-008	EN2203587-009	EN2203587-010
				Result	Result	Result	Result	Result
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m ² .month	5.4	1.2	2.2	4.7	3.8
Total Insoluble Matter (mg)	----	2	mg	99	22	41	85	69



Analytical Results

Sub-Matrix: DUST (Matrix: AIR)				Sample ID	Pad 6 01/03/22 - 01/04/22	CH582.870 01/03/22 - 01/04/22	CH602.870 01/03/22 - 01/04/22	----	----
Sampling date / time					01-Apr-2022 00:00	01-Apr-2022 00:00	01-Apr-2022 00:00	----	----
Compound	CAS Number	LOR	Unit	EN2203587-011	EN2203587-012	EN2203587-013	-----	-----	-----
				Result	Result	Result	----	----	----
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m ² .month	2.5	3.6	1.8	----	----	----
Total Insoluble Matter (mg)	----	2	mg	45	66	32	----	----	----

CERTIFICATE OF ANALYSIS

Work Order : EN2204478 Client : Trans 4 M Rail Joint Venture Contact : Pippa Donaldson Address : 64-68 Balo Street Moree 2400 Telephone : ---- Project : Narrabri 2 North Star Order number : PO/7632/004222 C-O-C number : ---- Sampler : Georgia Pianko Site : ---- Quote number : EN/333 No. of samples received : 13 No. of samples analysed : 13	Page : 1 of 5 Laboratory : Environmental Division Newcastle Contact : Address : 5/585 Maitland Road Mayfield West NSW Australia 2304 Telephone : +61 2 4014 2500 Date Samples Received : 11-May-2022 10:00 Date Analysis Commenced : 12-May-2022 Issue Date : 24-May-2022 15:07
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<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Jennifer Targett	Quality Coordinator	Newcastle - Inorganics, Mayfield West, NSW



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LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in g/m².mth as sampling data was provided by the client.
- Sample exposure period for 003-009 is 21 days which is outside the typical exposure period of 30 +/- 2 days as per AS3580.10.1.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.



Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST**
 (Matrix: **AIR**)

Sample ID

				Pad 2	Pad 4	Croppa Creek Town	Crooble	Milguy
				01/04/22 - 02/05/22	01/04/22 - 02/05/22	12/04/22 - 03/05/22	12/04/22 - 03/05/22	12/04/22 - 03/05/22
				02-May-2022 00:00	02-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	EN2204478-001	EN2204478-002	EN2204478-003	EN2204478-004	EN2204478-005
				Result	Result	Result	Result	Result
Total Insoluble Matter	----	0.1	g/m ² .month	0.2	0.4	15.4	3.6	0.9
Total Insoluble Matter (mg)	----	2	mg	3	7	191	44	11



Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST**
 (Matrix: **AIR**)

Sample ID

				Wongabindie Rd 12/04/22 - 03/05/22	Roydon Rd 12/04/22 - 03/05/22	North Star Town 12/04/22 - 03/05/22	North Star Croppa LX 12/04/22 - 03/05/22	CH593.38 "Edgeroi" 01/04/22 - 02/05/22
Sampling date / time				03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00	03-May-2022 00:00	02-May-2022 00:00
Compound	CAS Number	LOR	Unit	EN2204478-006	EN2204478-007	EN2204478-008	EN2204478-009	EN2204478-010
				Result	Result	Result	Result	Result
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m ² .month	4.4	0.7	1.1	2.3	4.3
Total Insoluble Matter (mg)	----	2	mg	54	9	14	29	78



Analytical Results

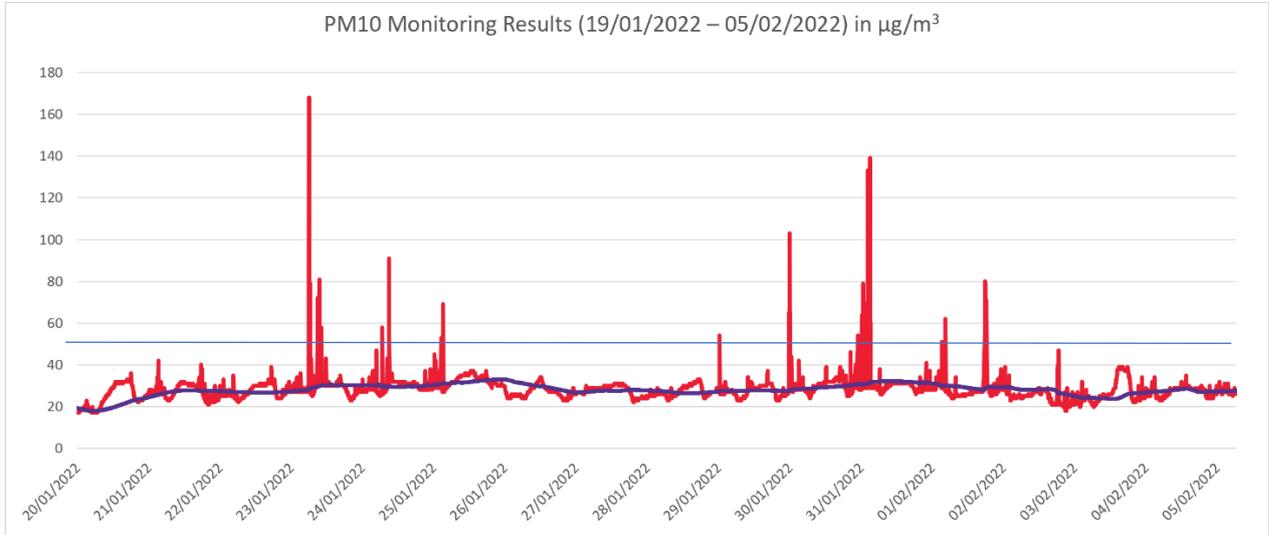
Sub-Matrix: **DEPOSITIONAL DUST**
 (Matrix: **AIR**)

Sample ID

			Pad 6 01/04/22 - 02/05/22	CH582.870 "Spring Creek" 01/04/22 - 02/05/22	CH602.870 01/04/22 - 02/05/22	----	----	
Sampling date / time			02-May-2022 00:00	02-May-2022 00:00	02-May-2022 00:00	----	----	
Compound	CAS Number	LOR	Unit	EN2204478-011	EN2204478-012	EN2204478-013	-----	-----
				Result	Result	Result	----	----
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m ² .month	4.8	2.4	1.0	----	----
Total Insoluble Matter (mg)	----	2	mg	87	43	19	----	----

Attachment D: Airborne Air Quality (PM10) Monitoring Results

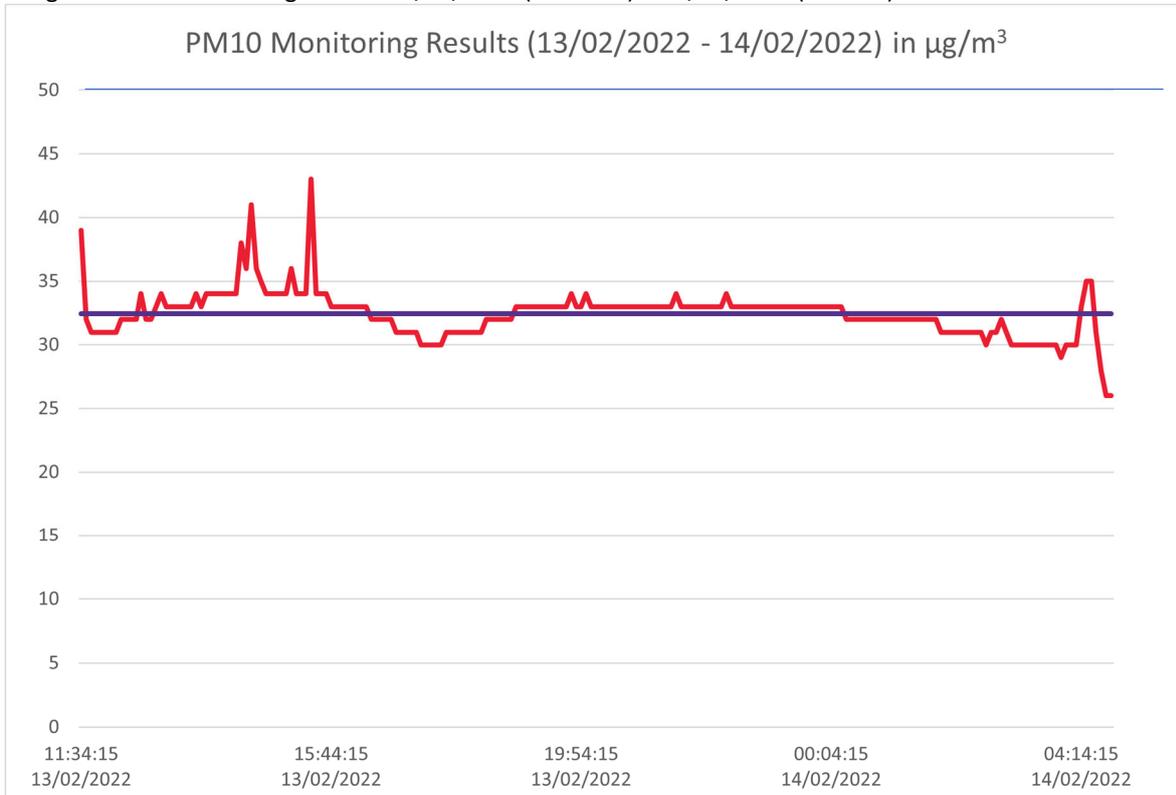
Image 1: PM10 Monitoring Results 19/01/2022 (12:11pm) – 05/02/2022 (18:36pm)



Legend:

- Red – PM10 Monitoring Results (in $\mu\text{g}/\text{m}^3$) – 5 min intervals
- Blue – Criteria $50\mu\text{g}/\text{m}^3$ (Air NEPM and the NSW EPA Approved Methods)
- Black – 24hr rolling average in $\mu\text{g}/\text{m}^3$

Image 2: PM10 Monitoring Results 13/02/2022 (11:29am) – 14/02/2022 (4:44am)



Legend:

- Red – PM10 Monitoring Results (in $\mu\text{g}/\text{m}^3$) – 5 min intervals
- Blue – Criteria $50\mu\text{g}/\text{m}^3$ (Air NEPM and the NSW EPA Approved Methods)
- Black – 24hr rolling average $\mu\text{g}/\text{m}^3$



Attachment E: DusTrak Calibration Certificate / Service Report



Customer	Eco Environmental Pty Ltd
Address	Unit 4, 15 Holt Street Pinkenba, Qld 4008
Contact	Joanne Gannon
Equipment	TSI Dusttrak
Model	8530
Serial Number	8530211516
Calibration Date	July 22, 2021
Condition as Received	New

Reference Instruments			
Measurement Variable	Model No.	Serial No.	Calibration Due
Photometer	858700	8587205101	15/12/2021
DC Voltage (Keithley)	2700	4364761	5/01/2022
Pressure	276140-SP	4146296	15/01/2022
Flow and Temperature	4140	41401118008	15/11/2021
1 um PSL	19518	698880	Apr-22
2.8 um PSL	19520	702200	Apr-22
10 um PSL	DC-10	187001	Jul-23

ENVIRONMENTAL CONDITIONS	
Ambient Temp	18°C
Humidity	56%RH
Barometric Pressure	1002hPa

Kenelec Scientific Pty Ltd Certifies That :-
All performance and acceptance tests required were successfully conducted according to required specifications. All test and calibration data supplied by Kenelec Scientific has been obtained using Emery Oil and has been nominally adjusted to respirable mass standard ISO 12103-1 AI Test Dust. Calibration of sizing is performed using the above particles and verified on the TSI calibration Bench.

Procedures Followed:	LABP1
Approved Signatory:	
Date:	26/07/2021

CALIBRATION RESULTS				
As Left Verification Data				
Testing Number	Calibration Reference mg/m3	Instrument Output	Allowable Range +/- 10%	
1	0.059	0.059	0.053	0.065
2	0.662	0.66	0.596	0.728
3	3.796	3.755	3.416	4.176
4	33.178	33.65	29.860	36.496

CALIBRATION RESULTS							
Flow And Pressure Verification				System DTII01-01			
Parameter	Standard	Measured	Allowable Range	Parameter	Standard	Measured	Allowable Range
Flow Lpm	3	3.080	3.150 - 2.850	Pressure kPA	99.631	99.630	104.613-94.649
Pump Run Hours:		0					

DustTrak Service Report

ECO-FOR-022



Date	8/4/22	Company	TRANS4M
Start Time	11:00	HIREPOS OC#	10288
Finish Time	12:30	Station Name	BRISBANE
Serial Number	8530 211516	Technician	ROBERT B
Asset Number			

1) Visual Inspection of Equipment		Comment
Instrument power on	✓	
Is the inlet free of obstructions	N/A	
Is the inlet tube clear of any kinks	N/A	
Any service warnings	NO	

2) DustTrak Readings (pre-service)				
Dust reading (DustTrak / Logger)	0.11	mg/m3	Logger	
Zero Check (Filter Attached)	0.00	mg/m3		
Full scale check (generate some dust)	0.87	mg/m3		
Flow 3.0L/m (+/- 0.1)	3.02	L/min		

3) Maintenance	Serviced or replaced	Comment	
Inlet head (every visit)	Serviced/Replaced/Checked	N/A	
Water trap (every visit)	Serviced/Replaced/Checked	N/A	
Impactor plate (if fitted)	Serviced/Replaced/Checked	Particle size	N/A
Internal filters	Serviced/Replaced/Checked	Filter colour	GOOD

4) Service		Comment
Leak check (does pump stop & restart?)	Yes/No	
Zero calibration	Yes/No	
Flow calibrated	Yes/No	
Does unit run after power-up?	Yes/No	

5) DustTrak Readings (post-service)				
Dust reading (DustTrak / Logger)	0.007	mg/m3		
Zero Check (Filter Attached)	0.00	mg/m3		
Full scale check (generate some dust)	0.55	mg/m3		
Flow 3.0L/m (+/- 0.1)	3.004	L/min		

