


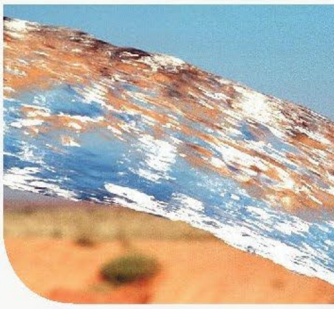
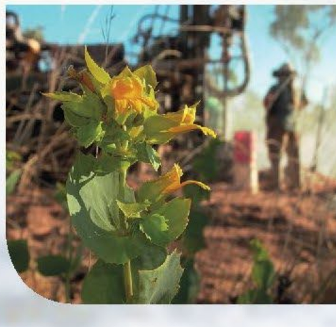

YINNETHARRA LITHIUM PROJECT

EXPANDED WATER SOURCE OPTIONS STUDY

REPORT FOR DELTA LITHIUM LTD

MAY 2024

Report No. 574.1/24/02

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1 INTRODUCTION

Electrostate Malinda Pty Ltd (Electrostate) a subsidiary of Delta Lithium Limited (Delta) is developing the Yinnetharra Lithium Project (Yinnetharra), which is located approximately about 260 km east of Carnarvon and 120 km northeast of Gascoyne Junction (Figure 1). The Yinnetharra Project is owned by Delta subsidiary Electrostate Malinda Pty Ltd (Electrostate). Delta is presently undertaking exploration activities to further define the lithium ore resource and is uncertain of what site infrastructure and water supply volumes would be required. However, based on other lithium mining operations in WA it is anticipated that at least 1.5 GL/annum of low salinity groundwater would be required for the project.

Delta has already established a network of six narrow diameter (125 mm diameter) water supply bores to provide a water supply to support drilling and other exploration activities (Rockwater 2023a, 2023b) which have a cumulative yield of approximately 20 L/s. Delta now requires options to secure a water supply to support the mining and processing of Lithium ore to produce lithium concentrate at Yinnetharra.

Delta commissioned Rockwater to conduct a hydrogeological assessment for the Yinnetharra Project, aimed at identifying and evaluating potential groundwater resources to meet the anticipated water demands for ore processing, mining camp facilities, dust suppression, and infrastructure development. The initial assessment was completed in February 2024. This report provides an update of the previous study, to include additional area tenements available to Delta through joint venture agreements with Voltaic Strategic Resources Ltd (Voltaic), Reach Resources Limited (Reach) and Dalaroo Metals Limited (Dalaroo).

2 METHOD OF ASSESSMENT

This report provides a desktop assessment of hydrogeology within a 100 km radius of the Yinnetharra Project. The objective of this study is to identify water source options for the Yinnetharra Project and includes:

- A summary description of the reviewed baseline conceptual hydrogeological setting of the study area in Sections 3, 4, 9, 6, 7, 8, and 9;
- Recommendations of water source options for the Yinnetharra Project in Section 10;
- A proposed programme in Section 12 outlines the work required to secure a suitable water supply.

2.1 AVAILABLE DATA

Delta has previously completed two groundwater exploration programmes (Rockwater 2023a, 2023b) at the Yinnetharra Project. Six production bores were installed at Yinnetharra to provide water supply to support drilling and other exploration activities in 2023. The DWER's Water Information Reporting (WIR) database has 578 bores within 100 km of Yinnetharra. The closest licenced groundwater abstraction is from the Carnarvon Superficial aquifer about 26 km away.

In addition to the data described above, the following data were available for this assessment:

1. The Paleovalley distribution map within Western Australia, (Bell, et. al, 2012) was reviewed to identify the distribution of paleochannel sediments.

2. The 1:100,000 State interpreted bedrock geology digital map (GSWA, 2020) was reviewed to determine the basement geology relevant to the Yinnetharra Project.
3. Geological Reports and exploratory notes (Sheppard et. al., 2010, Wingate et al., 2002, Cutten et al. 2016, Spinks et. al. 2018, Hocking et al. 1987).
4. Mineral exploration reports available from the Western Australian Mineral WAMEX database;
5. Publicly available technical reports of paleochannel investigations along Lyons River (GRM 2016, GRM, 2018a, and GRM 2018b).
6. Geological mapping of the Merlinleigh Sub-basin undertaken as part of the Carbon Dioxide storage atlas completed by 3D-GEO Pty Ltd for the Geological Survey of Western Australia.
7. Airborne Electromagnetic Survey data from the Capricorn 2013 AEM TEMPEST survey (Munday & Davis, 2020).
8. Groundwater investigations for the Perth – Dampier Gas Pipeline and Glenburgh project (Rockwater, 1982, Rockwater 2012)
9. Waterstrike and RQD core data from Yinnetharra mineral exploration bores.
10. Water bore information and groundwater licence information have been accessed from DWER databases.
11. Potential groundwater dependent ecosystem maps by Bureau of Meteorology.
12. Water quality results from the Yinnetharra production bores.
13. Heritage survey report of the Yinnetharra area (Trace, 2023).

3 PROJECT SETTING

3.1 LOCATION AND LAND USE

Yinnetharra is located 120 km northeast of Gascoyne Junction (Figure 1). Land use in the area is predominantly used for grazing and nature conservation. The Yangibana Rare Earth Metals project (Yangibana) is located 67 km to the north of Yinnetharra and Spartan Resources' Glenburgh Gold Project is located 100 km south of Yinnetharra.

3.2 TOPOGRAPHY AND DRAINAGE

The regional topography is primarily drained by two major rivers**,** the Lyons River and Gascoyne River (Figure 2). The drainage channels are generally broad and defined by large floodways within wide valleys. The rivers primarily flow from the west to east, where they eventually merge near Gascoyne Junction. Both rivers are considered ephemeral with flows associated with rainfall (Leonhard et. al., 2013). The closest local drainage lines to Yinnetharra are House Creek and Thirty-Three River about 3 km to the north-west and 4 km to the south respectively.

3.3 CLIMATE

The climate at Yinnetharra is arid, with hot, dry summers and mild winters. The monthly mean temperature maxima range from 23.4°C during July to 40.7°C in December and monthly mean temperature minima range from 9.6°C in July to 21.2°C in December. The mean annual evaporation is 3,047 mm and exceeds the mean annual rainfall of 227 mm by an order of magnitude. Peak monthly rainfall typically occurs from January to March due to rain-bearing depressions (degraded cyclones) and from May to July from interactions between cold fronts and tropical cloud bands.

The average rainfall and evaporation data at Yinnetharra (-24.50, 116.27), derived from the SILO database is shown in Figure 3.

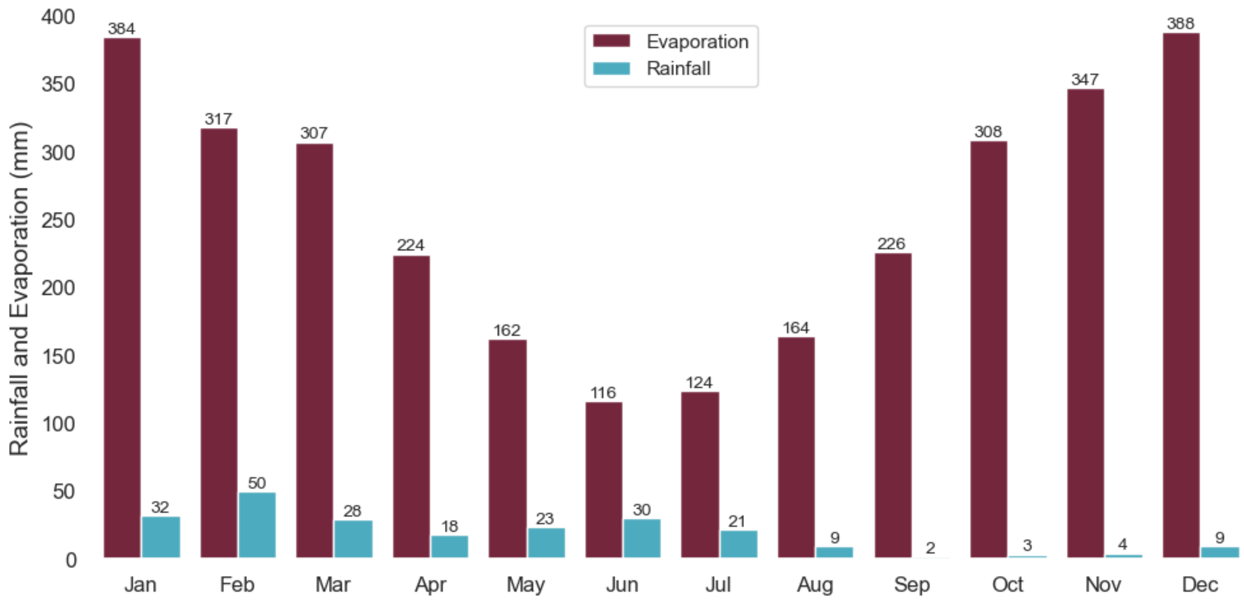


Figure 3: Climate statistics at Yinnetharra

4 HYDROGEOLOGICAL SETTINGS

4.1 REGIONAL GEOLOGY

The geology of the Yinnetharra Project area includes a range of Neoarchean to Paleoproterozoic gneisses, granites, and metasedimentary basins (Figure 4, Figure 4a). These rocks record the amalgamation of the Archean Pilbara and Yilgarn Cratons of the West Australian Craton which formed over a billion years of subsequent intracontinental crustal reworking. The Gascoyne Province is unconformably overlain by sedimentary rocks of the Edmund Basin and Collier Group to the northeast and by sedimentary rocks of the Carnarvon Basin to the west. A conceptual cross section through the Gascoyne Province is shown in Figure 5.

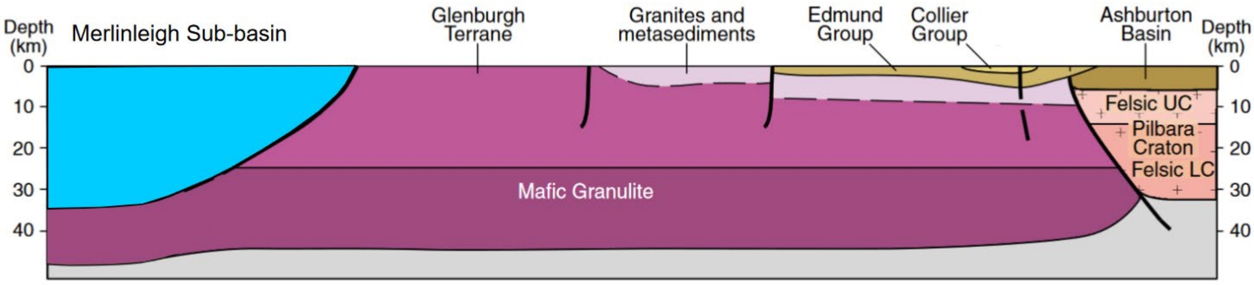


Figure 5: W-E cross section of through the Gascoyne Province (adapted from Sheppard et. al. 2010)

4.2 GASCOYNE PROVINCE

The Gascoyne Province is a geological basement complex comprised mainly of medium to highly metamorphosed metamorphic sequences and granitic units, and partly incorporates minor sedimentary rocks (Sheppard et. al, 2010). The oldest sequence of rocks in the geological province is mid to late Paleoproterozoic in age and is collectively referred to as the Glenburgh Terrane. Multiple orogenic episodes have caused continued overprints of granitic intrusions and metamorphism of the terrane. The main units are mapped by the 1: 100,000 Geosciences Western Australia digital map (2022) are described below:

- **Halfway Gneiss** consists of medium grained leucocratic granitic gneiss with ages of 2660 and 2430 million years ago (Ma). The leucocratic gneiss is generally very homogenous but may locally show pegmatite intrusion or banding and granitic rocks of the Dalgaringa supersuite.
- **Moogie Metamorphics** consists of psammitic and pelitic rocks that were deposited between 2240 and 2125 Ma. They can occur layered with the Halfway Gneiss but also occur as fault bounded xenoliths within foliated and gneissic granites of the Dalgaringa and Moorarie Supersuites.
- **Dalgaringa Supersuite** consists of massive to strongly foliated, and gneissic granites dated at 2005–1970 Ma (Sheppard et al., 1999).
- **Leake Spring Metamorphics** consists of semi-pelitic, quartz and garnet bearing schists. These occupy a 2.5 km by 60 kilometres zone directly north of Yinnetharra, where they mostly form disparate rafts and lenses within the regional granitic rocks of the Moorarie and Durlacher Supersuites.
- **Pooranoo Metamorphics** consists of psammitic schist and gneiss, felspathic sandstone. They have been intruded by the granites of the Durlarcher Supersuite.
- **Moorarie Supersuite** consists of massive, medium-grained porphyritic biotite monzogranite. It displays flow banding and layering locally and is present in metamorphic units previous described.
- **Durlarcher Supersuite** is an intrusive granitic unit consisting of schlieric, biotite–muscovite granodiorite. These intrusions exhibit strong layering and include inclusions of country rock closely associated with Pooranoo Metamorphics.
- These units can be considered as a single hydrostratigraphic unit; the fractured rock aquifer. The descriptions above are provided to aid in the field recognition of the local structural and metamorphic regime.