6) Calibration					
Calibration date	22/7/21				
Pump run time	992	hours	Cum Mass	2.2	mg
Date filter last changed	22/7/21		Cum Filter Mass	2.2	mg

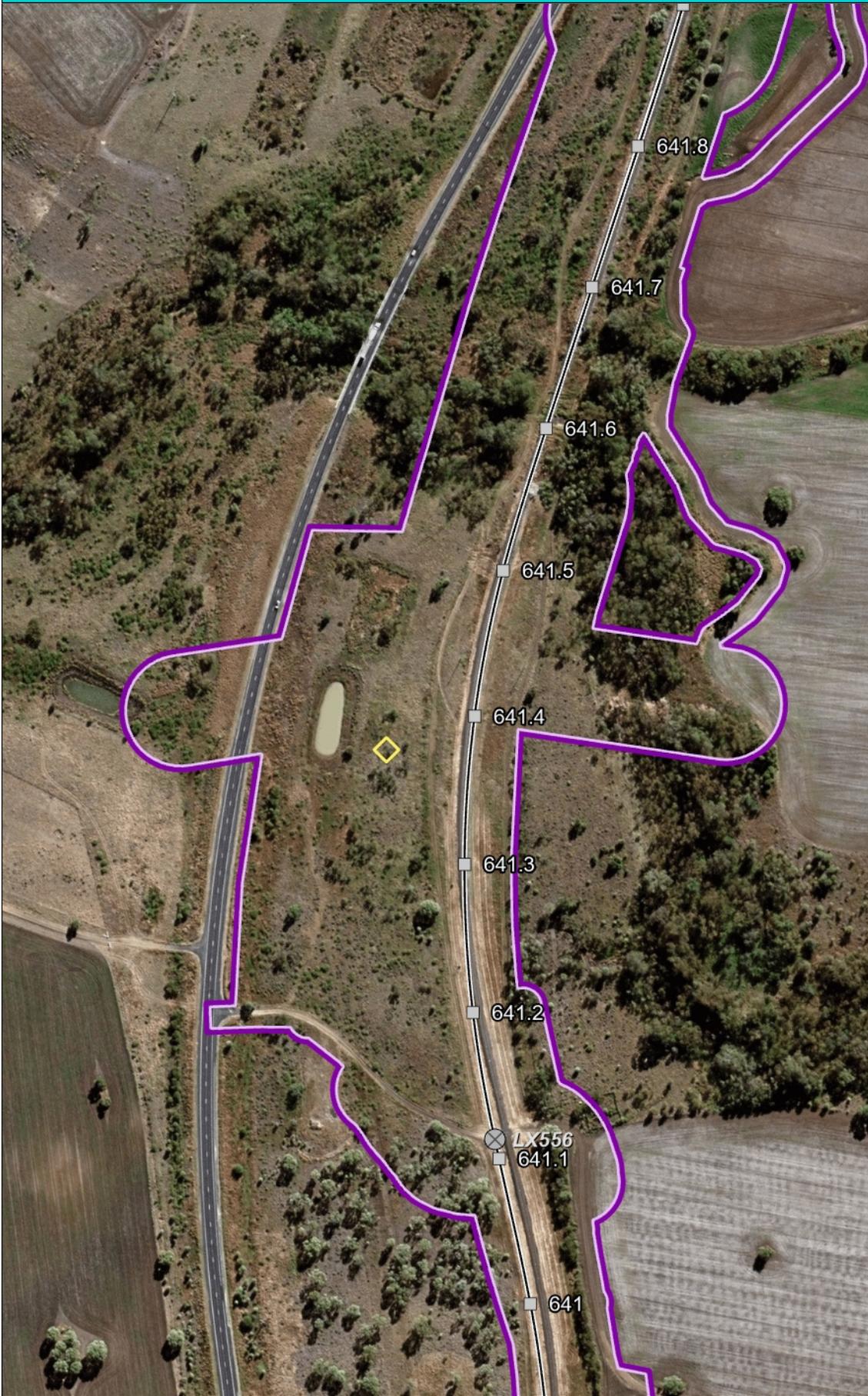
7) System Parameters					
Solar (V)	N/A	Solar panel rating (Watt)		Angle / Dirn	
Battery (V)	N/A	Solar panel open circuit (V)		Time	
Load (V)	N/A	Solar panel short circuit (A)		Weather	
		System Current Drain (A)		RSSI (dB) < -107	

8) Recommendations for Next Site Visit or Comments
 INSECT REMAINS FOUND IN 37MM FILTER AND INTERNAL FILTER

Attachment F: Air Quality Monitoring Locations

PAD 2 - Depositional Dust Gauge (Active)

INTERNAL USE ONLY



Legend

- World Boundaries and Places
- CIZ (SPIR)
- Level Crossings
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- ⊙ Residential Receivers
- Sensitive Receivers
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.06 0.1 Kilometers



Scale: 1: 4,514

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Yellow Diamond - PAD 2 Depositional Dust Gauge Monitoring Location (Active)
Purple - EPL Premise Boundary

Note: ARTC web applications use the Web Mercator (EPSG:3857) coordinate system. This modified Mercator projection maximises system performance, but at the expense of distortion and accuracy. As such, all measurements carried out in these applications are to be regarded as approximate.



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Crooble Depositional Dust Gauge

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Yellow Diamond - Depositional Dust Gauge Monitoring Location (Active)
Purple - EPL Premise Boundary

Note: ARTC web applications use the Web Mercator (EPSG:3857) coordinate system. This modified Mercator projection maximises system performance, but at the expense of distortion and accuracy. As such, all measurements carried out in these applications are to be regarded as approximate.

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Croppa Creek DDG & PM10 Monitoring Location

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ◆ Public
 - ◆ Private
 - ◆ Pedestrian
- Chainage 100m
- Rail Alignment
- Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

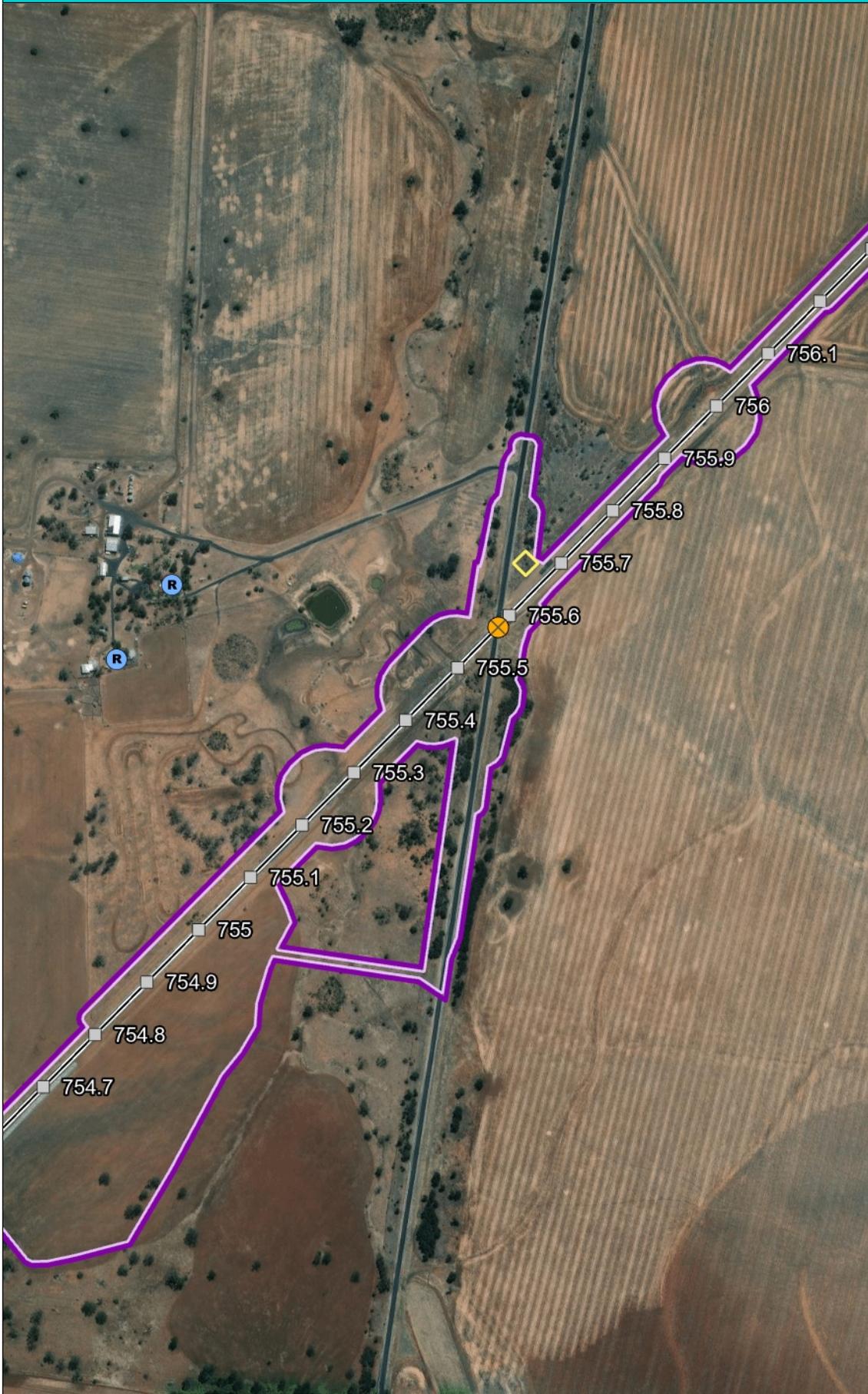
Notes:

- Purple - Current EPL Premise Boundary
- Yellow Diamond - DDG Croppa Creek Monitoring Location (Active)
- Red Diamond - PM10 Monitoring Location AQ01 (Inactive)
- Blue Diamond - PM10 Monitoring Location AQ02 (Active)

Note: ARTC web applications use the Web Mercator (EPSG:3857) coordinate system. This modified Mercator projection maximises system performance, but at the expense of distortion and accuracy. As such, all measurements carried out in these applications are to be regarded as approximate.



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Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- ⊗ Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

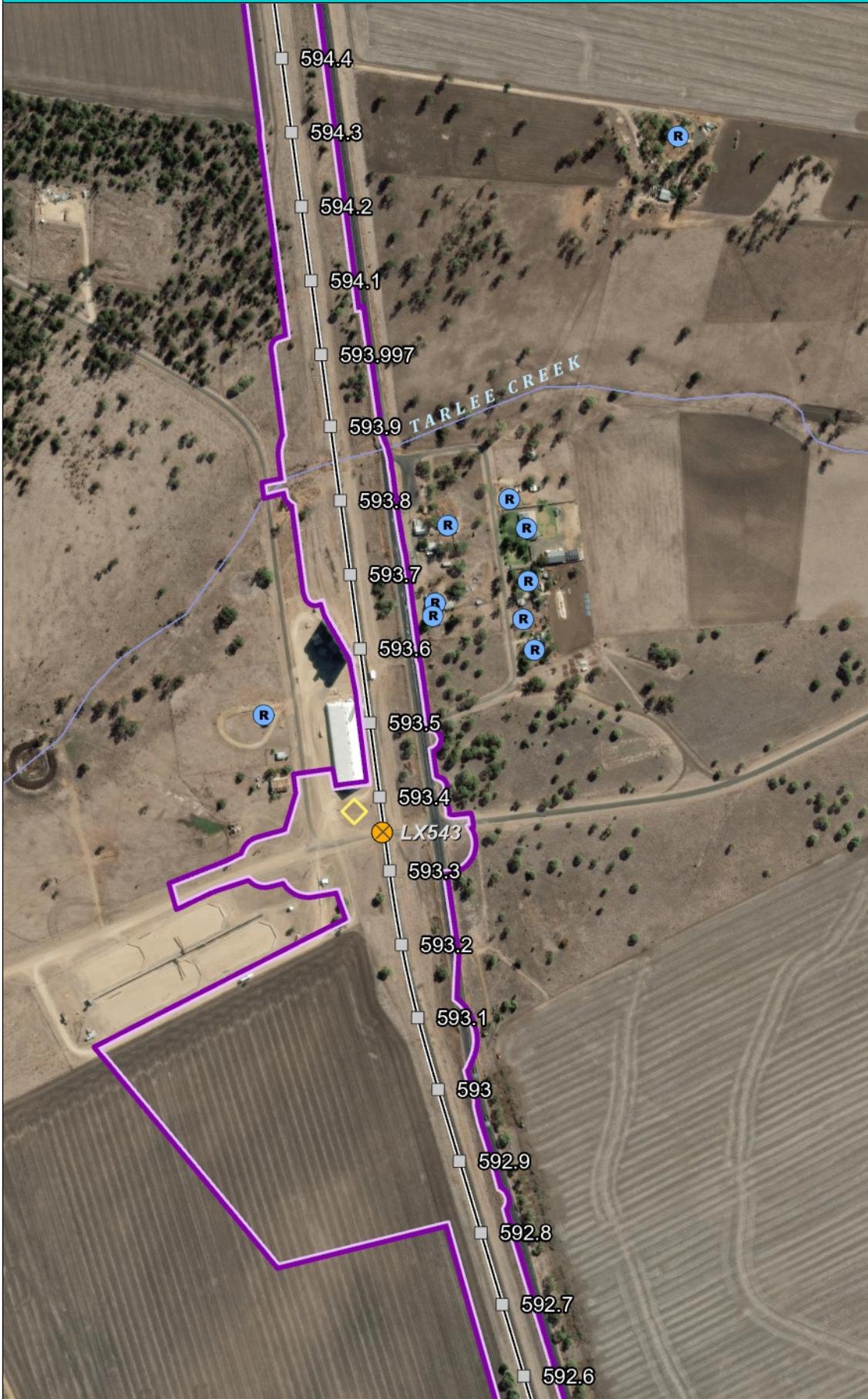
Notes:

Yellow Diamond - Croppa - North Star
Depositional Dust Gauge Location (Active)
Purple - EPL Premise Boundary

Note: ARTC web applications use the Web Mercator (EPSG:3857) coordinate system. This modified Mercator projection maximises system performance, but at the expense of distortion and accuracy. As such, all measurements carried out in these applications are to be regarded as approximate.



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Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- ⊙ Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious
- Named Watercourse LS**
 - <all other values>
 - 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 9

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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Yellow Diamond - Edgeroi DDG Monitoring Location (Active)

Purple - EPL Premise Boundary

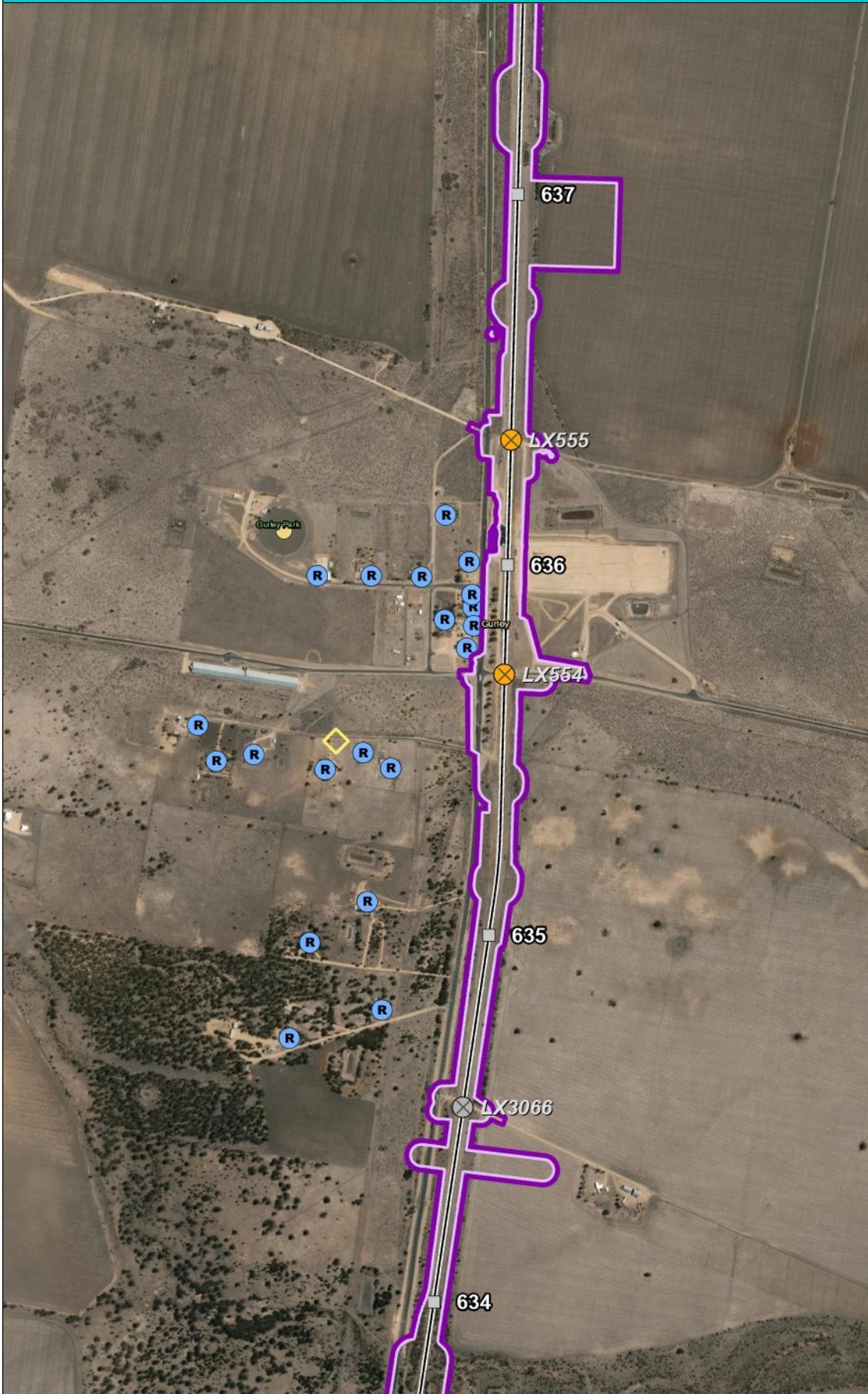
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Gurley Depositional Dust Guage

INTERNAL USE ONLY



Legend

- World Boundaries and Places
- CIZ (SPIR)
- Level Crossings
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 1km
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.23 0.5 Kilometers



Scale: 1: 18,056

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Yellow Diamond - Gurley Depositional Dust Monitoring Location (Decommissioned)

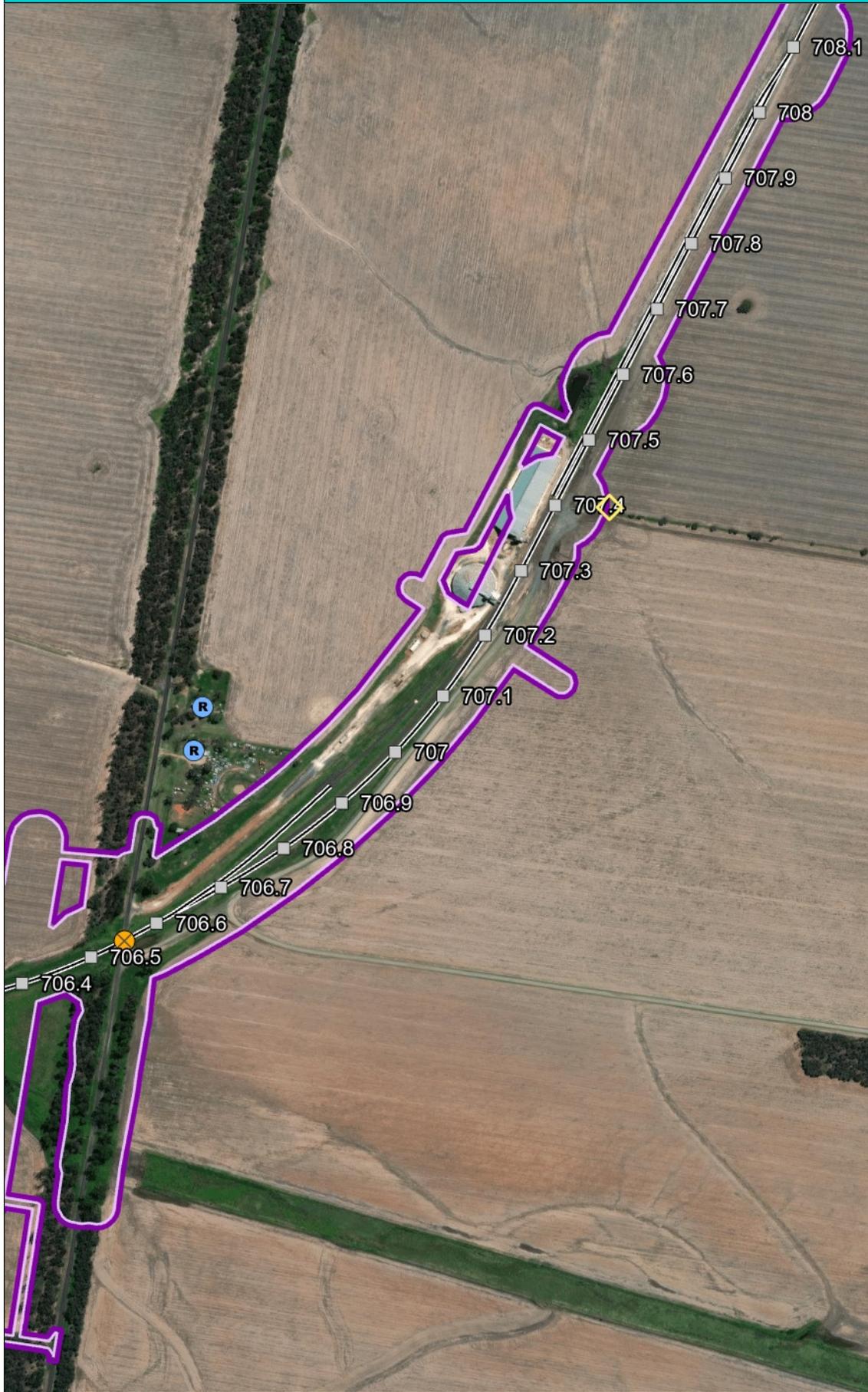
Note: ARTC web applications use the Web Mercator (EPSG:3857) coordinate system. This modified Mercator projection maximises system performance, but at the expense of distortion and accuracy. As such, all measurements carried out in these applications are to be regarded as approximate.



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Milguy Depositional Dust Gauge

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Yellow Diamond - Milguy Depositional Dust Gauge Monitoring Location (Active)
Purple - EPL Premise Boundary

Note: ARTC web applications use the Web Mercator (EPSG:3857) coordinate system. This modified Mercator projection maximises system performance, but at the expense of distortion and accuracy. As such, all measurements carried out in these applications are to be regarded as approximate.



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Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Yellow Diamond - North Star DDG Monitoring Location (Active)

Purple - EPL Premise Boundary

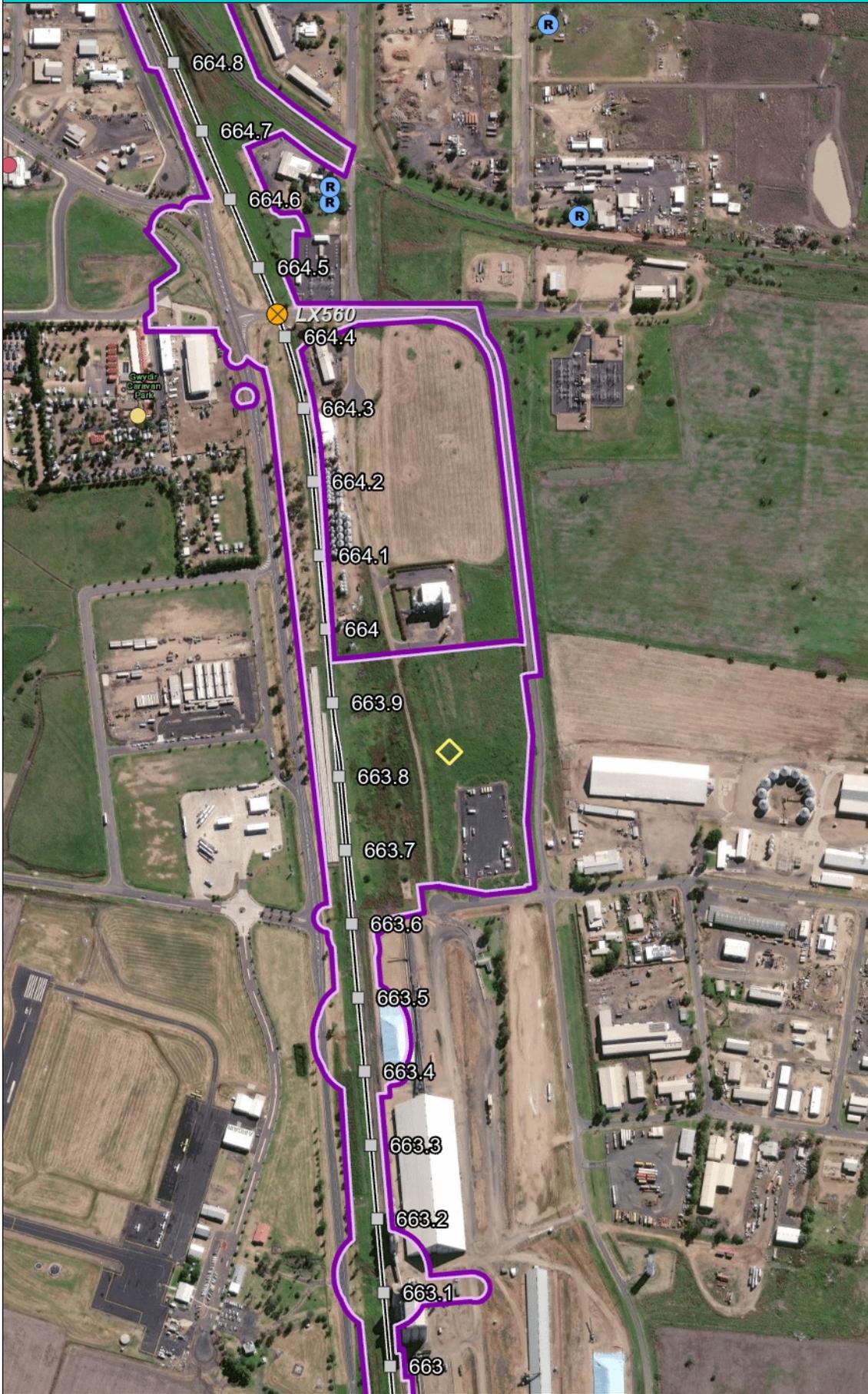
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PAD 4 - Depositional Dust Gauge (Active)

INTERNAL USE ONLY



Legend

- World Boundaries and Places
- CIZ (SPIR)
- Level Crossings
 - X Public
 - X Private
 - X Pedestrian
- Chainage 100m
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