4.3 EDMUND AND COLLIER BASIN

The Edmund Basin comprises 4 to 10 km of fine grained siliciclastic and carbonate metasedimentary rocks grouped into six depositional packages, each separated by an unconformity or basal marine-flooding surface (Martin and Thorne, 2004). It is overlain by the Collier Basin, and in turn unconformably overlies granitic rocks of the Gascoyne Province (Figure 5). The basins are intruded by dolerite sills and dykes related to the Warakurna Large Igneous Province (Wingate et al., 2002).

The Edmund and Collier Group is divided into six depositional packages in literature (Martin and Thorne 2004, Cutten et al. 2016, Spinks et. al. 2018). The first four depositional packages are associated with the Edmund Group while a further two within the Collier Group. The deposition packages, from oldest to youngest are:

- basal carbonates (D1)
- conglomerate, fluvial, and deep marine facies (D2)
- fluvio-deltaic siliciclastic and shallow marine siltstone facies (D3)
- deep to shallow marine siltstone and carbonate facies (D4)
- shallow marine laminated siltstones with thin beds of sandstone and dolomudstones (D5)
- marine shelf deposited laminated, pyritic carbonaceous siltstones, fine sandstones, and calcareous sediments (D6)

4.3.1 TI TREE SHEAR ZONE

The NW-SE trending Ti Tree Shear Zone passes through the Yinnetharra tenements E09/2716 (pending) and E09/2169. On the southern side of the shear zone, the Pooranoo and Leake Spring Metamorphics have been metamorphosed into schist and amphibolite facies. Along the north of the shear zone, the Kiangi Creek Formation occurs as a lens shaped outcrop. It is comprised of predominantly interbedded fine-grained metasandstone with some metasiltstone, which have undergone low-grade greenschist metamorphism. The formation is commonly silicified and may host quartzite horizons up to 1 m thick.

4.4 MERLINLEIGH SUB-BASIN

Sedimentary rocks Merlinleigh Sub-Basin outcrop 60 km to the southwest of Yinnetharra, marking the eastern edge of the in the Carnarvon Basin. The geology of Lyons and Wooramel Groups in the sub-basin is described in Hocking et al. (1987) and is summarised below. Its stratigraphic sequence, from oldest to youngest are:

- The **Carboniferous-Permian aged Lyons Group**, primarily of glacial origin, comprising poorly to moderately sorted sandstone, siltstone and diamictites. Lyons group is the dominant geological outcrop approximately 60 km to the west of Yinnetharra. The unit directly overlies the Glenburgh Terrane basement from the surface, where it thickens to the east to more than one kilometre thick (3D-GEO Pty Ltd, 2013). Locally, it can contain variable calcareous content with boulder and shale beds. Sandstones occur as discrete lenticular intervals, including the basal Harris Sandstone;

- The **Wooramel Group** in the study area is represented by Moogooloo Sandstone, comprising fine- to coarse-grained quartz arenite with lesser amounts of conglomerate and siltstone. (Rockwater, 2011).

4.4.1 PALEOCHANNEL DEPOSITS

Paleochannel deposits consist of deep unconsolidated alluvial sediments that transition laterally away from the main drainage lines into colluvial, eolian, and residual deposits near the surface. The primary lithology includes clay, silts, sand, and gravel within paleochannel drainages, with calcrete present in parts. Thin lenses of sulphurous, carbonaceous black silts with occasional wood fragments have also been found in Lyons paleochannel sediments (GRM, 2018b).

There are three paleochannel systems in the study area (Figure 6):

- Lyons Paleochannel;
- Gascoyne Paleochannel; and
- Teede Paleochannel.

Calcrete thicknesses can reach up to 30 meters within Lyons Palaeochannel (Global Groundwater, 2016). Additionally, basal sands typically ranging from 20 to 40 meters in thickness are commonly intersected in this paleochannel. The actual depth of the paleochannel sediments encountered in drilling GRM (2018b) generally agrees with mapped depths from the Capricorn 2013 AEM TEMPEST survey (Munday & Davis, 2020). The surveys were therefore used as a basis to estimate paleochannel thicknesses:

- more than 300 m along the main thalwegs of Lyons and Gascoyne Palaeochannels; and
- up to 140 m thick within the Gascoyne paleotributary channels within Yinnetharra's exploration tenements E09/2283 and E09/2170; Reach Resources tenement E09/2375, Voltaic tenement E09/2503 and Dalaroo tenement E09/2713.

Paleochannels deposits are generally more reliable water supply aquifers than fractured rock aquifers. Their potential to contribute to the Yinnetharra water supply is discussed in Section 5.1. Figure 6 shows prospective tenement locations for the Yinnetharra Project.

5 GROUNDWATER OCCURENCE

Groundwater occurrence in the study area can be grouped in to three hydrostratigraphic units, based on their ability to store and transmit groundwater:

- Fractured rock aquifers
- Paleochannel aquifers
- Sedimentary aquifers

Review of the mining tenements in the study area shows historical mine water supply development from the Lyons paleochannel aquifer (GRM 2018a, GRM 2018b) and the sedimentary rock aquifer (Rockwater, 2012). More recently, Delta has completed two rounds of water exploration drilling at the Yinnetharra Project (Rockwater 2023a, Rockwater 2023b).

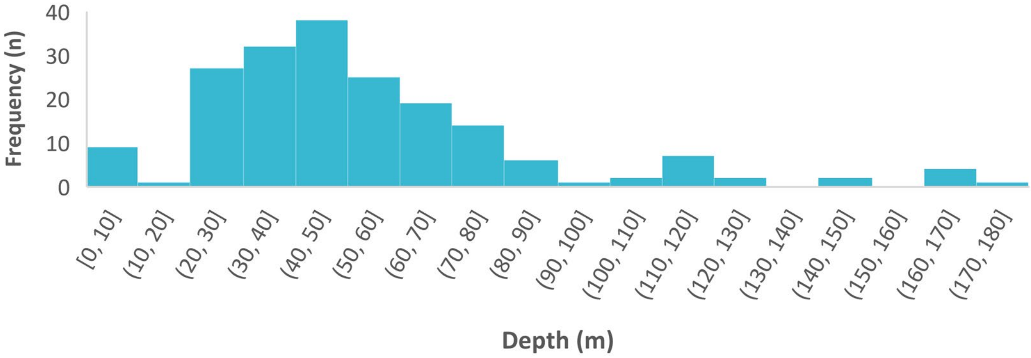
5.1 FRACTURED ROCK AQUIFER

Outside of the paleochannel and sedimentary aquifers, groundwater occurs within fractures associated with consolidated bedrock units, or fractured rock aquifers. Yields in fractured rock aquifers are determined by the presence and interconnectivity of water-bearing, permeable fractures. These fractures enhance the natural rock's permeability through processes like fracturing, dissolution, and chemical weathering. Bores within fractured rock aquifers tend to have limited sustainable yields due to limited storage from interconnected water bearing fracture.

Waterstrike depths at Yinnetharra primarily range between 20 to 80 meters. The likelihood of encountering practical groundwater yields decreases significantly beyond 80 meters, likely due to pressure from the overlying rock mass impeding the formation of fractures. This corresponds to the core RQD data at Yinnetharra indicating a reduction in fractures beyond 70 meters. Whilst the majority of the groundwater occurrence is up to 80 m, there is no accurate flow rate data of water yields at depth. What is clear however, is that groundwater may occur in fractures even at 180 m depths, albeit at a lesser frequency. Waterstrike depths and RQD data collated by Delta are presented in Figure 7.

Thirteen groundwater exploration holes were drilled in 2023 (Rockwater 2023a, Rockwater 2023b). Of the holes drilled, six 125 mm ID production bores with airlift yields ranging from 2.5 to 5.0 L/s were constructed. Two of the highest yielding bores (5.0 L/s) are located at the northernmost area of POW115416, within 1.5 km of the Ti Tree Shear zone to the north. It is likely that these bores would have yielded greater volumes of water if constructed at a larger diameter The Ti Tree Shear Zone likely hosts higher yielding water bearing fractures and should be further explored for future mine water supply.

There are no notable water occurrence records in mineral exploration drilling reports for the Dalaroo tenements (Alterra Resources Limited 2009, Serena Minerals Limited, 2021). Groundwater yields outside of regional structures zones – e.g. Ti Tree Shear Zone, Chalba Shear Zone, regional faults – are usually lower due to the lack of interconnected water bearing structures.



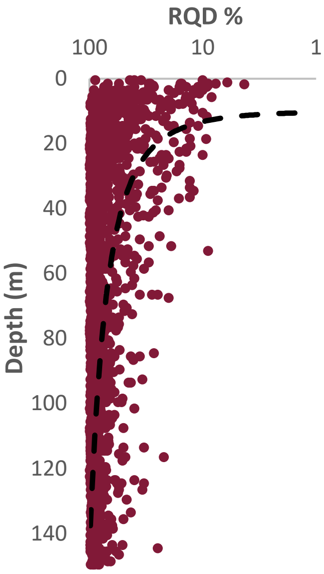


Figure 7: Summary of Waterstrike Depths (top) and RQD (bottom) in Fractured Rock at Yinnetharra

5.2 PALEOCHANNEL AQUIFERS

The Lyons paleochannel located north of Yinnetharra has been extensively investigated and developed for process water supply for the Yangibana Project. Figure 6 shows the location of the Yangibana Development by Hastings Technology Metals Ltd. GRM (2018a) conceptualised the paleochannel aquifer into three hydrostratigraphic units:

- shallow alluvium and calcrete deposits;
- a thick confining clay layer which acts as an aquitard (up to 100 m thick); and
- a basal sand or calcrete aquifer (up to 40 m thick).

The shallow alluvium may not extend below the water table, particularly outside major river drainage lines (Global Groundwater, 2016). Airlift yields from this shallow aquifer ranged from 0.1 to 1 L/s, with an average of 0.4 L/s. Groundwater yields from three bores constructed into the basal sand aquifer were test pumped, and each of their sustainable yields determined between 4 to 16 L/s over two years. Modest yields were recorded from calcrete aquifers, but their use as a water supply source is not viable due to environmental values related to stygofauna (Section 9.2).

The permeability of the paleochannel aquifer ranges from 0.003 to 5.37 m/d, with specific storage between 5.6×10^{-4} to 6.0×10^{-4} (GRM, 2018b). There have been no studies into the Gascoyne and Teede Paleochannel, and their groundwater occurrence is virtually unknown (Magee, 2009).

5.3 MERLINLEIGH SUB-BASIN SEDIMENTARY AQUIFERS

Sedimentary aquifers have the potential for substantial potable water production. Historical groundwater investigations at the Glenburgh Gold Project aimed to extract groundwater from both the Lyons Group and Moogooloo Sandstone for process water supply (Rockwater, 2012). Three 150 mm production bores were constructed to a maximum depth of 150 meters below ground level (mbgl), targeting permeable sandstone and conglomerates. Test pumping of these bores provided sustainable yields between 2 to 6.5 L/s. The permeability of the Lyons Group and Moogooloo Sandstone aquifer ranges from 0.1 to 0.7 m/d (Rockwater, 2012) near Glenburgh.

The Lyons Group near Gascoyne Junction was also previously investigated for hydrostatic testing water supply for the Perth to Dampier natural Gas pipeline project (Rockwater, 1982). Increase in airlift yields were consistently observed between 150 to 180 mbgl, up to a maximum of 18 L/s during drilling. Test pumping of bores near to Gascoyne Junction indicated permeability of the aquifer between 2 to 16 m/d while storage coefficients ranged from 1×10^{-4} to 5×10^{-4}.

6 GROUNDWATER LEVELS AND FLOW

Groundwater levels from previous studies show that water levels are consistent with topography and flow towards the major drainage lines (Rockwater 2023b, GRM 2018b). Groundwater levels in aquifers around locations of interest are:

- 15 to 21 mbgl in the paleochannel aquifer the Lyons paleochannel (GRM, 2018b); and
- 16 to 25 mbgl in the sedimentary aquifer near Glenburgh (Rockwater, 2018).

Groundwater levels recorded at the Yinnetharra Project (Table 1) bores indicated that the depth to water ranges from about 13.3 m to 26 m below ground level (bgl) dependant on ground elevation, and ranges from 303.4 to 308.6 m AHD.

Regional water level data obtained from the DWER Water information Reporting database and presented in Table 2 correlate reasonably well with observations from the project area. Interpolated water levels (Figure 8) indicate a low hydraulic gradient of 0.0023 from northeast to southwest, generally reflecting the local surface water drainage towards the Gascoyne River.