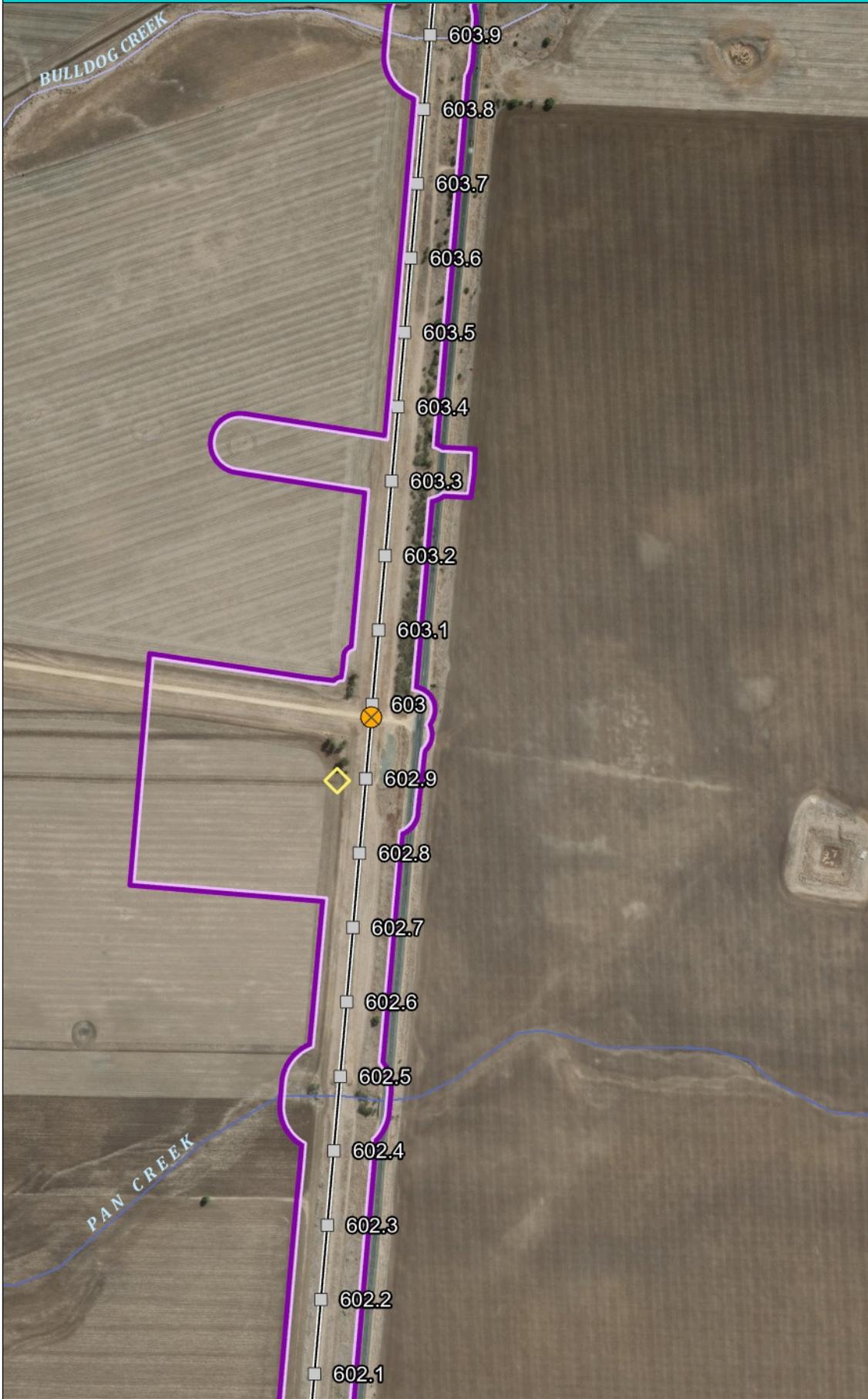
Notes:

Yellow Diamond - PAD 4 Depositional Dust Gauge Monitoring Location (Active)
Purple - EPL Premise Boundary

Note: ARTC web applications use the Web Mercator (EPSG:3857) coordinate system. This modified Mercator projection maximises system performance, but at the expense of distortion and accuracy. As such, all measurements carried out in these applications are to be regarded as approximate.



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Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious
- Named Watercourse LS**
 - <all other values>
 - 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 9

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0 0.11 0.2 Kilometers



Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

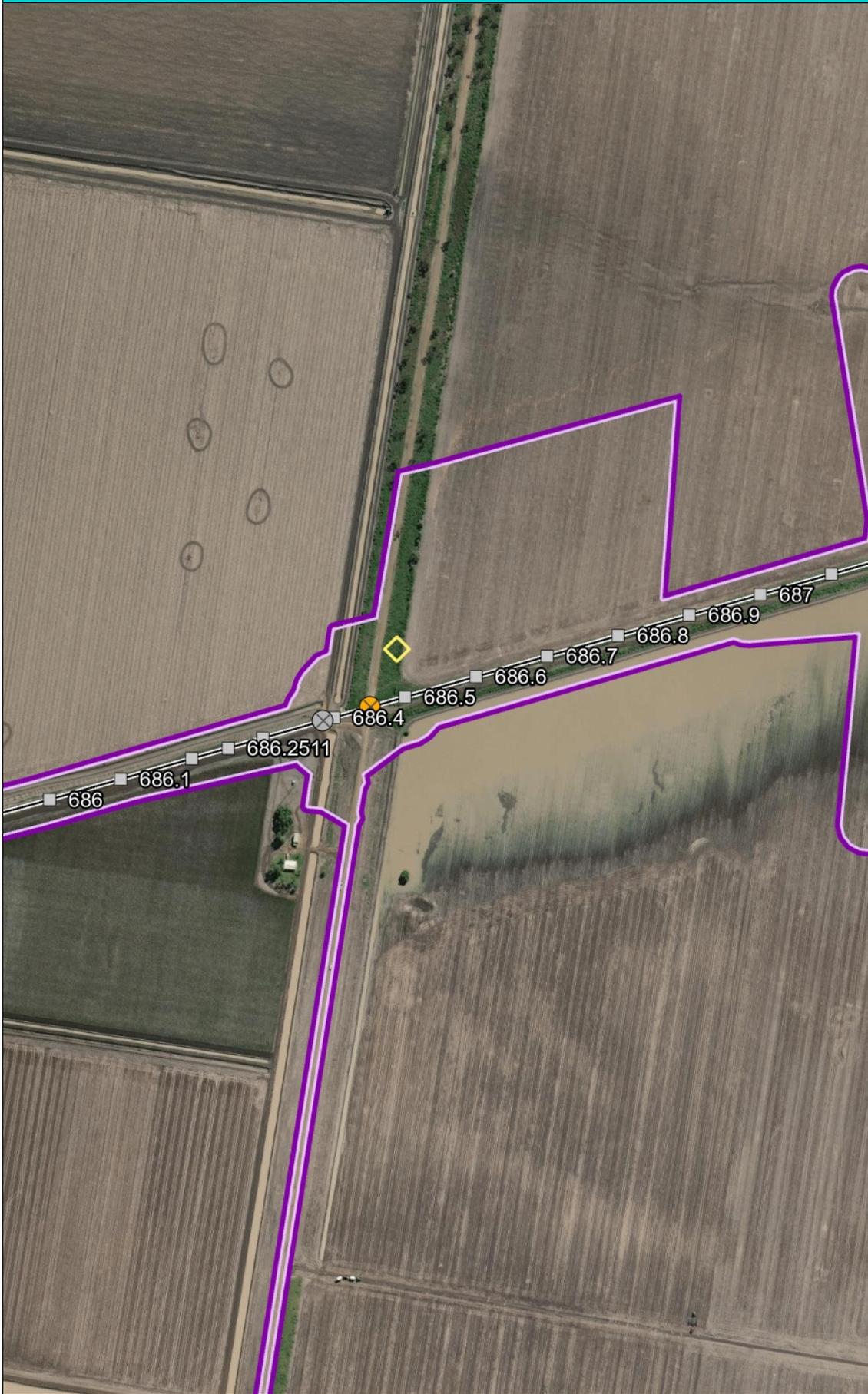
Yellow Diamond - Pan Creek DDG Monitoring Location (Active)

Purple - EPL Premise Boundary

Note: ARTC web applications use the Web Mercator (EPSG:3857) coordinate system. This modified Mercator projection maximises system performance, but at the expense of distortion and accuracy. As such, all measurements carried out in these applications are to be regarded as approximate.



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Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- Ⓡ Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.11 0.2 Kilometers



Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Yellow Diamond - Roydon Rd Depositional Dust Gauge Location
Purple - EPL Premise Boundary

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Spring Creek DDG Location

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- ⊙ Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious
- Named Watercourse LS**
 - <all other values>
 - 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 9

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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Yellow Diamond - Spring Creek DDG Monitoring Location (Active)

Purple - EPL Premise Boundary

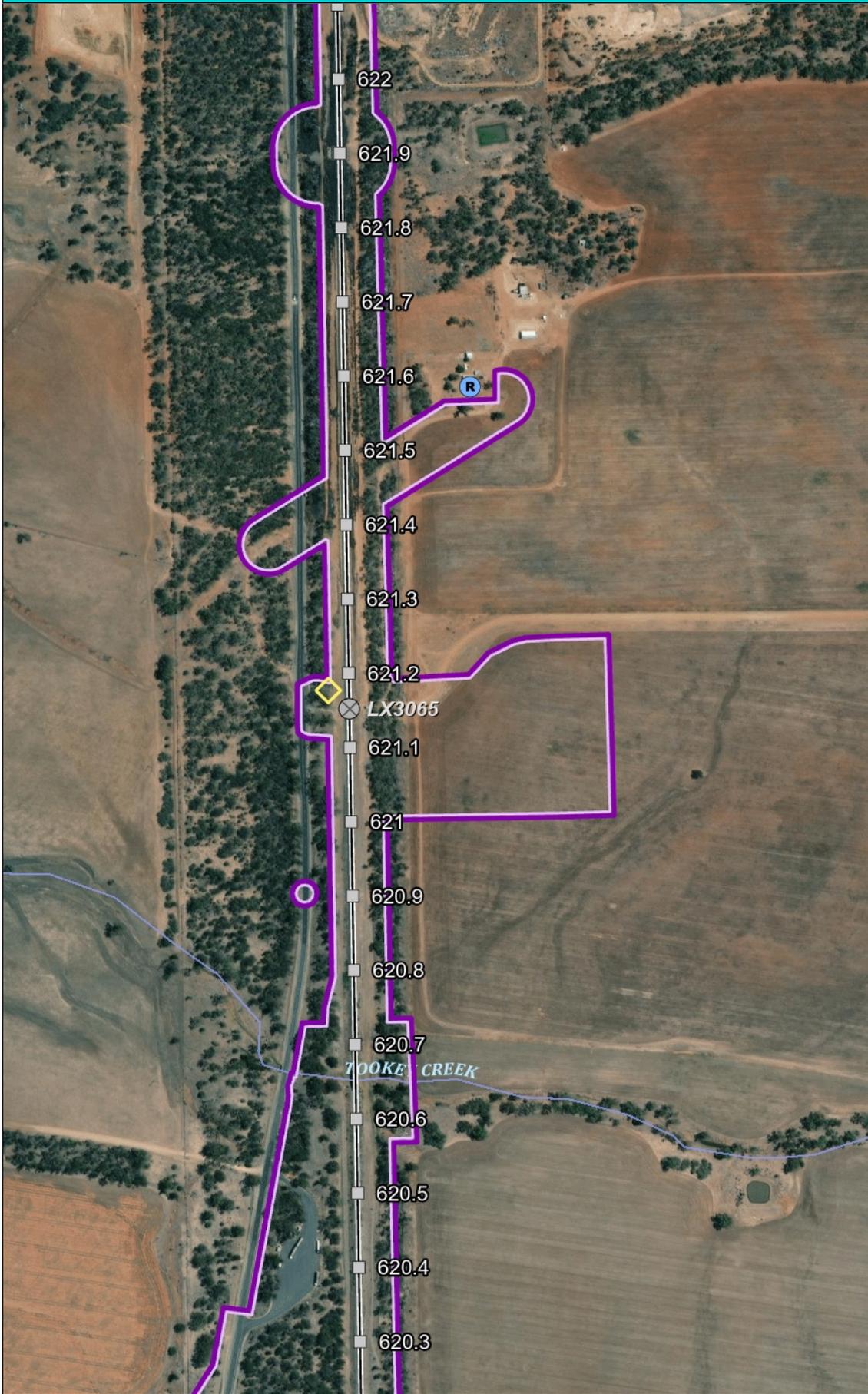
Note: ARTC web applications use the Web Mercator (EPSG:3857) coordinate system. This modified Mercator projection maximises system performance, but at the expense of distortion and accuracy. As such, all measurements carried out in these applications are to be regarded as approximate.