7 GROUNDWATER RECHARGE AND DISCHARGE

Rainfall in the region results in high runoff to creeks and rivers, leading to episodic recharge into permeable sediments along the Lyons and Gascoyne Rivers where runoff concentrates. Recharge into the paleochannel aquifer is from a combination of vertical leakage from surface alluvium and river infiltration, along with lateral flow from the fractured rock aquifers in the vicinity.

On a regional scale, direct rainfall replenishment of the fractured rock aquifer's weathered surface is expected to be low. In comparison, groundwater recharge into the sedimentary aquifer is moderately higher due to higher permeability. Geological structures such as shear and contact zones may locally enhance aquifer permeability, potentially offering a fresher water supply.

Regional groundwater discharge is westward towards the coast, following the general topography of both Lyons and Gascoyne River. Groundwater discharge may also occur through evapotranspiration of riparian vegetation or discharge into surface water pools along the river. The existence of surface water pools and riparian vegetation is discussed in Section 9.2.

Table 3 shows the groundwater recharge estimates for aquifers based on data available for review.

Table 1 – Groundwater recharge estimates

Aquifer	Recharge (mm/a)	Source
Paleochannel	1.0 to 1.9	GRM, 2018a
Sedimentary	0.5 to 0.9*	Rockwater, 2018
Fractured rock	0.1*	Delta Lithium

* Based on average site groundwater Cl concentrations and chloride deposition rate from Wilkins et. al. 2022

Table 2 – Groundwater levels in the Yinnetharra Project area

Bore ID	Easting (MGA)	Northing (MGA)	Ground Level (m AHD)	SWL (m bgl)	SWL (m AHD)
YNPB 001	425,888	7,289,921	324.7	16.9	307.8
YNPB 002	425,451	7,289,321	327.7	24.3	303.4
YNPB 003	426,648	7,288,944	322.8	16.8	306.0
YNPB 004	425,054	7,289,800	323.3	18.0	305.3
YNPB 005	426,362	7,290,044	324.6	18.2	306.4
YNPB 006	426,014	7,290,180	323.1	16.9	306.2
YRRD 135	425,522	7,289,644	325.2	17	308.2
YRRD 138	425,889	7,289,403	330.4	26	304.4
YRRD 139	425,477	7,289,525	325.4	18	307.4
YRRD 138	425,889	7,289,403	330.4	26	304.4
RW 007	426,900	7,288,817	18.3	18.3	306.5
RW 008	426,880	7,288,596	16.5	16.5	308.4
RW 009	426,901	7,288,769	17.6	17.6	307.0
RW 012	425,282	7,290,343	13.3	13.3	307.1

Table 3 – Regional water level data

Bore ID	Easting	Northing	Ground Level	SWL	SWL
	(MGA)	(MGA)	(m AHD)	(m bgl)	(m AHD)
Mumill Well	427,653	7,282,750	325	13	312
Reids Well	430,926	7,289,065	364	18	346
Gillies Well	444,172	7,272,109	340	13	327
Andrews Well	438,166	7,269,267	340	14	326
Court Well	432,556	7,274,936	328	13	315
Victory Well	412,854	7,278,193	295	12	283
33 Mile Well	422,612	7,280,120	316	14	302
Nardoo Hill Well	408,418	7,288,050	300	16	284
South Well	432,509	7,298,100	349	9	340
Howletts Well	447,509	7,287,844	366	13	353
Ram Well	424,904	7,293,888	328	6	322
Dunlop Well	421,647	7,292,546	318	4	314
Morans Well	414,734	7,294,937	335	12	323
Nardoo Well	409,595	7,293,624	314	6	308

8 GROUNDWATER QUALITY

8.1 FRACTURED ROCK AQUIFER GROUNDWATER QUALITY

Groundwater from the fractured rock aquifer at Yinnetharra is saline, has high hardness and contains elevated levels of sulfate, nitrate, uranium, and arsenic according to the Australian Drinking Water Guidelines. To date, six production bores have been constructed at Yinnetharra, all which yield saline groundwater (7,720 to 25,000 mg/L TDS). Delta is in the process of installing a reverse osmosis plant to treat groundwater for future potable use.

8.2 PALAEOCHANNEL AQUIFER GROUNDWATER QUALITY

Drilling investigations in the main trunk of the Lyons paleochannel aquifer encountered found saline water (9,300 mg/L), while the northern Lyon paleochannel tributary aquifer has marginal (~1,000 mg/L) water (GRM, 2018b). For this reason, the paleochannel tributary aquifer was developed for the Yangibana process water supply.

8.3 SEDIMENTARY AQUIFER GROUNDWATER QUALITY

Groundwater within the Lyons Group sedimentary aquifer displays a salinity range between 1,300 and 5,000 mg/L (Rockwater, 2012). This salinity range is consistent with DWER records from bores drilled in the Lyons Group and Moogooloo Sandstone (DWER, 2023). Historical supply studies (Rockwater 1982, 2012) in the sedimentary aquifer indicate water salinity increases with depth. Groundwater near Gascoyne Junction at a depth around 150 mbgl has notably higher salinity levels, ranging from 9,500 to 11,000 mg/L (Rockwater, 1982).

9 GROUNDWATER USE

9.1 PRIVATE GROUNDWATER USERS

Hastings Technology Metals (Yangibana) is the most significant groundwater user in the area. The mine holds a 1.8 GL/a allocation from the Combined - Fractured Rock West - Palaeochannel aquifer, and 0.8 GL/a allocation from the Fractured Rock aquifer. Yangibana's groundwater use is primarily from the Lyons Paleochannel and fractured rock aquifers adjacent to the mine.

The remaining allocations are relatively small (< 50,000 kL) and are allocated to private owners and the local Shire. Figure 9 and Table 4 show licensed groundwater users near Yinnetharra. Due to the nature of the majority of the registered water users, it is unlikely that Delta can acquire the existing miscellaneous tenements and their allocations.

Delta has applied for a 5C licence to take 250,000 kL/annum of groundwater from the Carnarvon fractured Rock Aquifer – West. This application (ref 057921) is currently under assessment.

Table 4 – Nearby licenced groundwater users

Licence number	Distance from Project) (km	Licence Holder	Allocation (kL)	Expiry date	Aquifer
203347	45	Hastings Technology Metals Ltd	1,840,000	11/09/2026	Combined - Fractured Rock West - Palaeochannel
183285	45	Hastings Technology Metals Ltd	820,000	11/09/2026	Combined - Fractured Rock West - Fractured Rock
64561	38	Millar, James Arthur	41,500	14/07/2026	Combined - Fractured Rock West - Fractured Rock
178786	93	Gascoyne Resources Limited	40,000	6/10/2024	Combined - Fractured Rock West - Fractured Rock
204759	43	Shire of Upper Gascoyne	33,000	8/09/2030	Combined - Fractured Rock West - Fractured Rock
204758	31	Shire of Upper Gascoyne	12,000	8/09/2030	Combined - Fractured Rock West - Fractured Rock
205613	88	Anthony Paterson Stehn	2,400	31/03/2031	Combined - Fractured Rock West - Fractured Rock
46673	41	Millar, James Arthur	10,000	9/09/2023	Carnarvon - Superficial
204757	26	Shire of Upper Gascoyne	3,000	8/09/2030	Carnarvon - Surficial

9.2 GROUNDWATER DEPENDENT ECOSYSTEMS

Potential groundwater dependent ecosystems (GDEs) are displayed in the Bureau of Meteorology's online GDE map (http://www.bom.gov.au/water/groundwater/gde/map.shtml). Note that occurrence of GDEs is only mapped as potential occurrence and requires field confirmation by ecological surveys. Data obtained for the study area are presented on Figure 10.

The Lyons and Gascoyne River systems are considered to exhibit high potential for aquatic GDEs, such as permanent pools or perennial streams. Regional and local studies (Leonhard et. al. 2013 and GRM 2018a) however noted the river systems as ephemeral therefore do not host aquatic GDEs. To the northwest and south of the Yinnetharra there are mapped moderate potential aquatic GDEs along House Creek and Thirty Three River. To the north and west of the project there are mapped Stony plains, lower tributary drainage plains and low stony rises, supporting scattered tall shrublands of mulga, other acacias and chenopods; these terrestrial ecosystems have a low to moderate GDE potential.

The Bureau of Meteorology's dataset does not identify any subterranean GDEs in the area. However, the Department of Biodiversity, Conservation and Attractions (DBCA) database for Priority Ecological Communities (PEC) notes occurrence of unique assemblage of stygofauna in calcretes associated with Gascoyne and Lyons paleochannels.

Based on the low to moderate potential GDEs and the lack of known permanent water pools in the region, the risk of impacts to GDEs by Delta's Yinnetharra Lithium Project is considered low.

9.3 CULTURALLY SIGNIFICANT GROUNDWATER

Known Aboriginal heritage areas near the project location are shown on Figure 11. The closest heritage area mapped by Bureau of Meteorology are located approximately 10 km south of Yinnetharra and are unlikely to be impacted by Delta's Yinnetharra Lithium Project.

An archaeological and ethnographic Survey and Site survey of E09/2169 completed by Yinggarda Aboriginal Corporation and Trace Archaeology and Ecology (Trace, 2023) identified three culturally significant water sources (water source north, water source south and water source west). Photographs of the sites (Trace, 2023) indicate that the water sources south and water source west are collections of water in outcropping rocks. Water source north appears to be a perched water source in a topographical low. All three appear to be ephemeral water sources and as the depth to water near to these sites is typically about 15 m, they are likely to have a poor connection to the underlying aquifer. Nonetheless, groundwater exploration should avoid these areas.

10 RECOMMENDATION AND DATA GAPS

Based on the hydrogeological review, four groundwater prospects have been identified in this study:

- **Priority area 1a:** Gascoyne tributary paleochannel aquifer along House Creek and Thirty-Three River located 3 km south of Yinnetharra; and another section of the paleochannel 35 km southwest of Yinnetharra, along the Gascoyne River. Airborne electromagnetic surveys suggest paleochannel aquifer can be up to 140 m thick. Assuming similar results from paleochannel investigations by GRM (2018b) and the 2023 Yinnetharra drilling, yields are expected to be around 8 to 12 L/s. Water quality is expected to be similar to the fractured rock aquifer;

- **Priority area 1b:** Fractured rock aquifers adjacent to the Ti Tree Shear Zone, located 2 km north of Yinnetharra. The aquifer hosts saline water (7,720 to 25,000 mg/L TDS) and has yielded up to 5 L/s from 125 mm diameter bores. Construction of larger diameter bores will likely provide higher yields;

- **Priority area 2:** Lyons tributary paleochannel aquifer located 80 km north-east of Yinnetharra. Water salinity is expected to be between 1000 to 10,000 mg/L, with yields between 4 to 16 L/s. Whilst this area can potentially provide a low salinity water supply, it would require significant piping to provide a water supply to Yinnetharra. There is an area currently not covered by another proponent's exploration tenement and is therefore available for exploration; and
- **Priority area 3:** Moogooloo Sandstone sedimentary aquifer located 90 km south-west of Yinnetharra. Water salinity is expected to be between 1,000 to 15,000 mg/L, with salinity increasing at depth. Groundwater yields between 2 to 10 L/s are expected from this aquifer. As with the Lyons tributary palaeochannel, significant piping cost would be required to utilise groundwater from the sedimentary aquifer.

The key aquifer details and suitability of water supply options are summarised in Table 5.

The key data gaps and assumptions for the findings are:

- Priority areas have been identified based on hydrogeological characteristics and access to exploration tenements available to Delta through Electrostate, and Delta's joint venture agreements with Voltaic Strategic Resources Ltd, Reach Resources Limited and Dalaroo Metals Limited;
- The depth and geometry of paleochannel aquifers have been estimated from the TEMPEST airborne electromagnetic surveys. Actual depths must be confirmed with drilling;
- It is preferable to develop and explore for groundwater in paleochannel deposits rather than fractured rock aquifer, as the storage capacity of fractured rock aquifers is lower compared to traditional unconsolidated sand aquifers. This results in lower sustainable yields and limited borefield longevity;
- There is no groundwater chemistry data from the paleochannel aquifer in Priority area 1a. Groundwater in the paleochannel receives recharge from the surrounding fractured rock aquifer and therefore may host similar salinities. Groundwater salinity in paleochannels is also known to be increasingly saline with depth due to stratification;
- Water supply option recommendations have avoided areas where calcrete is present within the paleochannel aquifers and where stygofauna Priority Ecological Communities (PEC) have been mapped due to their ecological significance;
- No aquifer parameter data from the priority areas 1a and 1b is available; a more detailed understanding of the formation permeability, storativity and heterogeneity is recommended to understand long term sustainable yields and reduce water risk to the Yinnetharra Project.

Table 5 – Summary of potential water source areas for the Yinnetharra Project

Aquifer	Priority	Distance (km)	Lithology	Approximate depth (mbgl)	Water level (mbgl)	TDS (mg/L)	Potential volume per bore (L/s)	Comment
Gascoyne paleochannel (tributary)	1a	3 to 37	Unconsolidated sand, silt, and clays	120	16 to 26	7,720 to 25,000	8 to 12	Prospective but unexplored
Fractured Rock (Ti Tree Shear zone)	1b	2 to 8	Fractured granitic metamorphic rocks	150	16 to 26	7,720 to 25,000	up to 5	Prospective but may not provide long term supply security
Lyons paleochannel (tributary)	2	80	Unconsolidated sand, silt, and clays	140 to 180	15 to 21	1000 to 10,000	4 to 15	Requires significant piping to use
Sedimentary Aquifer (Near Gascoyne Junction)	3	90	Sandstone, siltstone, conglomerates	100 to 150	16 to 25	1,000 to 15,000	2 to 11	Requires significant piping to use

11 FUTURE INVESTIGATIONS

The data gaps identified in Section 10 should be addressed by conducting targeted groundwater drilling investigations. This will improve the understanding of the available water supply for the project beyond the current desktop level assessment for Yinnetharra.

11.1 APPLICATION FOR ADDITIONAL GROUNDWATER EXPLORATION DRILLING

Drilling for groundwater, bore construction, and operation in Western Australia is governed by the *Rights in Water and Irrigation Act 1914* (the Act), (*Rights in Water and Irrigation Act 1914*, Government of Western Australia).

The requirements of the Act include licences to:

- Construct or alter a well (Section 26D of the Act); and
- Take groundwater (Section 5C of the Act);

Delta would need to submit a Form 1 application for a Section 26D licence to construct of alter a well (CAW) to DWER to drill and construct groundwater bores for the purposes of proving and developing the groundwater resource. Delta must demonstrate to DWER during this stage that it has appropriate land access permission to investigation areas. The land access requirements for the field programme are granted through exploration tenements, shown in Table 4. Access to tenement E09/2716 is pending approval of the exploration tenement.

It is recommended that investigations be undertaken for nearer water supply opportunities at Priority areas 1a and 1b before searching further afield. It is also recommended that Delta secures miscellaneous licences to search for groundwater at Priority areas 2 and 3 so that these water resources can be explored if required.

Once a 26D licence is granted, Delta would be able engage a water drilling contractor and undertake a groundwater exploration programme to assess the potential of the priority areas described in Table 6. The outcome of the groundwater investigation programme would then be reported to DWER in support of a 5C licence to secure the required water supply for Yinnetharra.

Table 6 – Exploration areas for land access rights

<table>
<tr><th>Holder</th><th>Tenement</th><th>Status</th><th>Priority area</th><th>Aquifer</th></tr>
<tr><td rowspan="4">Electrostate Malinda Pty Ltd</td><td>E 09/2283</td><td>Live</td><td>Priority area 1a</td><td>Gascoyne paleochannel (tributary)</td></tr>
<tr><td>E 09/2170</td><td>Live</td><td>Priority area 1a</td><td>Gascoyne paleochannel (tributary)</td></tr>
<tr><td>E 09/2716</td><td>Pending</td><td>Priority area 1b</td><td>Fractured Rock (Ti Tree Shear zone)</td></tr>
<tr><td>E 09/2169</td><td>Live</td><td>Priority area 1b</td><td>Fractured Rock (Ti Tree Shear zone)</td></tr>
<tr><td>Reach Resources Ltd</td><td>E 09/2375</td><td>Live</td><td>Priority area 1a</td><td>Gascoyne paleochannel (tributary)</td></tr>
<tr><td>Voltaic Strategic Resources Ltd</td><td>E 09/2503</td><td>Live</td><td>Priority area 1a</td><td>Gascoyne paleochannel (tributary)</td></tr>
<tr><td>Dalaroo Metals Ltd</td><td>E 09/2713</td><td>Live</td><td>Priority area 1a</td><td>Gascoyne paleochannel (Gascoyne River)</td></tr>
<tr><td colspan="3">No tenement</td><td>Priority area 2</td><td>Lyons paleochannel (tributary)</td></tr>
<tr><td colspan="3">No tenement</td><td>Priority area 3</td><td>Sedimentary (Near Gascoyne Junction)</td></tr>
</table>

11.2 PALEOCHANNEL TEST BORE DRILLING

It is proposed to drill hydrostratigraphic holes along the paleochannel along Gascoyne tributary paleochannel to investigate the aquifer potential for water supply, these would be completed as groundwater monitoring bores. Where conditions are favourable – e.g. thick sand layers, sufficient saturated aquifer thickness – a production bore would be installed adjacent to the monitoring bore for pump testing, which would potentially form part of the water supply borefield. The methodology of the drilling investigation is further discussed in Section 12.

Stygofauna sampling bores may also be required if identified by the subterranean fauna consultant.

11.3 FRACTURED ROCK AQUIFER TEST BORE DRILLING

It is proposed to drill up to 18 hydrostratigraphic holes within and along the Ti Tree Shear zone within Delta's tenements E09/2169 and E09/2716. Up to ten production bores would then be installed where airlift yields from drillholes are around 5 L/s. The methodology of the drilling investigation is further discussed in Section 12.

Stygofauna sampling bores may also be required if identified by the subterranean fauna consultant.

11.4 GEOPHYSICAL LOGGING

To further define the stratigraphic sequence of the paleochannel aquifers, and to identify porous aquifer conducive to groundwater flow, it is recommended that wire-line geophysical logs are completed on uncased holes. The geophysical logging suite should include gamma and resistivity (short wave and long wave). In addition to understanding the stratigraphic sequence of the target aquifers, wireline logging would provide indicative salinity vs depth information.

11.5 TEST PUMPING

Production bores constructed as part of the drilling programme are proposed to be test pumped to quantify the permeability and storage coefficients of the target aquifers and determine the sustainable yield for a potential borefield.

11.6 WATER ANALYSIS

Following completion of test pumping water samples should be collected and submitted to a NATA accredited laboratory for comprehensive analysis. The water chemistry would be used to establish the salinity, dominant ion, and water-type chemistry.

12 PROPOSED DRILLING AND AQUIFER TESTING

It is proposed to undertake a groundwater exploration and bore construction programme at Yinnetharra to develop a water supply borefield with a capacity of 48 L/s (1.5 GL/a). Drill locations at priority areas P1a, P1b, P2, and P3 are presented in Figures 12, Figure 13, Figure 14, and Figure 15 respectively.

12.1 PRIORITY AREA 1A – GASCOYNE TRIBUTARY PALEOCHANNEL AQUIFER

Assuming an average yield of 10 L/s from each production bore in the tributary paleochannel, the Yinnetharra Project would require five production bores to meet a water supply requirements of 48 L/s.

Rockwater has selected 5 new groundwater exploration targets to be tested in the upcoming drilling programme. The selection of these sites was informed by review of mapped geology, regional aeromagnetics and similar water supply studies from the nearest paleochannel studies (GRM, 2018). Up to 10 bores (5 monitoring, 5 production) would be drilled using mud rotary methods, to approximately 120 m to the base of the paleochannel sediments. Construction of a monitoring bore is crucial for the assessment of aquifer storage during pump testing stage, which would enable an assessment of the long-term supply potential of the aquifer.

Ten transects comprising one to three hydrostratigraphic drill holes, spaced 200 to 400 m apart are proposed to delineate the Gascoyne Palaeochannel aquifer. Geophysical logs (Gamma and resistivity) would be run on the hydrostratigraphic holes to determine aquifer intervals and optimal construction depths. Where favourable lithology and downhole geophysics results are present, a monitoring bore and production bore would be constructed.

Up to three hydrostratigraphic bores are proposed within each transect line as a preliminary investigation of the paleochannel aquifer potential. Out of 26 identified drill targets, 15 have been selected for drilling based on the priority sequence outlined in Table 7. The proposed locations for the hydrostratigraphic boreholes are detailed in Table 7 and shown in Figure 12

Drilling at Priority area 1a would include:

- Drill up to 15 hydrostratigraphic test holes using air-core methods, up to 180 m depth through valley fill sediments;
- Run gamma logs in each hole;
- Drill and construct production and monitoring bores at five locations where ground conditions are favourable; and
- Complete test pumping on the production bores.

The bore design of the hydrostratigraphic test holes would be determined based on logged cuttings and geophysical logs. The bore design would include 203 mm ND, 0.5 mm aperture, 316 grade stainless steel screens to class 18 uPVC blank casing. +1.6 – 3.2 mm graded gravel pack will fill the entire annulus followed by a bentonite seal and cement seal. A conceptual bore design for the paleochannel production bores is provided in Figure 16.

The costs for a drilling contractor to complete drilling at Priority area 1a would be approximately $1,300,000.

Table 7 – Priority 1a Exploration Holes

Priority Sequence	Tenement	Target Name	Coordinates GDA2020 zone 50		Aquifer target	Proposed Drill Depth
			East	North		(m)
1	E 09/2283 (Delta)	33River_01a	430,731	7,285,455	Paleochannel basal sand	120
2	E 09/2283 (Delta)	33River_01b	430,726	7,285,051	Paleochannel basal sand	
3	E 09/2283 (Delta)	33River_01c	430,741	7,285,852	Paleochannel basal sand	
4	E 09/2283 (Delta)	33River_02a	425,000	7,285,176	Paleochannel basal sand	
5	E 09/2283 (Delta)	33River_02b	425,008	7,285,577	Paleochannel basal sand	
6	E 09/2283 (Delta)	33River_02c	424,995	7,284,776	Paleochannel basal sand	
7	E 09/2283 (Delta)	33River_03a	419,999	7,285,475	Paleochannel basal sand	
8	E 09/2283 (Delta)	33River_03b	420,005	7,285,882	Paleochannel basal sand	
9	E 09/2283 (Delta)	33River_03c	420,000	7,285,083	Paleochannel basal sand	
10	E 09/2375 (Reach)	GP_09a	419,997	7,287,684	Paleochannel basal sand	
11	E 09/2375 (Reach)	GP_09b	419,795	7,287,679	Paleochannel basal sand	
12	E 09/2375 (Reach)	GP_09c	420,220	7,287,687	Paleochannel basal sand	
13	E 09/2375 (Reach)	GP_08	419,998	7,283,938	Paleochannel basal sand	
14	E 09/2170 (Delta)	GP_07	420,001	7,280,813	Paleochannel basal sand	
15	E 09/2503 (Voltaic)	GP_01	435,000	7,282,743	Paleochannel basal sand	
16	E 09/2503 (Voltaic)	GP_02	435,000	7,282,285	Paleochannel basal sand	
17	E 09/2503 (Voltaic)	GP_03	434,999	7,280,046	Paleochannel basal sand	
18	E 09/2713 (Dalaroo)	GP_04a	394,995	7,272,046	Paleochannel basal sand	
19	E 09/2713 (Dalaroo)	GP_04b	394,728	7,272,045	Paleochannel basal sand	
20	E 09/2713 (Dalaroo)	GP_04c	395,281	7,272,047	Paleochannel basal sand	
21	E 09/2713 (Dalaroo)	GP_05a	395,008	7,270,441	Paleochannel basal sand	
22	E 09/2713 (Dalaroo)	GP_05b	394,796	7,270,440	Paleochannel basal sand	
23	E 09/2713 (Dalaroo)	GP_05c	395,229	7,270,440	Paleochannel basal sand	
24	E 09/2713 (Dalaroo)	GP_06a	395,001	7,269,045	Paleochannel basal sand	
25	E 09/2713 (Dalaroo)	GP_06b	394,767	7,269,043	Paleochannel basal sand	
26	E 09/2713 (Dalaroo)	GP_06c	395,253	7,269,045	Paleochannel basal sand	

* One monitoring bore and one production bore at transect lines (a, b, c)

12.2 PRIORITY AREA 1B – TI TREE SHEAR ZONE FRACTURED ROCK AQUIFER

Assuming an average yield of 5 L/s from each production bore in the fractured rock aquifer, the Yinnetharra Project would require 10 production bores meet a water supply requirements of 48 L/s.

Rockwater has selected 18 new groundwater exploration targets to be tested in the upcoming drilling programme. The selection of these sites was informed by review of mapped faults, shear zones and geological contacts and recent water supply drilling at Yinnetharra (Rockwater, 2023b). The holes would be drilled using air hammer methods to approximately 150 m depth. Where suitable airlift yields are intersected (> 5L/s), a production bore would be constructed. The proposed location of the hydrostratigraphic holes is presented in Table 8 and shown in Figure 13.

Drilling at Priority area 1b would include:

- Drilling 18 exploration holes, using air-hammer methods to approximately 150 m depth;
- Converting up to 10 of the exploration holes to production bores for water supply; and
- Completing pumping tests on the production bores.

The bore design would be determined based on logged cuttings and airlift yields. The design would include 203 mm ND, 1 mm machine slotted, class 18 uPVC casing +1.6 – 3.2 mm graded gravel pack would fill the annulus where the fractured rock aquifer is intersected, followed by a bentonite seal. The annulus above the bentonite seal would be cement grouted to isolate any overlying unconsolidated paleochannel sediments. A conceptual bore design for the production bores is provided in Figure 17.