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Tookey Creek DDG Location

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious
- Named Watercourse LS**
 - <all other values>
 - 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 9

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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

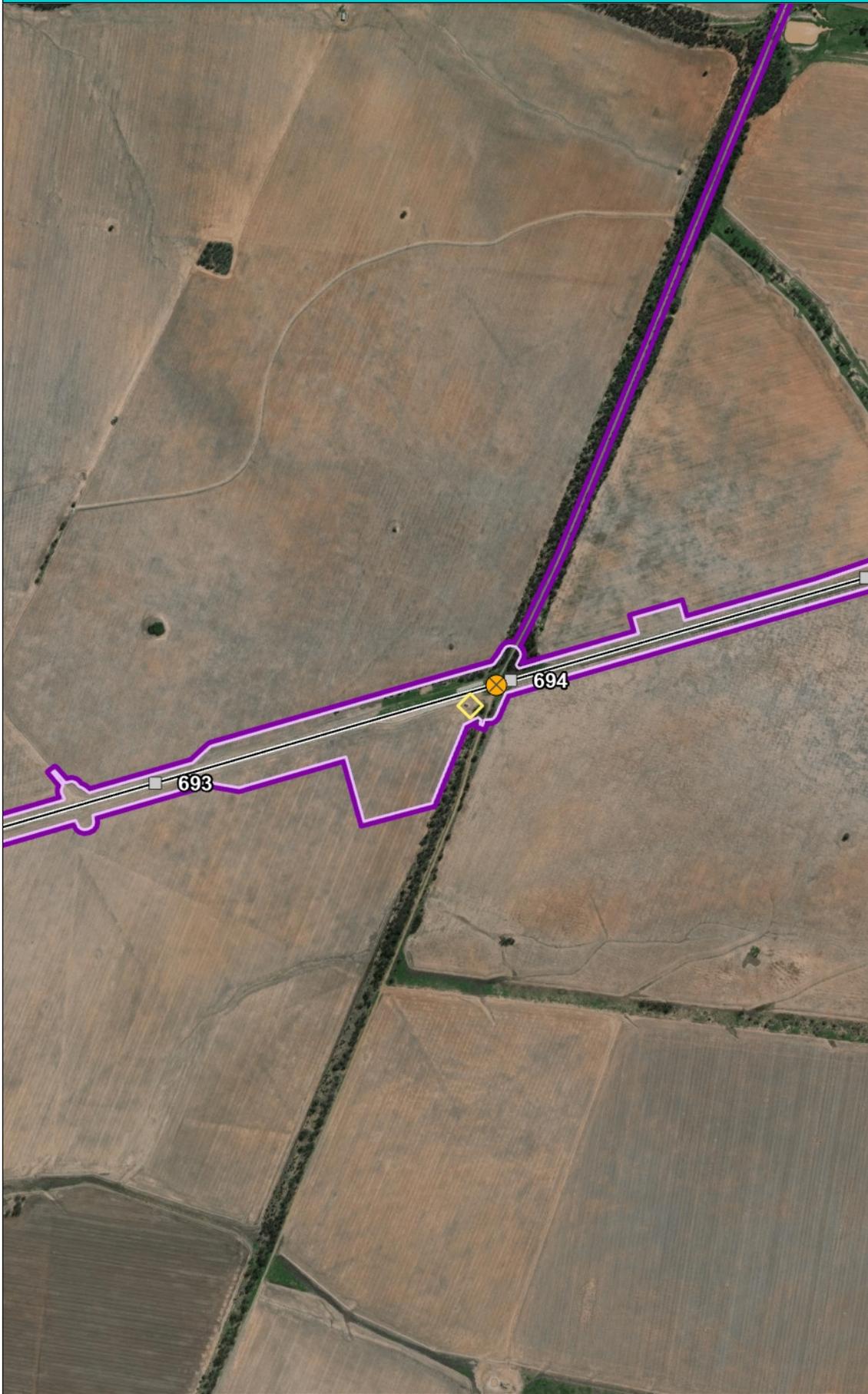
Yellow Diamond - Tookey Creek DDG Monitoring Location (Active)

Purple - EPL Premise Boundary

Note: ARTC web applications use the Web Mercator (EPSG:3857) coordinate system. This modified Mercator projection maximises system performance, but at the expense of distortion and accuracy. As such, all measurements carried out in these applications are to be regarded as approximate.



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Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 1km
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

DISCLAIMER:

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0 0.23 0.5 Kilometers

Scale: 1: 18,056

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Yellow Diamond - Wongabindie Rd
Depositional Dust Gauge Location
Purple - EPL Premise Boundary

Note: ARTC web applications use the Web Mercator (EPSG:3857) coordinate system. This modified Mercator projection maximises system performance, but at the expense of distortion and accuracy. As such, all measurements carried out in these applications are to be regarded as approximate.



The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

Attachment G: Noise Monitoring Results

Noise Monitoring Results									
Test Number	Date	Sampler	Location	Chainage	LAeq (dB)	LAFmax (dB)	LAF10 (dB)	LAF90(dB)	Comments
N2NS Project Noise Management Level					40				
1	11/02/2022	CH, BK	GPS -29.12582, 150.305834 - Buckie Rd (Residential)	CH733.900	70.7	84.9	73.9	59.7	Township of Croppa Creek (Residential Receiver)
2	11/02/2022	CH, BK	GPS -29.404544, 150.001560 - Roydon Rd	CH686.400	41.2	65.5	39.0	28.2	Residential Receiver adjacent alignment
3	11/02/2022	CH, BK	GPS -29.366705, 150.149090 - Calimpa Rd	CH700.900	56.8	84.5	49.1	41.0	Residential Receiver adjacent alignment
4	11/02/2022	CH, BK	GPS -24.349590, 150.201193 - County Boundary Rd	CH706.500	60.6	85.7	61.6	52.1	Residential Receiver adjacent alignment
5	11/02/2022	CH, BK	GPS -29.265183, 150.254427 - Crooble Rd	CH717.500	59.4	83.6	49.3	39.7	Residential Receiver adjacent alignment
6	11/02/2022	CH, BK	GPS -29.166644, 150.289037 - South Croppa Moree Rd	CH728.900	40.6	63.7	45.1	25.3	Residential Receiver adjacent alignment
7	11/02/2022	CH, BK	GPS -29.125346, 150.308714 - School Gate Buckie Rd	CH733.900	49.5	67.0	52.2	38.6	Township of Croppa Creek (Primary School)
8	11/02/2022	CH, BK	GPS -29.096247, 150.309365 - Plevna Rd	CH737.900	57.6	93.0	57.1	36.8	Residential Receiver adjacent alignment
9	11/02/2022	CH, BK	GPS -29.049388, 150.323713 - Boonary Park Rd	CH742.700	44.6	70.4	47.9	34.8	Residential Receiver adjacent alignment
10	11/02/2022	CH, BK	GPS -28.995310, 150.336516 - Bushes Access Rd	Ch749.200	44.0	73.6	45.9	36.4	Residential Receiver adjacent alignment
11	11/02/2022	CH, BK	GPS -28.947634, 150.373184 - Croppa North Star Rd	CH755.600	57.0	78.1	54.6	41.0	Residential Receiver adjacent alignment





Sound Level Meter

IEC 61672-3:2013

Calibration Certificate

Calibration Number C21675

Client Details	T4MR 64-68 Balo Street Moree NSW 2400
-----------------------	---

Equipment Tested/ Model Number :	Rion NL-52EX
Instrument Serial Number :	00710356
Microphone Serial Number :	19630
Pre-amplifier Serial Number :	10898

Pre-Test Atmospheric Conditions	Post-Test Atmospheric Conditions
Ambient Temperature : 23.5°C	Ambient Temperature : 24.6°C
Relative Humidity : 50.3%	Relative Humidity : 47.9%
Barometric Pressure : 99.8kPa	Barometric Pressure : 99.7kPa

Calibration Technician : Lucky Jaiswal	Secondary Check: Harrison Kim
Calibration Date : 14 Oct 2021	Report Issue Date : 14 Oct 2021

Approved Signatory : 

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Least Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
125Hz	±0.13dB	Temperature	±0.2°C
1kHz	±0.13dB	Relative Humidity	±2.4%
8kHz	±0.14dB	Barometric Pressure	±0.015kPa
Electrical Tests	±0.10dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.



Sound Level Meter IEC 61672-3.2013 Calibration Test Report

Calibration Number C21675

Client Details	T4MR 64-68 Balo Street Moree NSW 2400
Equipment Tested/ Model Number :	Rion NL-52EX
Instrument Serial Number :	00710356
Microphone Serial Number :	19630
Pre-amplifier Serial Number :	10898
Pre-Test Atmospheric Conditions	Post-Test Atmospheric Conditions
Ambient Temperature : 23.5°C	Ambient Temperature : 24.6°C
Relative Humidity : 50.3%	Relative Humidity : 47.9%
Barometric Pressure : 99.8kPa	Barometric Pressure : 99.7kPa
Calibration Technician : Lucky Jaiswal	Secondary Check: Harrison Kim
Calibration Date : 14 Oct 2021	Report Issue Date : 14 Oct 2021

Approved Signatory :

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Least Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
125Hz	±0.13dB	Temperature	±0.2°C
1kHz	±0.13dB	Relative Humidity	±2.4%
8kHz	±0.14dB	Barometric Pressure	±0.015 kPa
Electrical Tests	±0.10dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This report applies only to the item tested and shall only be reproduced in full, unless approved in writing by Acoustic Research Labs.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172. Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

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1. OVERVIEW

This report presents the calibration test results of a Rion NL-52EX Sound Level Meter, and associated equipment. Calibration is carried out in accordance with *IEC 61672-3.2013, Electroacoustics - Sound Level Meters - Part 3: Periodic Tests*.

Relevant clauses from this standard have been used for periodic testing in conjunction with Acoustic Research Labs internal test methods described in Section 2 of the calibration work instruction manual.

1.1 UNCERTAINTIES

For each test performed, the associated measurement uncertainties are derived at the 95% confidence level and are given with a coverage factor of 2.

The uncertainty applies at the time of measurement only, and takes no account of any drift or other effects that may apply afterwards. When estimating uncertainty at any later time, other relevant information should also be considered, including, where possible, the history of the performance of the instrument and the manufacturer's specifications.

1.2 DOCUMENT CONVENTIONS

Test results which highlight non-conformances relative to the standard, and the sound level meter type specified by the manufacturer have been marked with an **F** in the respective tests.

Any tests that are not required, due to sound level meter configuration, are marked N/A.

2. GENERAL

2.1 ENVIRONMENTAL CONDITIONS DURING TEST

No corrections have been applied to any results obtained to compensate for the environmental conditions.

2.2 CALIBRATION TESTS

Where applicable the following tests were performed in accordance with the requirements of *IEC 61672-3:2013*. These clauses are used to define the periodic testing of Sound Level Meters.

Clause 10	Indication at the Calibration Check Frequency
Clause 11	Self Generated Noise
Clause 12	Acoustical Signal Tests of Frequency Weighting
Clause 13	Electrical Signal Tests of Frequency Weightings
Clause 14	Frequency and Time Weightings at 1kHz
Clause 15	Long Term Stability
Clause 16	Level Linearity on the Reference Level Range
Clause 17	Level Linearity including the level range control
Clause 18	Toneburst Response
Clause 19	Peak C Sound Level
Clause 20	Overload Indication
Clause 21	High Level Stability

2.3 TEST EQUIPMENT USED

All test equipment used during periodic testing are calibrated every 12months by an accredited laboratory, traceable to SI units.

The performance of all equipment during these calibrations and the effects of instrument stability are used to determine the measurement uncertainty of each reported result.

2.3.1 Multi-function Acoustic Calibrator

A Bruel & Kjaer 4226 Multi-function calibrator (S/N - 3215300) was used for frequency response testing of the entire instrument (including microphone). This instrument was used as a reference calibrator and for frequency response verification.

2.3.2 Microphone Electrical Equivalent Circuit

Calibration of most instrument parameters is carried out using electrical signals fed to the unit via a two-port electrical equivalent circuit of the microphone.

A 13pF capacitance dummy microphone was used during testing.

2.3.3 Adjustable Attenuator

A means for varying the attenuation of electrical signals via the dummy microphone was provided by a JFW Industries dual rotary attenuator (S/N - 761637). The attenuator is switchable in 1dB steps between 0dB and 60dB.

2.3.4 Arbitrary Function Generator

A Hewlett Packard 33120A (S/N - US36047448) was used to generate the required electrical signals.

2.3.5 Environmental Monitoring

A MHB-382SD (S/N – AG44204) was used for measuring environmental conditions during device calibration. It is capable of providing temperature, relative humidity and pressure measurements.

3. CALIBRATION TEST RESULTS

3.1 INDICATION AT THE CALIBRATION CHECK FREQUENCY

The indication of the sound level meter at the calibration check frequency was checked by application of an acoustic signal at the reference sound pressure level and frequency.

Stated reference conditions as found in manual are

Reference Level : 94.0 dB

Reference Frequency : 1000.0 Hz

Indications before and after adjustments were recorded and are shown in Table 1 (all measurements in dB) -

Table 1 - Check Frequency Calibration Results

Frequency Weighting	Initial Response	B&K 4226 Corrected	FreeField Corrected	Final Corrected Response
A	94.00	94.10	94.10	94.01
C	94.00	94.10	94.10	94.01
Z	94.00	94.10	94.10	94.01

Free field adjustment data as provided by the manufacturer. Windscreen correction factors applied.

3.2 SELF GENERATED NOISE

3.2.1 Microphone Installed

Self generated noise was measured with the microphone installed on the sound level meter, in the configuration submitted for periodic testing. The sound level meter was set to the most-sensitive level range and with frequency weighting A selected.

Ten (10) time weighted observations were made over a period of 60 seconds.

Random Readings dB(A)

13.80	13.70	13.80	13.80	13.80
13.80	13.80	13.70	13.80	13.80

Acoustic Noise Floor : 13.8 dB(A)

3.2.2 Electrical Input Signal Device

With the microphone replaced by the electrical input signal device and terminated as specified, the sound level meter was set to the most-sensitive level range and with frequency weightings Z, C and A selected as provided.

Ten (10) time weighted observations were made over a period of 60 seconds.

Random Readings dB(A)

7.10	7.10	7.10	7.10	7.10
7.10	7.10	7.10	7.10	7.10

Random Readings dB(C)

7.80	7.90	7.80	7.90	7.90
7.80	7.80	7.90	7.80	7.90

Random Readings dB(Z)

12.9	12.9	12.9	13.0	13.0
13.0	13.0	13.0	12.9	13.0

	dB(A)	dB(C)	dB(Z)
Electric Noise Floor :	7.1	7.9	13.0

3.3 ACOUSTICAL SIGNAL TESTS OF A FREQUENCY WEIGHTING

The sound level meter was set to measure frequency weighting C with a FAST response. The test was carried out using a multi-function acoustic calibrator set to pressure mode.

Three (3) readings were made at each test frequency. The average of the readings was then corrected to the multi-function acoustic calibrator.

Table 2 - Frequency Weighting C Response

Freq Hz	Reading 1	Reading 2	Reading 3	U95
125	94.0	94.0	94.0	0.13
1 000	94.1	94.1	94.1	0.13
8 000	87.9	87.9	87.9	0.14

Actual Freq Hz	B&K 4226 Corrections	Corrected Response dB(C)		Uexp
		Actual	re 1kHz	
125.90	-0.03	93.97	-0.04	0.13
1005.10	-0.09	94.01	0.00	0.13
7915.10	-0.08	87.82	-6.19	0.14

Adjustments were then applied to correct for free field and sound level meter body effects with data supplied by the manufacturer as per Table 3. Windscreen correction factors applied.

Table 3 - Correction Data

Actual Freq Hz	FreeField Corrections	U95	BodyEffects Corrections	U95	Windscreen Corrections	U95
125.90	0.00	0.25	0.00	0.25	0.000	0.200
1005.10	0.00	0.25	0.00	0.25	-0.100	0.200
7915.10	3.00	0.35	0.30	0.35	0.000	0.300

Finally, the corrected responses are normalised to the response at 1kHz and compared to the tolerances stated in Table 2 of IEC 61672.1-2013.