The costs for a drilling contractor to complete drilling at Priority area 1b would be approximately $1,400,000.

Table 8 – Priority 1b Exploration Holes

Target Name	Tenement	Coordinates GDA2020 zone 50		Aquifer Target	Proposed Drill Depth
		East	North		(m)
Ti Tree_01	E 09/2716 (Delta)	429,317	7,291,024	Fractured rock contact / shear zone	150
Ti Tree_02	E 09/2169 (Delta)	427,431	7,291,020	Fractured rock contact / shear zone	
Ti Tree_03	E 09/2716 (Delta)	426,756	7,292,774	Fractured rock contact / shear zone	
Ti Tree_04	E 09/2169 (Delta)	426,701	7,291,999	Fractured rock contact / shear zone	
Ti Tree_05	E 09/2716 (Delta)	426,087	7,292,934	Proximity to paleochannel / fractured rock contact / shear zone	
Ti Tree_06	E 09/2169 (Delta)	425,806	7,291,562	Fractured rock contact / shear zone	
Ti Tree_07	E 09/2716 (Delta)	425,660	7,292,707	Proximity to paleochannel / fractured rock contact / shear zone	
Ti Tree_08	E 09/2169 (Delta)	424,744	7,291,894	Proximity to paleochannel / fractured rock contact / shear zone	
Ti Tree_09	E 09/2169 (Delta)	421,597	7,290,999	Fractured rock contact	
Ti Tree_10	E 09/2169 (Delta)	420,979	7,293,844	Fractured rock contact / shear zone	
Ti Tree_11	E 09/2169 (Delta)	420,002	7,294,422	Fractured rock contact / shear zone	
Ti Tree_12	E 09/2169 (Delta)	419,952	7,294,866	Proximity to paleochannel / fractured rock contact / shear zone	
Ti Tree_13	E 09/2169 (Delta)	419,318	7,295,205	Proximity to paleochannel / fractured rock contact / shear zone	
Ti Tree_14	E 09/2169 (Delta)	418,613	7,295,177	Fractured rock contact / shear zone	
Ti Tree_15	E 09/2169 (Delta)	418,350	7,295,660	Proximity to paleochannel / fractured rock contact / shear zone	
Ti Tree_16	E 09/2169 (Delta)	417,731	7,295,675	Fractured rock contact / shear zone	
Ti Tree_17	E 09/2716 (Delta)	417,261	7,295,899	Fractured rock contact / shear zone	
Ti Tree_18	E 09/2716 (Delta)	415,727	7,297,949	Proximity to paleochannel / shear zone	

12.3 PRIORITY AREA 2 – LYONS TRIBUTARY PALEOCHANNEL AQUIFER

Assuming an average yield of 10 L/s from each production bore in the tributary paleochannel, the Yinnetharra Project would require five production bores to meet its water supply requirements of 48 L/s.

Rockwater has selected 7 new groundwater exploration targets to be tested in the drilling programme. The selection of these sites was informed by review of mapped geology, regional aeromagnetics and similar water supply studies from the nearest paleochannel studies (GRM, 2018).

At the time of writing, there are no pending or live tenements by Delta or other proponents at this Priority area (Figure 14). It is recommended that Delta applies for a miscellaneous licence to search for groundwater to secure this tenement as an alternative option to its water supply strategy.

The proposed location of the hydrostratigraphic holes is presented in Table 9 and shown in Figure 14. The drilling and bore construction methodology is as described in Section 12.1, but constructed to approximately 180 m to the base of the paleochannel sediments. A conceptual bore design for the paleochannel production bores is provided in Figure 16.

The costs for a drilling contractor to complete drilling at Priority area 2 would be approximately $1,700,000.

Table 9 – Priority 2 Exploration Holes

Target Name	Tenement	Coordinates GDA2020 zone 50		Aquifer Target	Proposed Drill Depth
		East	North		(m)
LTP_01a	To apply for tenement access	489,108	7,332,537	Palaeochannel Basal Sand	140 to 180
LTP_01b		488,982	7,332,382	Palaeochannel Basal Sand	
LTP_01c		489,214	7,332,707	Palaeochannel Basal Sand	
LTP_02a		490,003	7,332,086	Palaeochannel Basal Sand	
LTP_02b		490,004	7,332,286	Palaeochannel Basal Sand	
LTP_02c		490,003	7,331,886	Palaeochannel Basal Sand	
LTP_03a		491,345	7,332,229	Palaeochannel Basal Sand	
LTP_03b		491,314	7,332,033	Palaeochannel Basal Sand	
LTP_03c		491,519	7,332,327	Palaeochannel Basal Sand	
LTP_04a		492,122	7,331,450	Palaeochannel Basal Sand	
LTP_04b		492,217	7,331,626	Palaeochannel Basal Sand	
LTP_04c		491,977	7,331,312	Palaeochannel Basal Sand	
LTP_05a		493,155	7,331,375	Palaeochannel Basal Sand	
LTP_05b		493,259	7,331,545	Palaeochannel Basal Sand	
LTP_05c		493,083	7,331,190	Palaeochannel Basal Sand	

12.4 PRIORITY AREA 3 – SEDIMENTARY AQUIFER NEAR GASCOYNE JUNCTION

Assuming an average yield of 8 L/s from each production bore in the sedimentary aquifer, the Yinnetharra Project would require an additional 6 production bores meet its water supply requirements of 48 L/s.

At the time of writing, there are no pending or live tenements by Delta or other proponents at this Priority area (Figure 15). It is recommended that Delta initiate an application for a miscellaneous licence to search for ground water to enable this aquifer to be assessed as an option for its water supply strategy.

Rockwater has selected 10 new groundwater exploration targets to be tested in the drilling programme. The selection of these sites was informed by review of mapped geological contacts and previous water supply drilling nearby (Rockwater 1982, Rockwater 2012). The sedimentary aquifer is competent and has been historically drilled using air hammer methods (Rockwater 1982, Rockwater 2012). The holes would therefore be drilled using air hammer methods to approximately 180 m depth. Where suitable airlift yields are intersected (> 5 L/s), a production bore would be constructed at each location. The proposed location of the hydrostratigraphic holes is presented in Table 10 and shown in Figure 15.

Drilling at Priority area 3 would include:

- Drilling 10 exploration holes, using air-hammer methods, to approximately 180 m depth through neo-Proterozoic sediments near Dairy Creek (DC);
- Converting up to 6 of the exploration holes to production bores, for water supply; and
- Completing pumping tests on the production bores.

The bore design would be determined based on logged cuttings and airlift yields. The design would include 203 mm ND, 1 mm machine slotted, class 18 uPVC casing +1.6 – 3.2 mm graded gravel pack would fill the annulus where the fractured rock aquifer is intersected, followed by a bentonite seal. The annulus above the bentonite seal would be cement grouted to isolate any overlying unconsolidated paleochannel sediments.

The costs for a drilling contractor to complete drilling at Priority area 3 would be approximately $790,000.

Table 10 – Priority 3 Exploration Holes

Target Name	Tenement	Coordinates GDA2020 zone 50		Aquifer target	Proposed Drill Depth
		East	North		(m)
DC_01	To apply for tenement access	392,347	7,200,649	Lithological contact / Moogooloo Sandstone	180
DC_02		390,696	7,205,486	Lithological contact / Moogooloo Sandstone	
DC_03		390,182	7,204,900	Lithological contact / Moogooloo Sandstone	
DC_04		388,806	7,203,684	Lithological contact / Moogooloo Sandstone	
DC_05		388,762	7,202,069	Lithological contact / Moogooloo Sandstone	
DC_06		385,114	7,202,353	Lithological contact / Moogooloo Sandstone	
DC_07		385,114	7,200,640	Lithological contact / Moogooloo Sandstone	
DC_08		375,022	7,204,008	Lithological contact / Moogooloo Sandstone	
DC_09		374,212	7,204,897	Lithological contact / Moogooloo Sandstone	
DC_10		374,014	7,203,864	Lithological contact / Moogooloo Sandstone	

12.5 COST ESTIMATE

The cost estimate for the drilling, construction, and testing programmes for all priority areas are summarised in Table 11. These costs were estimated from rates by Caswell Drilling, a competent water bore drilling contractor. The rates are comparable with current industry rates. The cost for the required hydrogeological consulting for the management, supervision and reporting of the drilling programme would likely be an additional 10-15% of the above costs.

Table 11 – Cost estimates for proposed drilling programmes

Priority areas	Distance to Yinnetharra (m)	Cost estimate
Priority 1a – Gascoyne tributary/river paleochannel aquifer	3 to 37	$1,300,000
Priority 1b – Ti tree shear zone fractured rock aquifer	2 to 8	$1,400,000
Priority 2 – Lyons tributary paleochannel aquifer	80	$1,700,000
Priority 3 – Sedimentary Aquifer near Gascoyne Junction	90	$790,000

It is recommended that Delta adopts a staged approach to the drilling and testing programme, beginning with the most prospective target, the Gascoyne tributary paleochannel aquifer. If successful, there would be no further need to proceed with the remaining drilling programmes, unless additional water supply security and redundancy is required.

13 SUMMARY AND CONCLUSIONS

Rockwater has undertaken this hydrogeological assessment of the Yinnetharra Project using data provided by Delta, the Geological Survey of WA, Geoscience Australia, the Bureau of Meteorology, the Department of Water and Environmental Regulation, The Department of Planning, Land Use and Heritage and Technical reports by others and records held by Rockwater.

Prospective areas where a suitable groundwater supply may occur include:

- **Priority 1a:** Gascoyne tributary paleochannel aquifer along House Creek and Thirty-Three River 3 km south of Yinnetharra, and another section of the paleochannel 35 km southwest of Yinnetharra along the Gascoyne River;
- **Priority 1b:** Fractured rock aquifers at the Ti Tree Shear Zone 2 km north of the Yinnetharra;
- **Priority 2:** Lyons tributary paleochannel aquifer 80 km north-east Yinnetharra; and
- **Priority 3:** Moogooloo Sandstone sedimentary aquifer 90 km west of Yinnetharra, near Gascoyne Junction.

It is recommended that the Priority 1a drilling programme is undertaken near Yinnetharra before proceeding further afield. The proposed investigation aims to drill hydrostratigraphic bores and construct test bores to assess potential aquifers nearby to provide mine water supplies.

Access to the proposed investigation areas are provided through a combination of Delta's own tenements, and additional tenements through joint venture agreements with Voltaic Strategic Resources Ltd, Reach Resources Limited and Dalaroo Metals Limited. Exploration within Delta's own tenements E 09/2169 and E 09/2283 offers the best prospect in terms of accessibility and distance to the Project.

Access to tenement E09/2375, held by Reach, offers Delta an opportunity to continue groundwater exploration adjacent to its own tenements if exploration drilling in E 09/2169 and E 09/2283 is not prospective.

Additional exploration bores in Voltaic's tenement E09/2503 allow for Delta to investigate the upper tributaries of the Gascoyne Paleochannel, which may offer better prospects for fresher groundwater. The aquifer thickness in this area is likely to be lower compared to other targets.

Proposed drilling in Dalaroo's tenement E09/2713 provides an opportunity to explore the main trunk of the Gascoyne Paleochannel, which is likely to host thicker aquifer intervals although at cost of higher groundwater salinity.

Delta should proceed with securing miscellaneous licences to search for water to enable groundwater exploration at Priority 2 and Priority 3 targets, if this is required.

Dated: 3 May 2024 **Rockwater Pty Ltd**

Peter Khor
Senior Hydrogeologist

Steve Bolton
Principal Hydrogeologist

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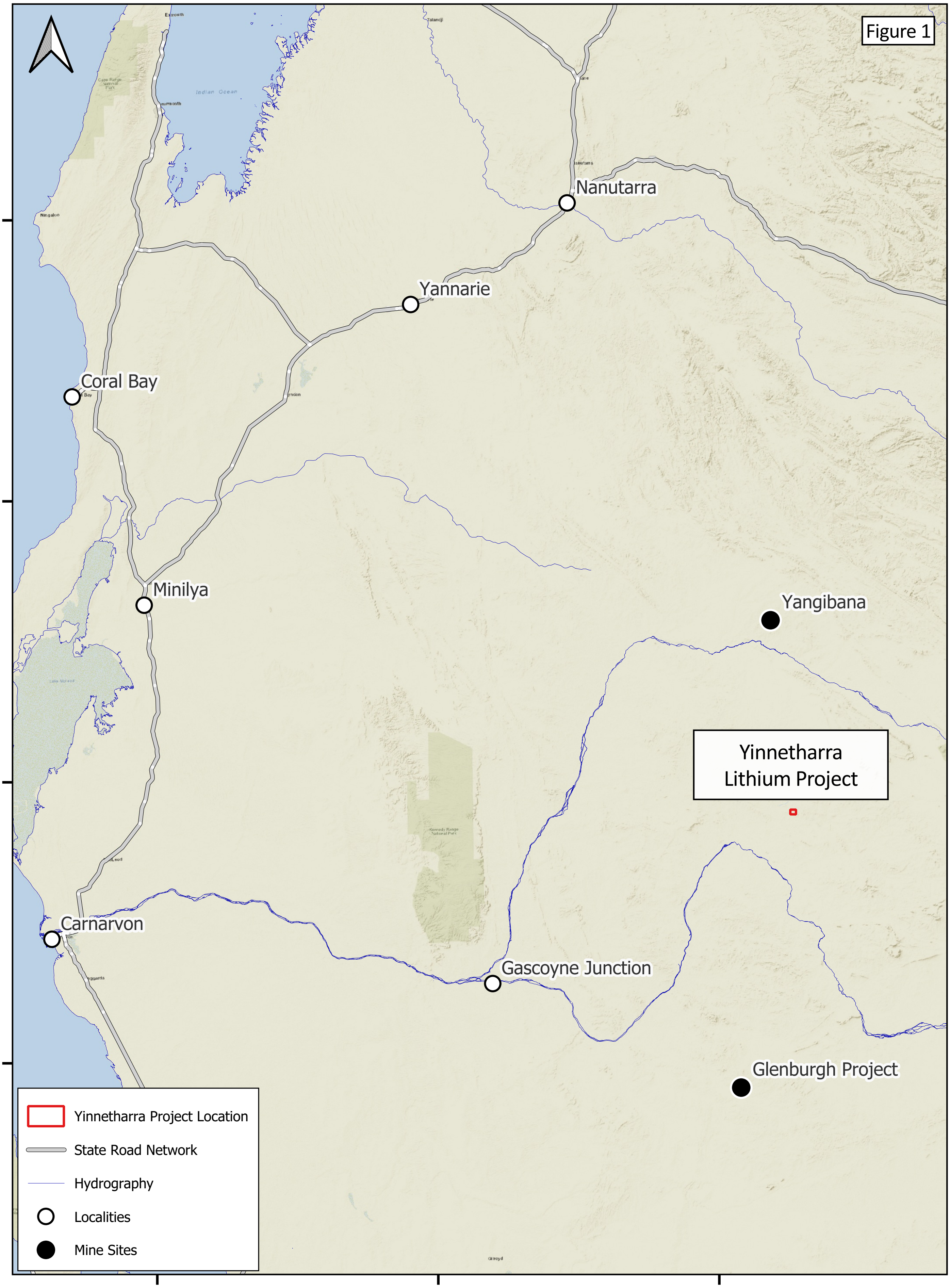
FIGURES



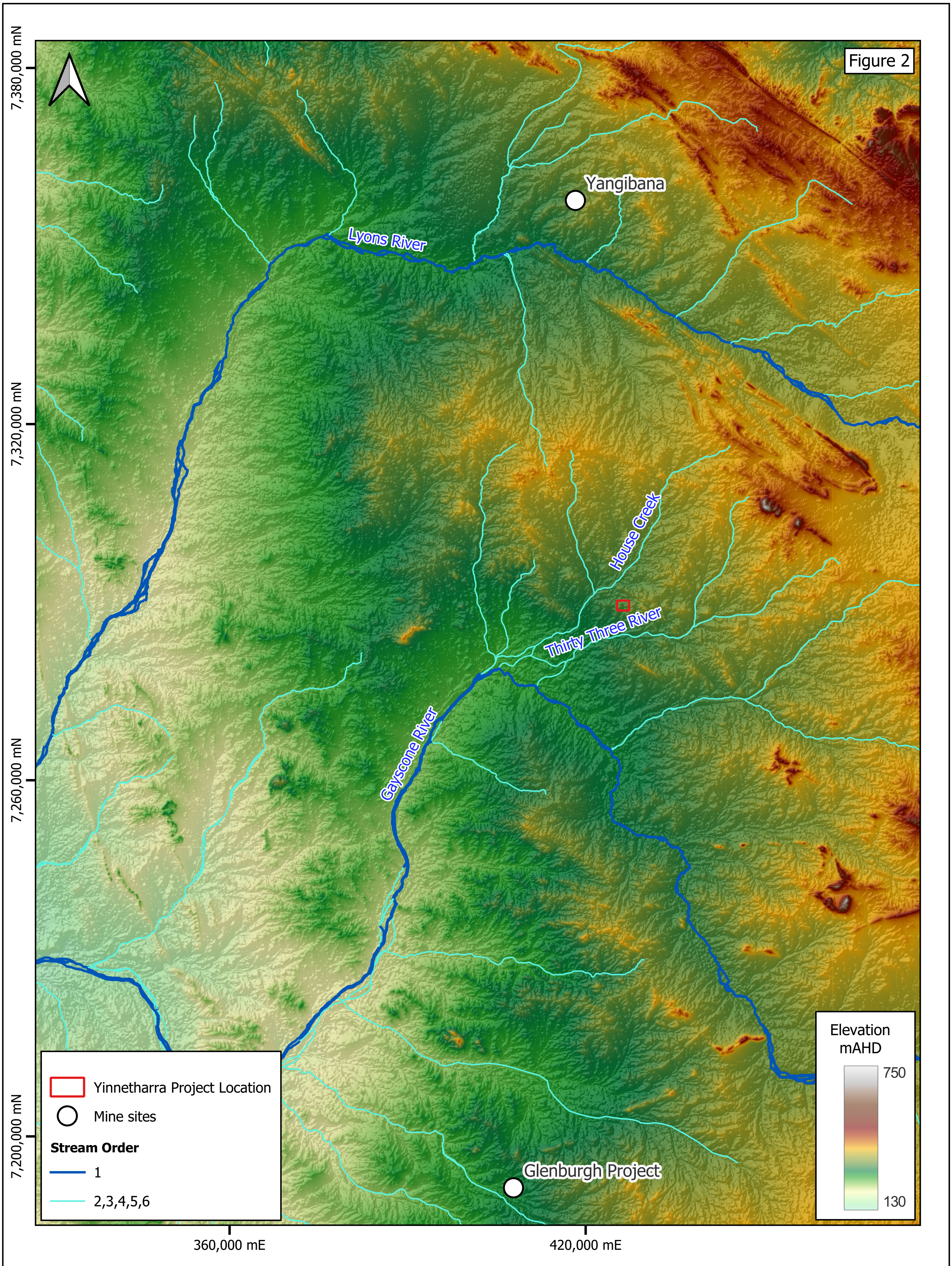
Rockwater

0 25 50 km

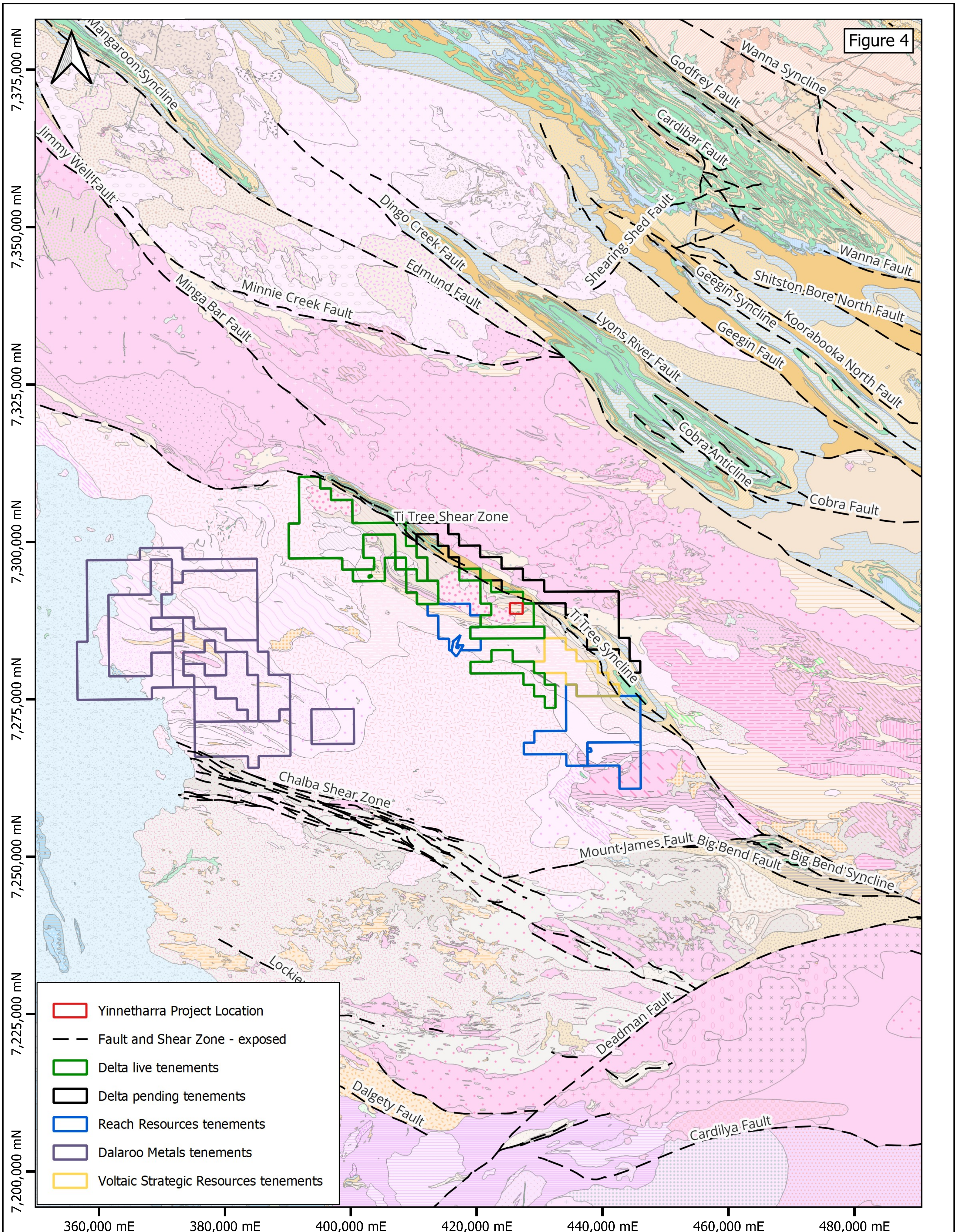
Coordinate System: GDA 2020
MGA Zone 50

Project	Yinnetharra Lithium Project
Client	Delta Lithium
Date	May 2024
Figure Number	574-1/24/02-01

Yinetharra Lithium
Project Locality



Rockwater	0 15 30 km Coordinate System: GDA 2020 MGA Zone 50	Project: Yinnetharra Lithium Project Client: Delta Lithium Date: May 2024 Figure Number: 574-1/24/02-02	Regional Topography and Drainage



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Rockwater

Coordinate System: GDA 2020
MGA Zone 50

Project	Yinnetharra Lithium Project
Client	Delta Lithium
Date	May 2024
Figure Number	574-1/24/02-04

Regional Geology

Figure 4a

100K Geology

Hydrothermal unit
Hydrothermal unit
Mafic intrusive unit
Nadarra Formation
Coyrie Formation
Billidee Formation
Moogooloo Sandstone
Callytharra Formation
Lyons Group
Harris Sandstone
Mundine Well Dolerite
Kulkatharra Dolerite
Thirty Three Supersuite
Thirty Three Supersuite
Thirty Three Supersuite
Thirty Three Supersuite
Gifford Creek Carbonatite
Narimbunna Dolerite
Narimbunna Dolerite
Waldburg Dolerite
Ilgarari Formation
Calyie Formation
Backdoor Formation
Backdoor Formation
Backdoor Formation
Coodardoo Formation
Coodardoo Formation
Ullawarra Formation
Curran Member
Ullawarra Formation
Ullawarra Formation
Devil Creek Formation
Devil Creek Formation
Devil Creek Formation
Discovery Formation
Discovery Formation
Discovery Formation
Kiangi Creek Formation
Kiangi Creek Formation
Kiangi Creek Formation
Kiangi Creek Formation
Kiangi Creek Formation
Cheyne Springs Formation
Blue Billy Formation
Gooragoora Formation
Irregully Formation
Irregully Formation
Irregully Formation
Yilgatherra Formation
Yilgatherra Formation

Mount Augustus Sandstone
Mount Augustus Sandstone
Gascoyne Province metamorphosed mafic intrusive unit
Davey Well Granite
Davey Well Granite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Dingo Creek Granite
Pimbyana Granite
Pimbyana Granite
Pimbyana Granite
Yangibana Granite
Yangibana Granite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Durlacher Supersuite
Pooranoo Metamorphics
Pooranoo Metamorphics
Pooranoo Metamorphics
Pooranoo Metamorphics
Pooranoo Metamorphics
Spring Camp Formation
Biddenew Formation
Biddenew Formation
Biddenew Formation
Biddenew Formation
Biddenew Formation
Biddenew Formation
Moorarie Supersuite
Gooche Gneiss
Middle Spring Granite
Middle Spring Granite
Rubberoid Granite
Moorarie Supersuite
Moorarie Supersuite
Moorarie Supersuite
Moorarie Supersuite
Moorarie Supersuite
Moorarie Supersuite