Table 4 - Acoustic C Response

Actual Freq (Hz)	Corrected Response dB(C)		Expected Response dB(C)		Deviation	P/F	Uexp
	Actual	re 1kHz	re 1kHz	Tolerance			
125.90	93.97	0.06	-0.2	±1.0	0.26	P	0.43
1005.10	93.91	0.00	0.0	±0.7	0.00	P	0.43
7915.10	91.12	-2.79	-3.0	+1.5 / -2.5	0.21	P	0.60

3.4 ELECTRICAL SIGNAL TESTS OF FREQUENCY WEIGHTINGS

Frequency weighting responses for Z, C and A were determined relative to the response at 1kHz using steady sinusoidal electrical input signals.

On the reference level range, and for each frequency weighting under test, the level of a 1kHz input signal was adjusted to yield 93dB. At test frequencies other than 1kHz, the input signal level was adjusted to compensate for the design goal attenuations as specified in Table 2 of IEC 61672.1-2013.

Table 5 - Measured Electrical Frequency Response

Freq Hz	A Weighting (dB)	C Weighting (dB)	Z Weighting (dB)	U95
63	92.9	92.9	93.0	0.10
125	92.9	93.0	93.0	0.10
250	92.9	93.0	93.0	0.10
500	92.9	93.0	93.0	0.10
1 000	93.0	93.0	93.0	0.10
2 000	93.0	93.1	93.0	0.10
4 000	93.0	93.0	93.0	0.10
8 000	93.0	93.1	93.0	0.10
15 850	91.8	91.8	93.0	0.10

Adjustments were then applied to correct for a uniform free field response and sound level meter body effects with data supplied by the manufacturer as per Table 6. Windscreen correction factors applied.

Table 6 - Correction Data

Freq Hz	Ufreq	U95	Body Effects	U95	WS Effects	U95
63	0.100	0.250	0.000	0.250	0.000	0.200
125	0.100	0.250	0.000	0.250	0.000	0.200
250	0.100	0.250	0.000	0.250	0.000	0.200
500	0.000	0.250	-0.100	0.250	-0.100	0.200
1 000	0.000	0.250	0.000	0.250	-0.100	0.200
2 000	0.000	0.250	0.000	0.250	-0.300	0.200
4 000	0.100	0.250	0.300	0.250	-0.300	0.200
8 000	0.000	0.350	0.300	0.350	0.000	0.300
15 850	-0.800	0.450	0.400	0.350	0.700	0.300

Finally, the corrected responses were referenced to the response at 1kHz and compared to the tolerances stated in Table 2 of IEC 61672.1-2013.

Table 7 - A Weighted Electrical Response

Freq Hz	Response		Tolerance (dB)	P/F	Uexp
	Corrected	re 1kHz			
63	93.00	0.10	±1.0	P	0.42
125	93.00	0.10	±1.0	P	0.42
250	93.00	0.10	±1.0	P	0.42
500	92.70	-0.20	±1.0	P	0.42
1 000	92.90	0.00	±0.7	P	0.42
2 000	92.70	-0.20	±1.0	P	0.42
4 000	93.10	0.20	±1.0	P	0.42
8 000	93.30	0.40	+1.5 / -2.5	P	0.59
15 850	92.10	-0.80	+2.5 / -16	P	0.65

Table 8 - C Weighted Electrical Response

Freq Hz	Response		Tolerance (dB)	P/F	Uexp
	Corrected	re 1kHz			
63	93.00	0.10	±1.0	P	0.42
125	93.10	0.20	±1.0	P	0.42
250	93.10	0.20	±1.0	P	0.42
500	92.80	-0.10	±1.0	P	0.42
1 000	92.90	0.00	±0.7	P	0.42
2 000	92.80	-0.10	±1.0	P	0.42
4 000	93.10	0.20	±1.0	P	0.42
8 000	93.40	0.50	+1.5 / -2.5	P	0.59
15 850	92.10	-0.80	+2.5 / -16	P	0.65

Table 9 - Z Weighted Electrical Response

Freq Hz	Response		Tolerance (dB)	P/F	Uexp
	Corrected	re 1kHz			
63	93.10	0.20	±1.0	P	0.42
125	93.10	0.20	±1.0	P	0.42
250	93.10	0.20	±1.0	P	0.42
500	92.80	-0.10	±1.0	P	0.42
1 000	92.90	0.00	±0.7	P	0.42
2 000	92.70	-0.20	±1.0	P	0.42
4 000	93.10	0.20	±1.0	P	0.42
8 000	93.30	0.40	+1.5 / -2.5	P	0.59
15 850	93.30	0.40	+2.5 / -16	P	0.65

3.5 FREQUENCY AND TIME WEIGHTINGS AT 1KHZ

A steady sinusoidal electrical input signal of 1kHz at the reference sound pressure level was applied to the reference level range.

The deviations of the indicated level of C and Z frequency weightings were recorded, along with the deviations of the indication of A weighted time averaged, and SLOW weighted response.

Table 10 - Frequency and Time Weighting Results

Frequency Weighting	Time Weighting	Response (dB)	Deviation (dB)	P/F	Tolerance (dB)	U95
A	Fast	94.0	0.0	P	±0.2	0.10
	Leq	94.0	0.0	P	±0.2	0.10
	Slow	94.0	0.0	P	±0.2	0.10
C	Fast	94.0	0.0	P	±0.2	0.10
Z	Fast	94.0	0.0	P	±0.2	0.10

3.6 LONG-TERM STABILITY

Long-term stability was tested by comparing a steady sinusoidal electrical signal applied at the start, and at the end of testing. The applied signal level was set to the reference level and frequency and was maintained constant. The difference between the indicated levels was recorded.

Table 11 - Frequency and Time Weighting Results

Signal Level (mV)	Initial Response (dB)	Final Response (dB)	Deviation (dB)	P/F	Tolerance (dB)	U95
73.3	94	94.0	0.0	P	±0.1	0.10

3.7 LEVEL LINEARITY ON THE REFERENCE LEVEL RANGE

Level linearity was tested with a steady sinusoidal electrical signal at a frequency of 8kHz, with the meter set to display frequency weighted A, FAST response.

The starting point for level linearity testing was set to 94.0dB as stated in the instruction manual.

Level linearity was measured in 5dB steps of increasing input signal level from the starting point up to within 5dB of the stated upper limit, then at 1dB steps up to (but not including) the first indication of overload.

Table 12 - Level Linearity - Increasing

Ideal (dB)	Response (dB)	Deviation (dB)	Tolerance (dB)	P/F	U95
94.0	94.0	0.0	±0.8	P	0.1
99.0	99.0	0.0	±0.8	P	0.1
104.0	104.0	0.0	±0.8	P	0.1
109.0	109.0	0.0	±0.8	P	0.1
114.0	114.0	0.0	±0.8	P	0.1
119.0	119.0	0.0	±0.8	P	0.1
124.0	124.0	0.0	±0.8	P	0.1
129.0	129.0	0.0	±0.8	P	0.1
131.0	131.0	0.0	±0.8	P	0.1
132.0	132.0	0.0	±0.8	P	0.1
133.0	133.0	0.0	±0.8	P	0.1
134.0	134.0	0.0	±0.8	P	0.1
135.0	135.0	0.0	±0.8	P	0.1
136.0	136.0	0.0	±0.8	P	0.1
137.0	137.0	0.0	±0.8	P	0.1

Overload indication at 138.0dB.

Level linearity test was the continued in 5dB steps of decreasing input signal level from the starting point up to within 5dB of the stated lower limit, then at 1dB steps up to (but not including) the first indication of under range.

Table 13 - Level Linearity - Decreasing

Ideal (dB)	Response (dB)	Deviation (dB)	Tolerance (dB)	P/F	U95
94.0	94.0	0.0	±0.8	P	0.1
89.0	89.0	0.0	±0.8	P	0.1
84.0	84.0	0.0	±0.8	P	0.1
79.0	79.0	0.0	±0.8	P	0.1
74.0	74.0	0.0	±0.8	P	0.1
69.0	69.0	0.0	±0.8	P	0.1
64.0	64.0	0.0	±0.8	P	0.1
59.0	59.0	0.0	±0.8	P	0.1
54.0	54.0	0.0	±0.8	P	0.1
49.0	49.0	0.0	±0.8	P	0.1
44.0	44.0	0.0	±0.8	P	0.1
39.0	39.0	0.0	±0.8	P	0.1
34.0	34.0	0.0	±0.8	P	0.1
30.0	30.0	0.0	±0.8	P	0.1
29.0	29.0	0.0	±0.8	P	0.1
28.0	28.0	0.0	±0.8	P	0.1
27.0	27.0	0.0	±0.8	P	0.1
26.0	25.9	-0.1	±0.8	P	0.1
25.0	24.8	-0.2	±0.8	P	0.1

Under range indication at 24.0dB.

3.8 TONEBURST RESPONSE

The response of the sound level meter to short-duration signals was tested on the reference range with 4kHz tone bursts.

The tone bursts were generated from a steady sinusoidal signal at a level of 135.0dB.

Table 14 - FAST Weighted Response

Burst Length	Response dB(A)	Deviation (dB)	Tolerance (dB)	P/F	U95
200ms	134.0	0.0	±0.5	P	0.1
2ms	117.0	0.0	+1.0 / -1.5	P	0.1
0.25ms	107.9	-0.1	+1.0 / -3	P	0.1

Table 15 - SLOW Weighted Response

Burst Length	Response dB(A)	Deviation (dB)	Tolerance (dB)	P/F	U95
200ms	127.6	0.0	±0.5	P	0.1
2ms	108.0	0.0	+1.0 / -3	P	0.1

Table 16 - Sound Exposure Level Response

Burst Length	Response dB(A)	Deviation (dB)	Tolerance (dB)	P/F	U95
200ms	128.1	0.1	±0.5	P	0.1
2ms	108.5	0.5	+1.0 / -1.5	P	0.1
0.25ms	98.9	-0.1	+1.0 / -3	P	0.1

3.9 PEAK C RESPONSE

Indication of Peak C sound level was tested on the least sensitive level range. Test signals used were -

- A single complete cycle of an 8kHz sinusoid, starting and stopping at zero crossings
- Positive and negative half cycles of a 500Hz sinusoid, starting and stopping at zero crossings.

The level of the steady 8kHz sinusoid was adjusted to display 133.0dB(C).

Table 17 - Single Cycle Response

Response Peak C	Deviation (dB)	Tolerance (dB)	P/F	U95	Overload Peak C
136.4	0.0	±2.0	P	0.22	N

Table 18 - Half Cycle Response

Signal Orientation	Response Peak C	Deviation (dB)	Tolerance (dB)	P/F	U95
Positive	134.5	-0.9	±1.0	P	0.1
Negative	134.5	-0.9	±1.0	P	0.1

No overload was noted during Peak C testing.

3.10 OVERLOAD INDICATION

The overload indication was tested on the least sensitive level range, with the sound level meter set to display frequency weighted A, time averaged values.

Positive and negative half cycle sinusoidal electrical signals at 4kHz were used. The test began at an indicated time averaged level of 137.0dB(A).

Using the positive half cycle signal, the signal level was increased in steps of 0.5dB up to, but not including, the first indication of overload. The level of the input signal was then increased in steps of 0.1dB until the first indication of overload. These steps were repeated using the negative half cycle signal.

Table 19 - Overload Indication

Signal Orientation	Overload Response	Difference	Tolerance	P/F	Uncertainty
Positive	136.6	0.0	±1.5	P	0.1
Negative	136.5				

Overload indication was verified.

Overload latch indication was verified.

3.11 HIGH LEVEL STABILITY

High level stability was tested by measuring the response of the meter to high signal levels. The result was evaluated as the difference between the A-Weighted indicated levels in response to a steady 1kHz signal applied over 5 minutes.