Moorarie Supersuite
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Moorarie Supersuite
Moorarie Supersuite
Dumbie Granodiorite
Scrubber Granite
Moorarie Supersuite
Moorarie Supersuite
Moorarie Supersuite
Moorarie Supersuite
Moorarie Supersuite
Moorarie Supersuite
Moorarie Supersuite
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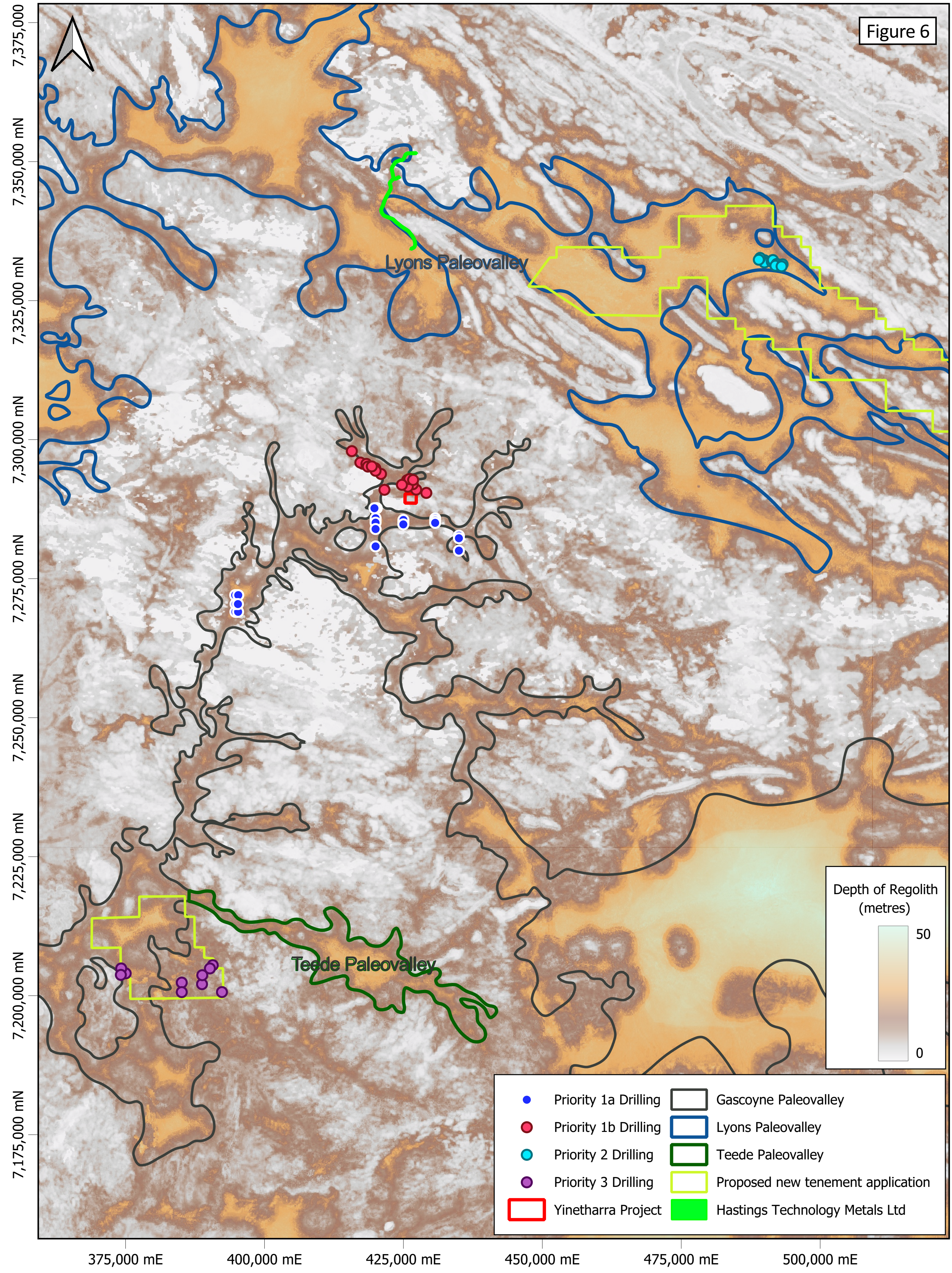
Leake Spring Metamorphics
Dalgaringa Supersuite
Nardoo Granite
Dalgaringa Supersuite
Dalgaringa Supersuite
Dalgaringa Supersuite
Dalgaringa Supersuite
Dalgaringa Supersuite
Dalgaringa Supersuite
Glenburgh Terrane Proterozoic unit
Glenburgh Terrane Proterozoic unit
Moogie Metamorphics
Moogie Metamorphics
Mumba Psammite
Mumba Psammite
Mumba Psammite
Glenburgh Terrane Proterozoic unit
Halfway Gneiss
Halfway Gneiss
Halfway Gneiss

Rockwater

Project	Yinnetharra Lithium Project	Geology Descriptions
Client	Delta Lithium	
Date	May 2024	
Figure Number	574-1/24/02-04a	



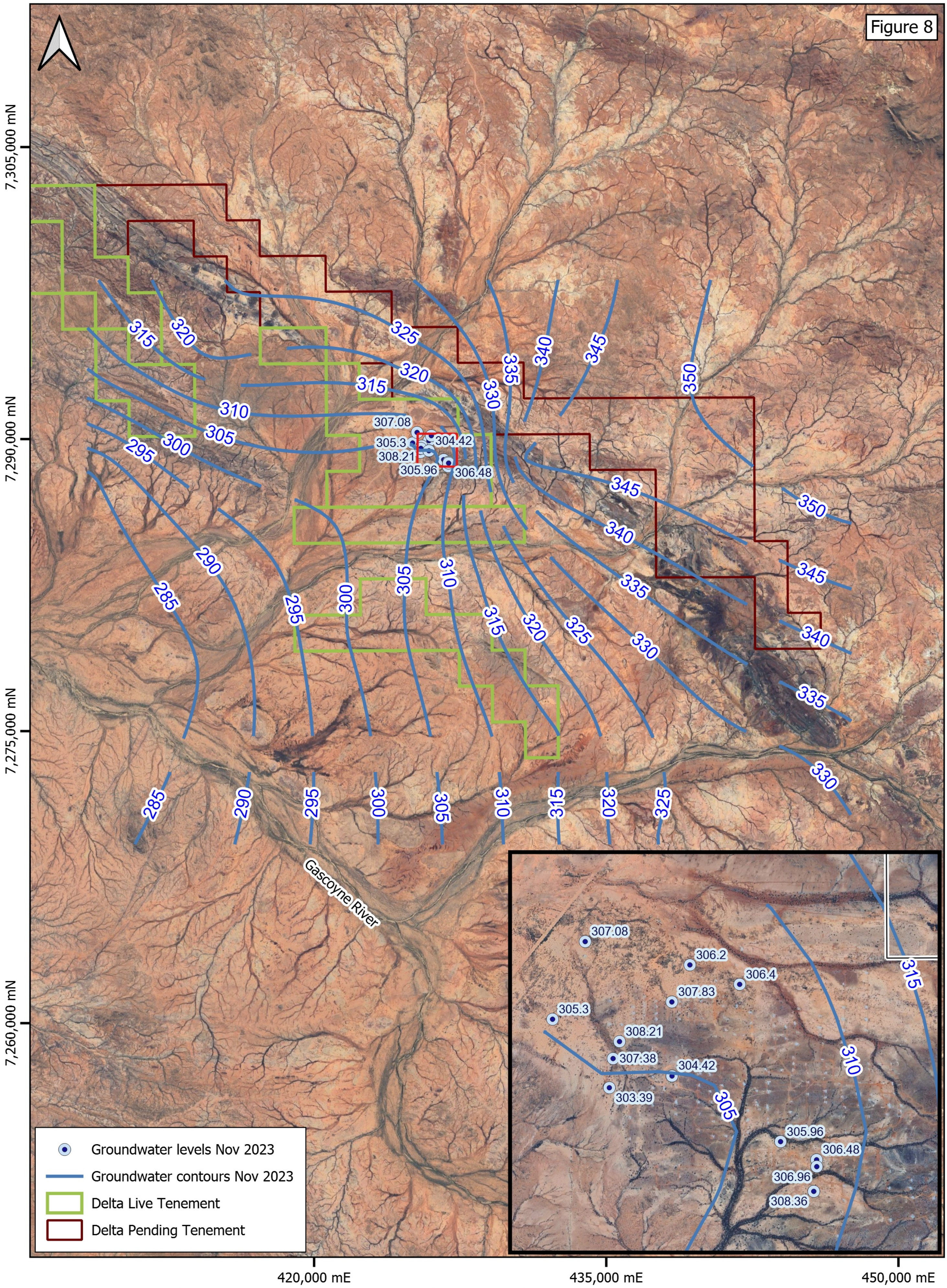
Rockwater

0 15 30 km

Coordinate System: GDA 2020
MGA Zone 50

Project	Yinnetharra Lithium Project
Client	Delta Lithium
Date	May 2024
Figure Number	574-1/24/02-06

Paleochannels in the Study Area



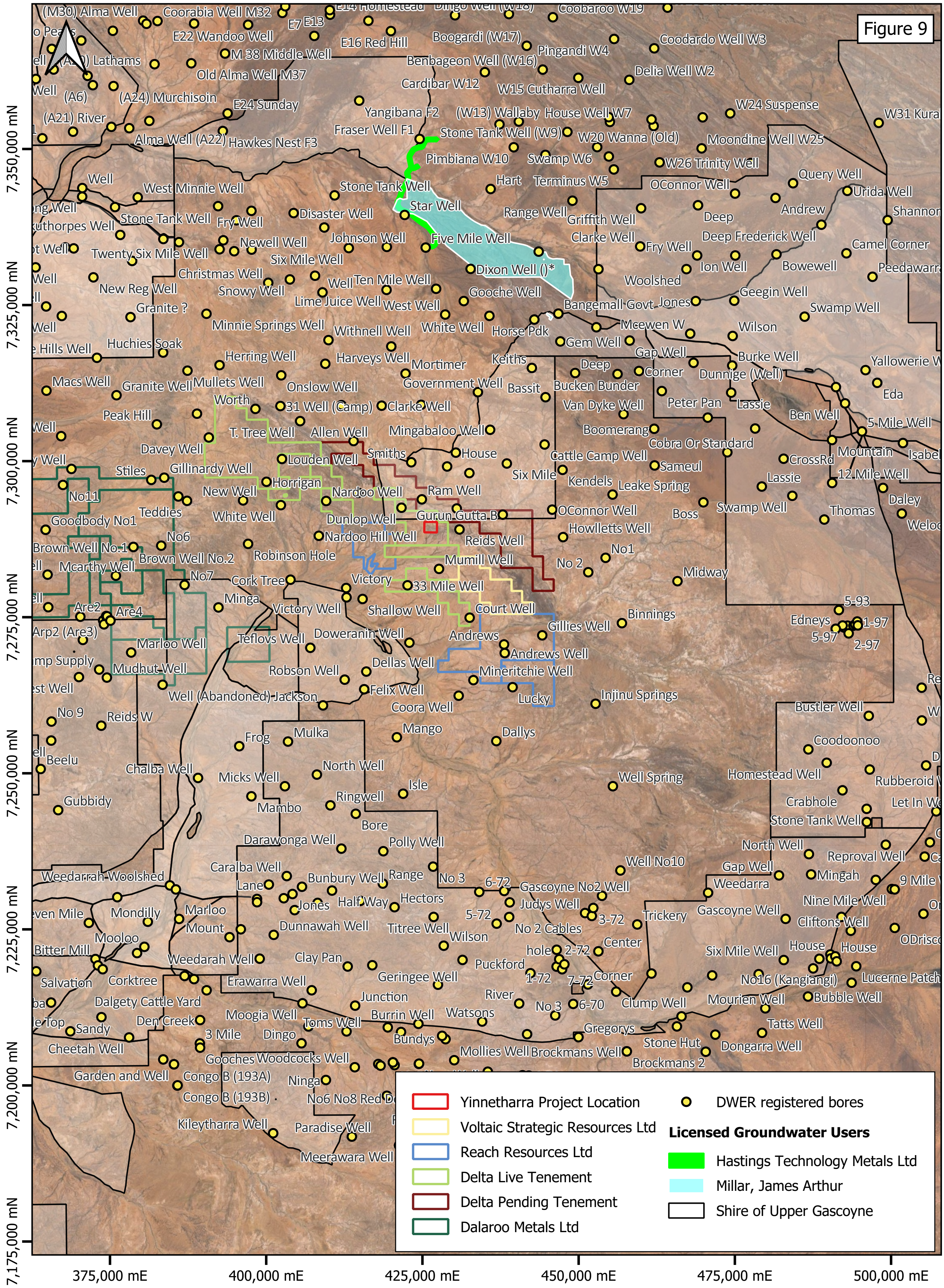
Rockwater

0 5 10 km

Coordinate System: GDA 2020
MGA Zone 50

Project	Yinnetharra Lithium Project
Client	Delta Lithium
Date	May 2024
Figure Number	574-1/24/02-08