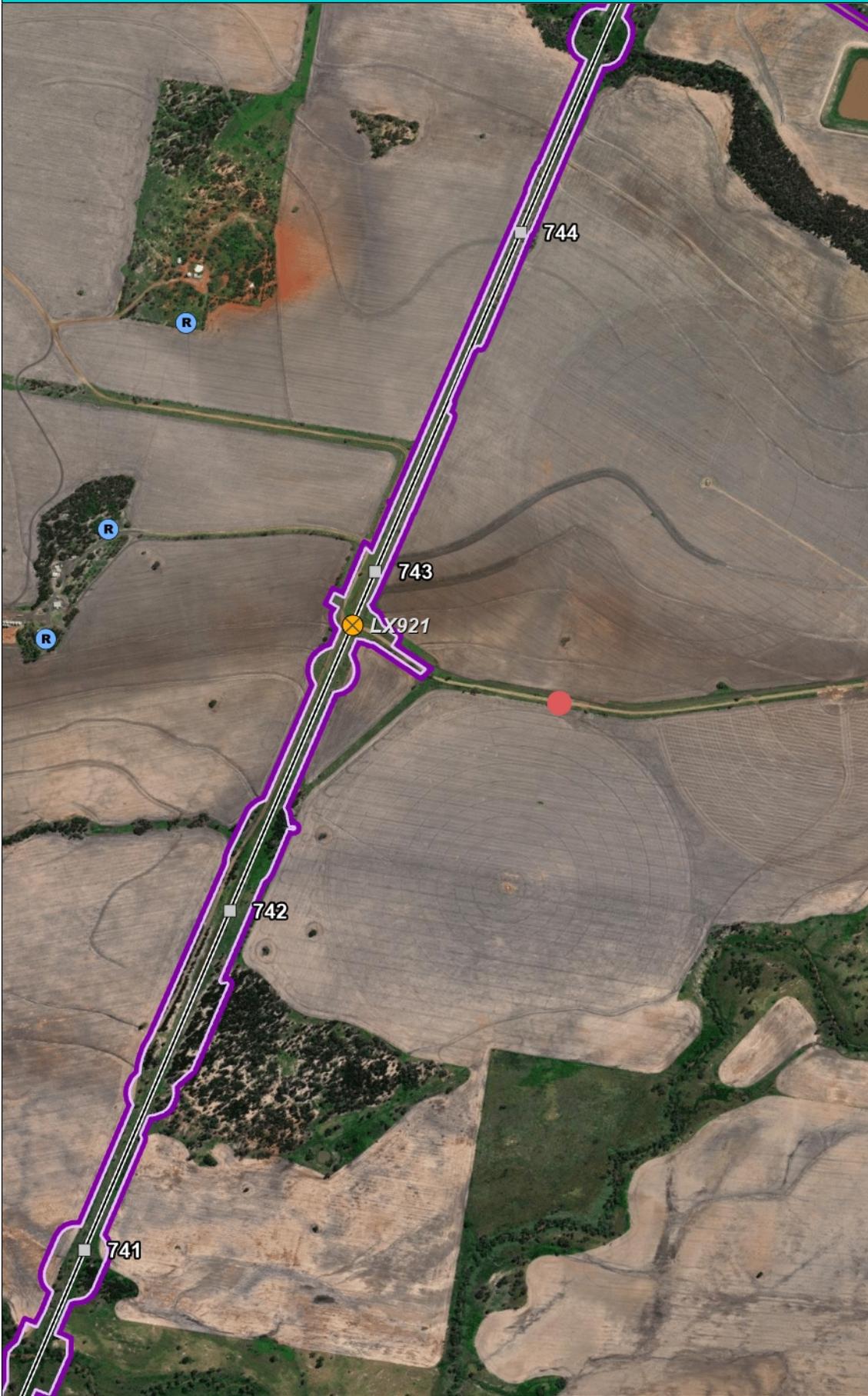
Table 20 - FAST Weighted Response

Time Weighting	Initial Response (dB)	Final Response (dB)	Deviation (dB)	Tolerance (dB)	P/F	U95
Fast	137.0	137.0	0.0	±0.1	P	0.10
Slow	N/A	N/A	N/A	±0.1	N/A	0.10
Leq	137.0	137.0	0.0	±0.1	P	0.10

Attachment I: Noise Monitoring Locations

Noise Monitoring Location - Boonery Park Rd

INTERNAL USE ONLY



Legend

CIZ (SPIR)

Level Crossings

- Public
- Private
- Pedestrian

Chainage 1km

Rail Alignment

Residential Receivers

Sensitive Receivers

- Active recreation
- Aged care
- Education
- Health
- Passive recreation
- Religious

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0 0.23 0.5 Kilometers

Scale: 1: 18,056

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Red Point - Boonery Park Rd Noise Monitoring Location (11/02/2022)

Note: ARTC web applications use the Web Mercator (EPSG:3857) coordinate system. This modified Mercator projection maximises system performance, but at the expense of distortion and accuracy. As such, all measurements carried out in these applications are to be regarded as approximate.

INLAND RAIL **ARTC**

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Noise Monitoring Location - Bushes Access Rd

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Red Point - Bushes Access Rd Noise Monitoring Location (11/02/2022)

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Noise Monitoring Location - Calimpa Rd

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.11 0.2 Kilometers



Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Red Point - Calimpa Rd Noise Monitoring Location (11/02/2022)
NOTE: Receiver @ CH701.350 acquired by ARTC.

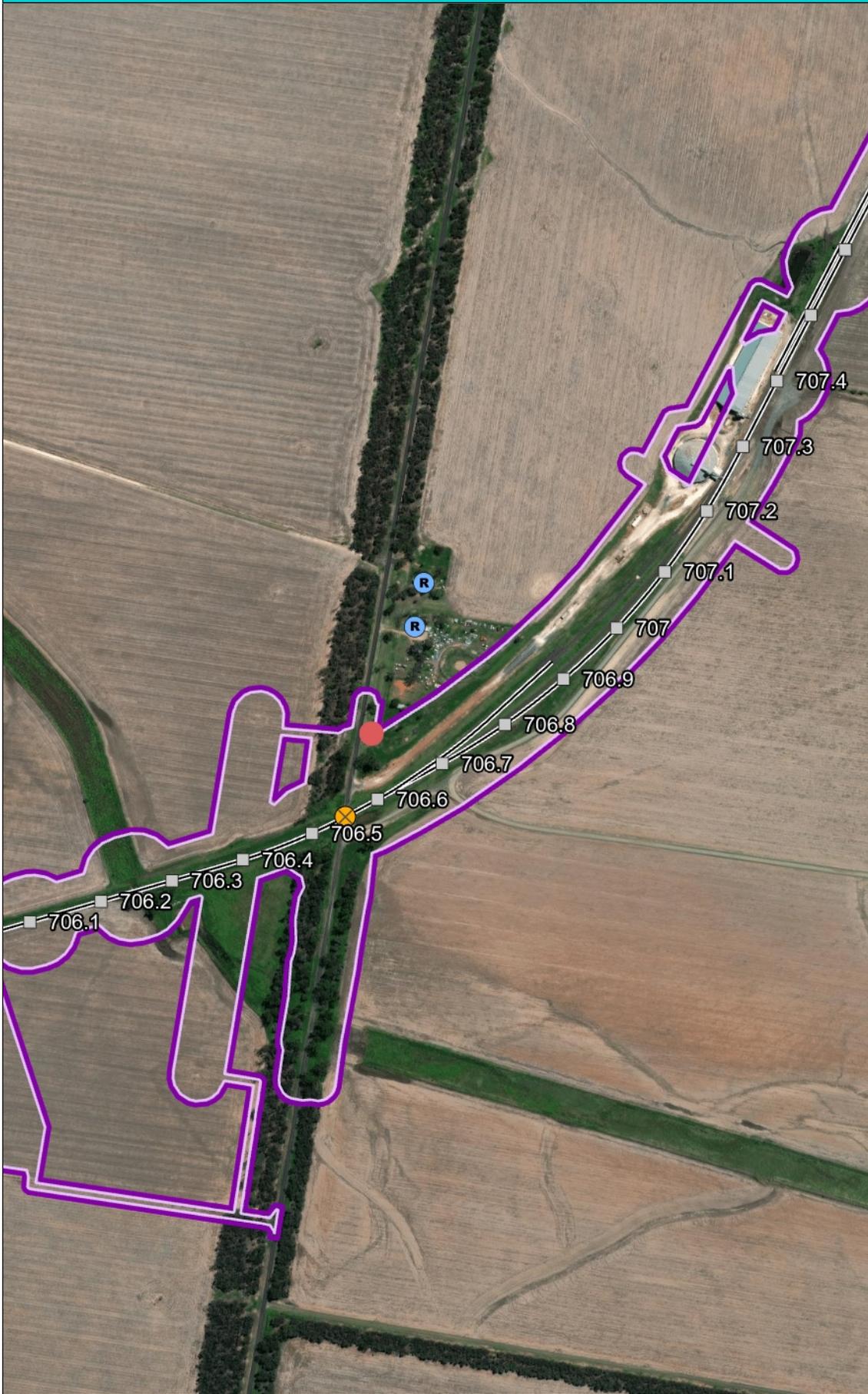
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Noise Monitoring Location - County Boundary Rd

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- ⊗ Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.11 0.2 Kilometers



Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Red Point - County Boundary Rd Noise Monitoring Location (11/02/2022)

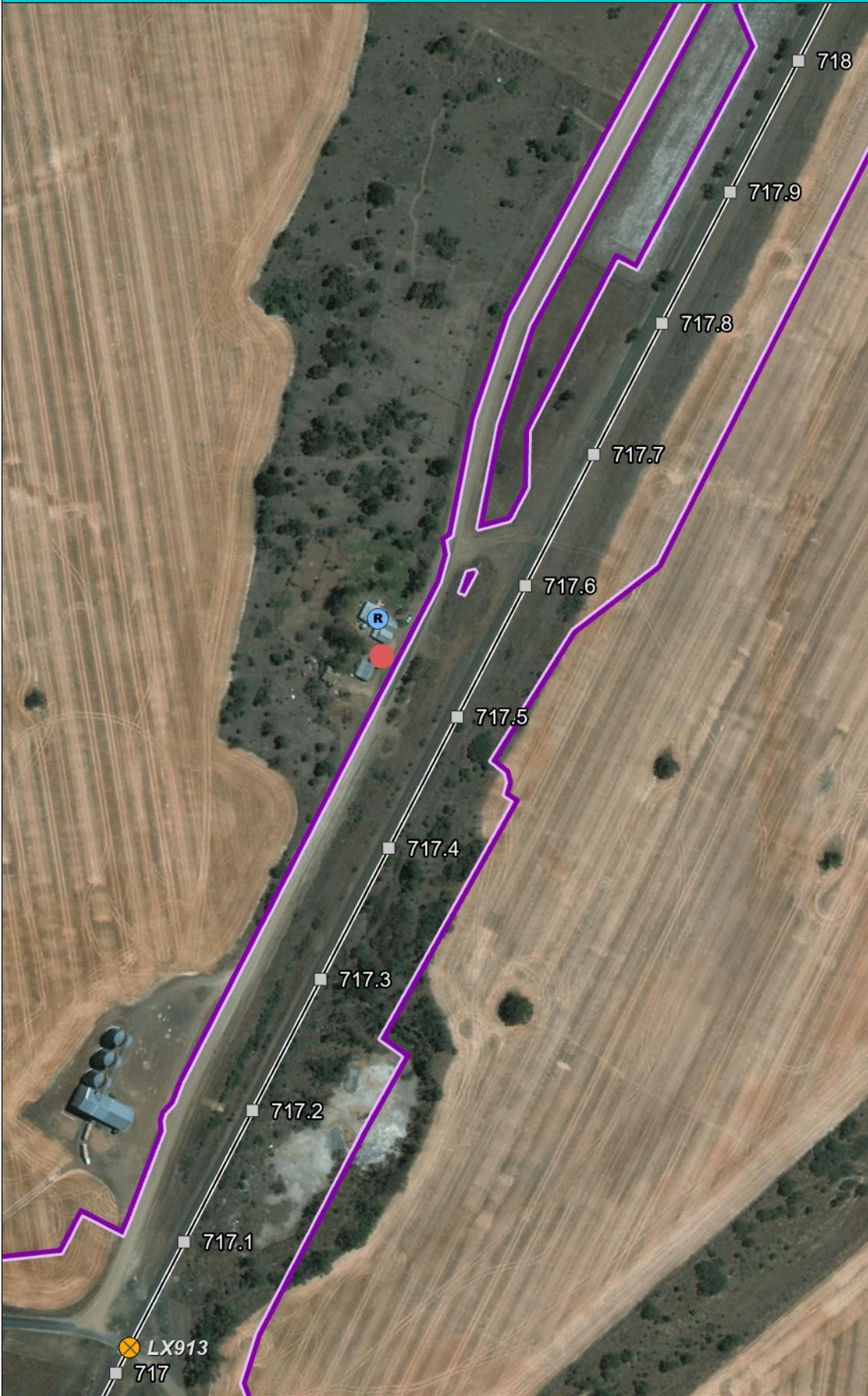
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Noise Monitoring Location - Crooble Rd

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- Ⓡ Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.06 0.1 Kilometers

Scale: 1: 4,514

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Red Point - Crooble Rd Noise Monitoring Location (11/02/2022)

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Noise Monitoring Location - Croppa Creek

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- ⊗ Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.06 0.1 Kilometers

Scale: 1: 4,514

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Red Point - Croppa Creek (Residential)
Noise Monitoring Location (11/02/2022)

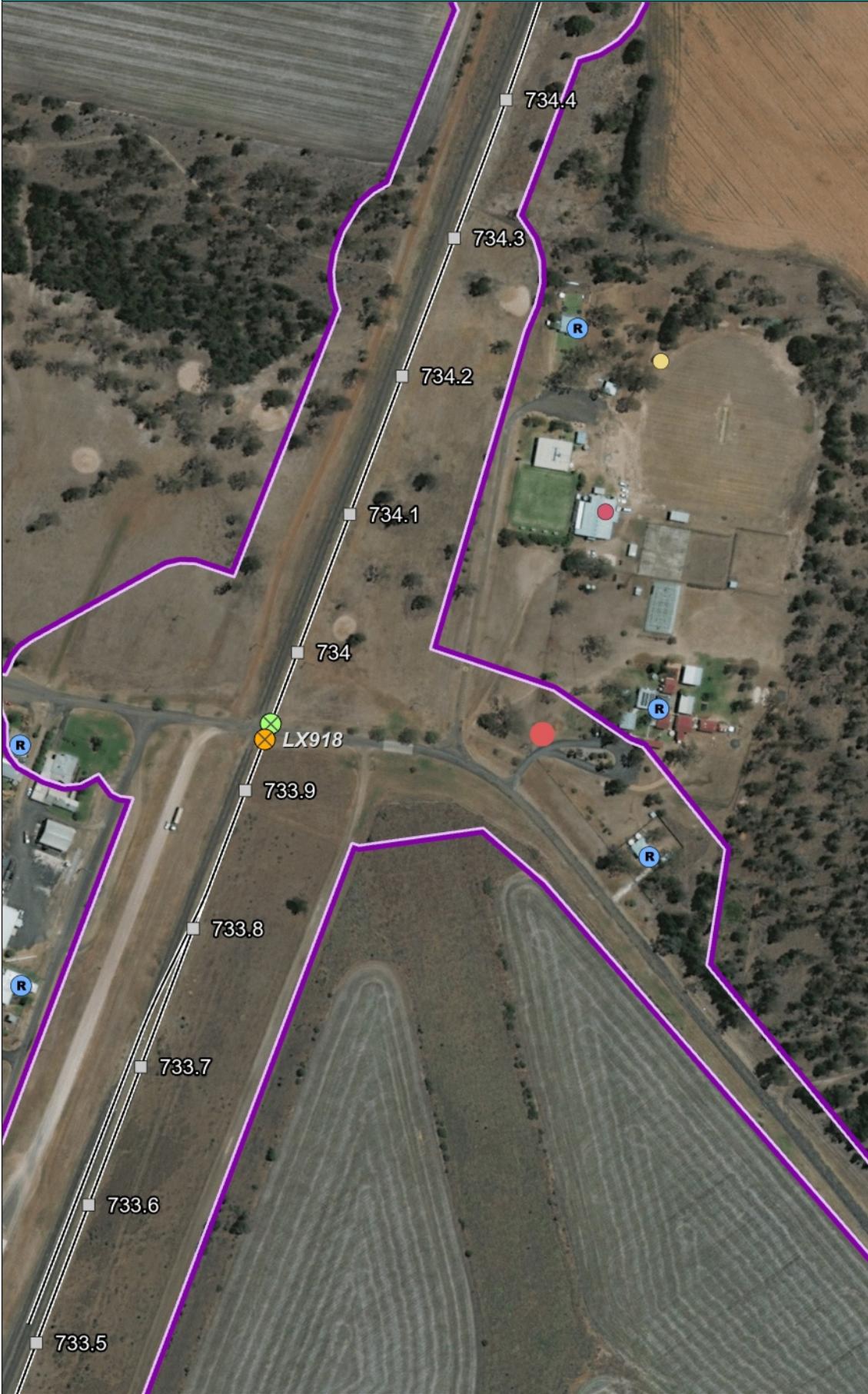
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Noise Monitoring Location - Croppa Creek School

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
 - Religious

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0 0.06 0.1 Kilometers



Scale: 1: 4,514

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Red Point - Croppa Creek School Noise Monitoring Location (11/02/2022)

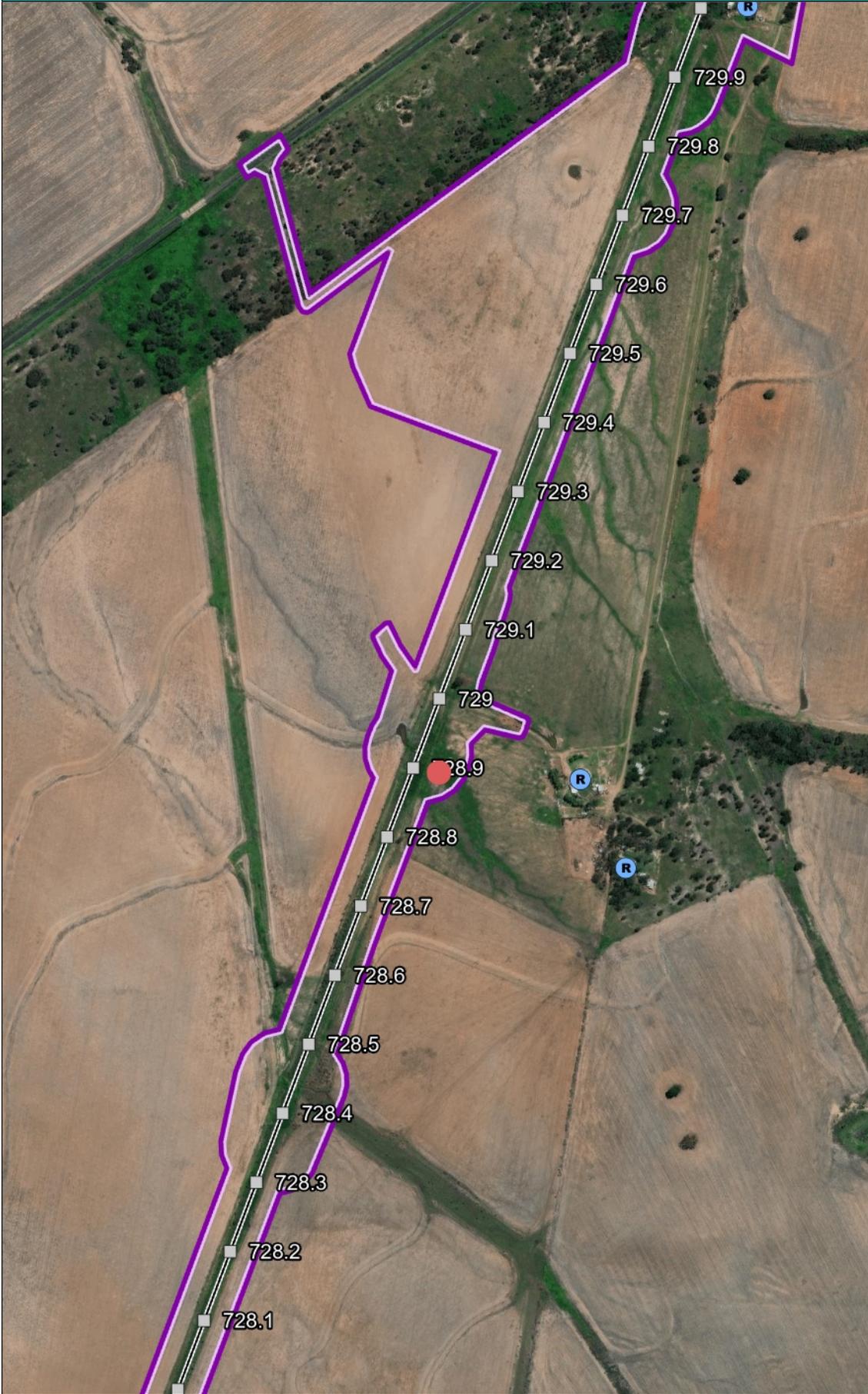
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Noise Monitoring Location - Croppa Moree Rd

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- Ⓡ Residential Receivers
- Sensitive Receivers**
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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Red Point - Croppa Moree Rd Noise Monitoring Location (11/02/2022)

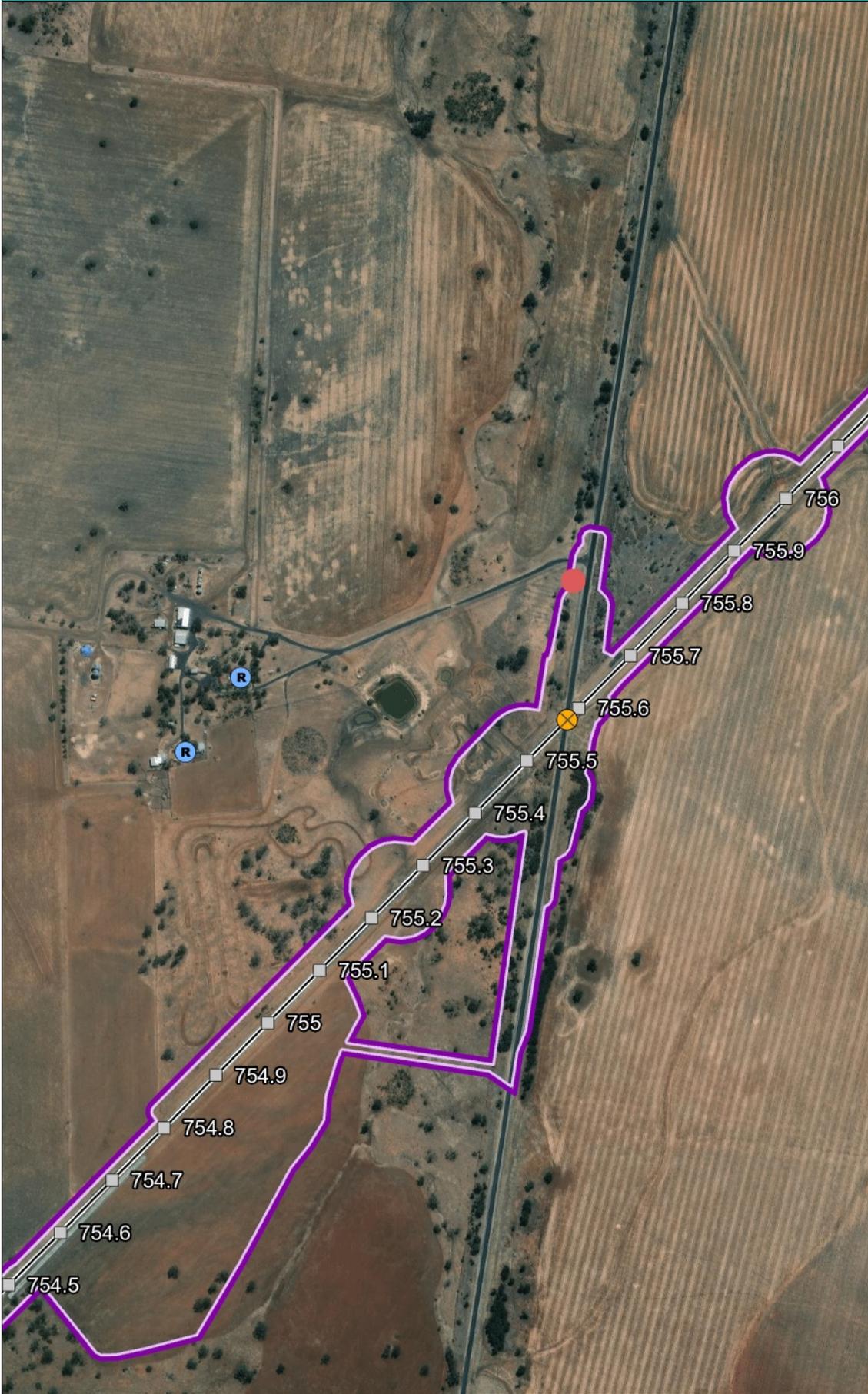
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Noise Monitoring Location - Croppa North Star Rd

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
 - Education
 - Health
 - Passive recreation
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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Red Point - Croppa North Star Rd Noise Monitoring Location (11/02/2022)

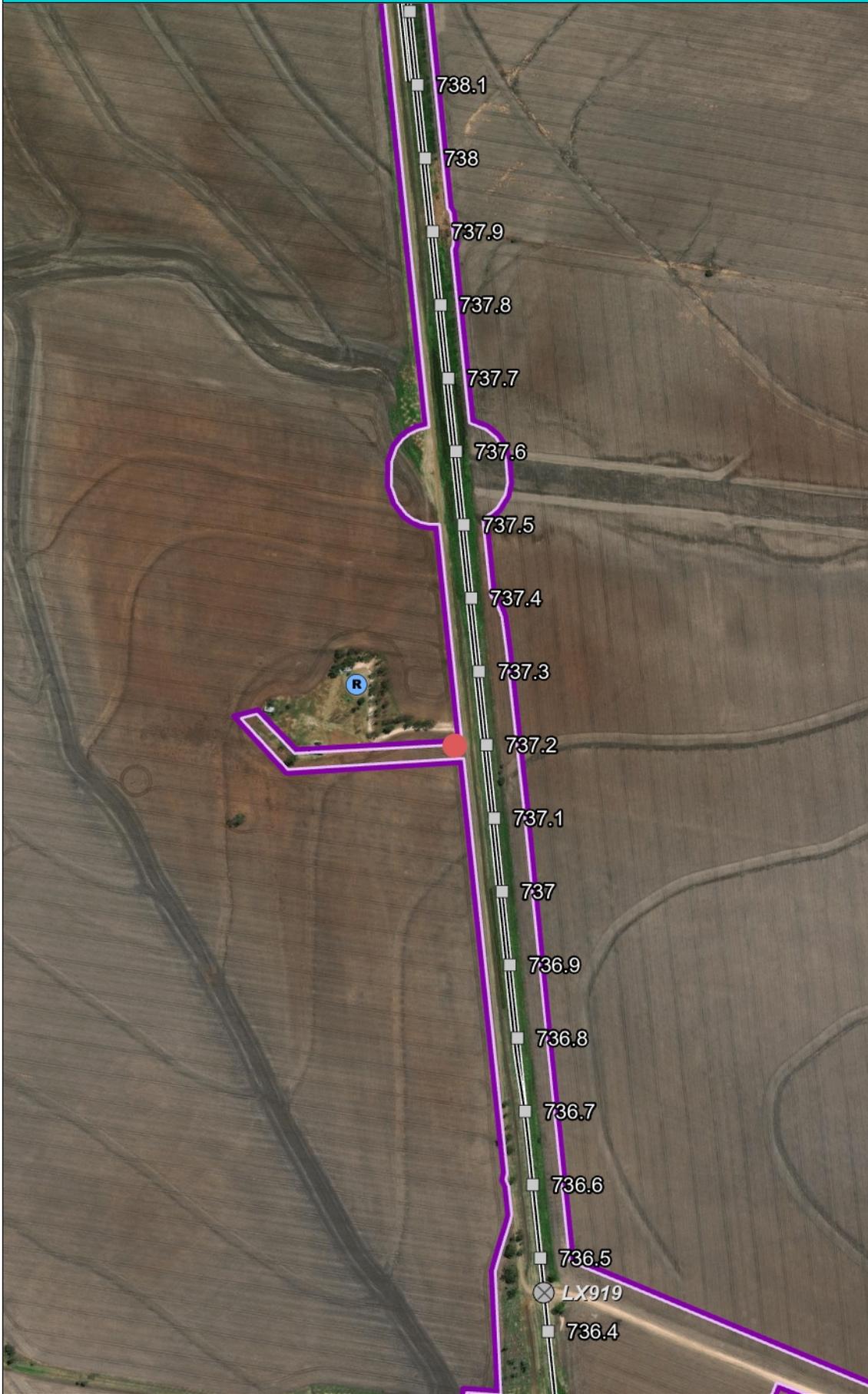
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Noise Monitoring Location - Plevna Rd

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers**
 - Active recreation
 - Aged care
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0 0.11 0.2 Kilometers

Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Red Point - Plevna Rd Noise Monitoring Location (11/02/2022)

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Noise Monitoring Location - Roydon Rd

INTERNAL USE ONLY



Legend

- CIZ (SPIR)
- Level Crossings**
 - ⊗ Public
 - ⊗ Private
 - ⊗ Pedestrian
- Chainage 100m
- Rail Alignment
- R Residential Receivers
- Sensitive Receivers**
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0 0.11 0.2 Kilometers



Scale: 1: 9,028

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Notes:

Red Point - Roydon Rd Noise Monitoring Location (11/02/2022)

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