Interpolated Groundwater Contours



0 10 20 km

Coordinate System: GDA 2020
MGA Zone 50

Project	Yinnetharra Lithium Project
Client	Delta Lithium
Date	May 2024
Figure Number	574-1/24/02-9

Rockwater

Other Groundwater Users

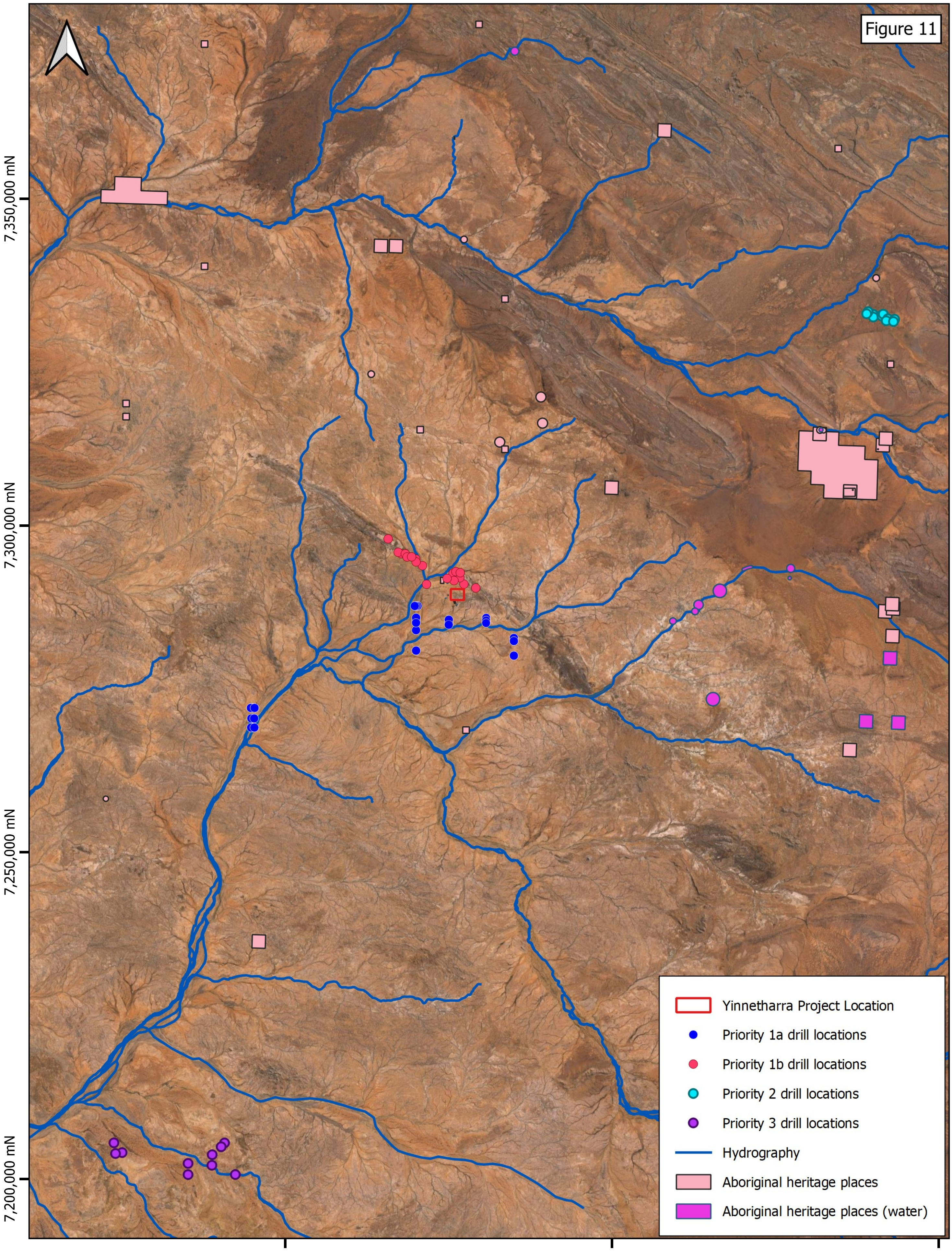
Rockwater

0 15 30 km

Coordinate System: GDA 2020
MGA Zone 50

Project	Yinnetharra Lithium Project
Client	Delta Lithium
Date	May 2024
Figure Number	574-1/24/02-10

Groundwater Dependent Ecosystems

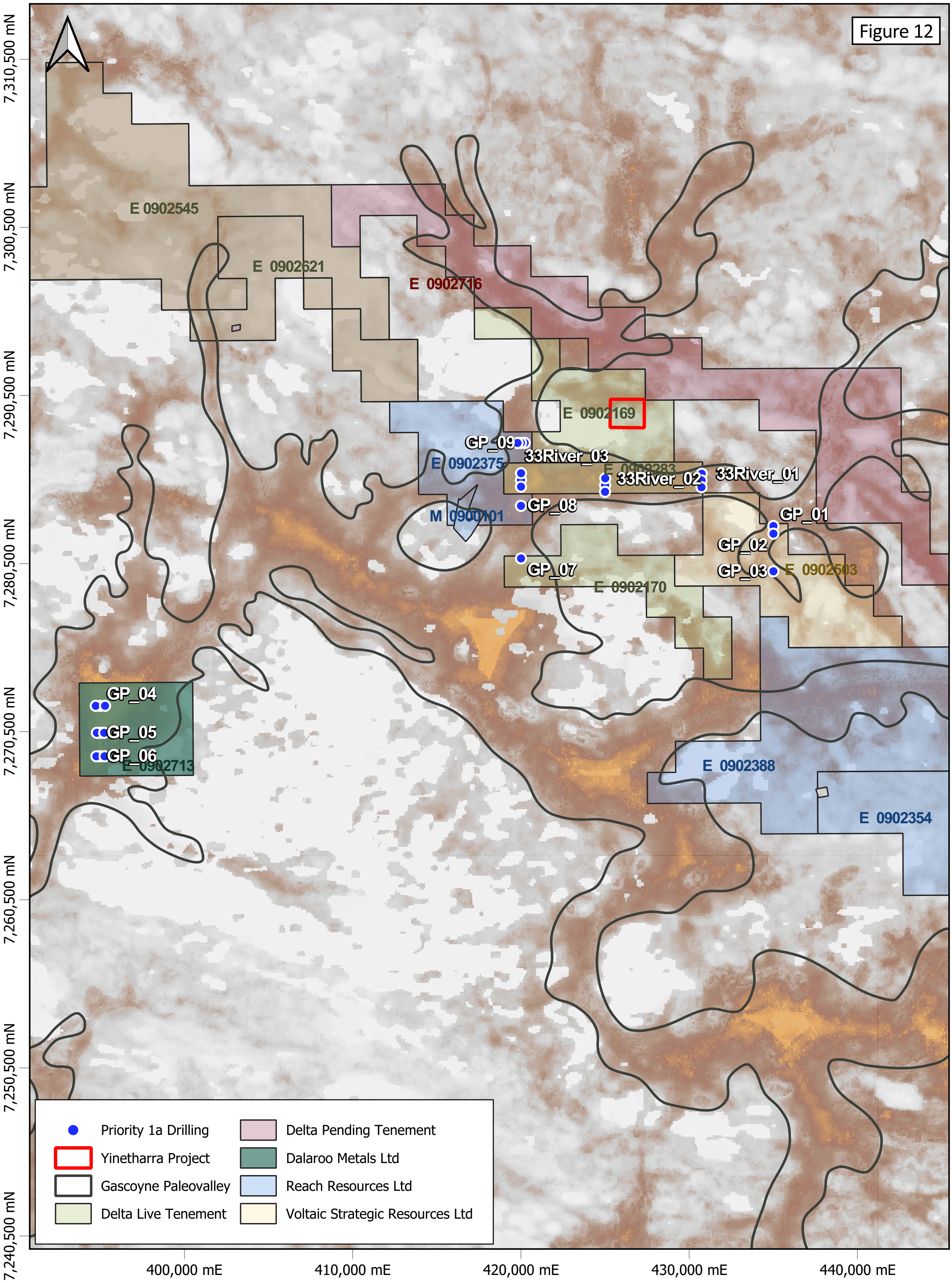


Rockwater

Coordinate System: GDA 2020
MGA Zone 50

Project	Yinnetharra Lithium Project
Client	Delta Lithium
Date	May 2024
Figure Number	574-1/24/02-11

Aboriginal Heritage Sites



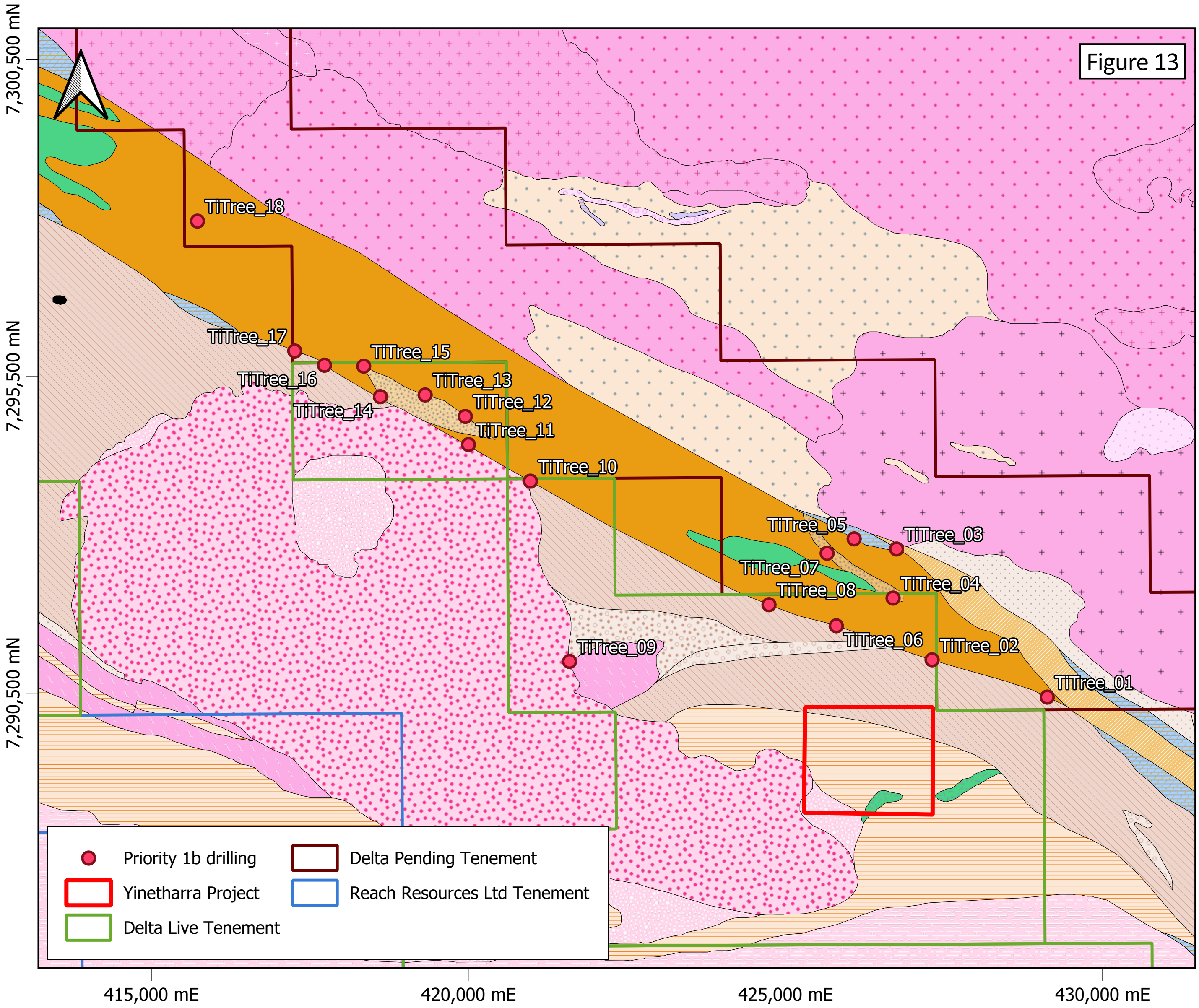
Rockwater

0 5 10 km

Coordinate System: GDA 2020
MGA Zone 50

Project	Yinnetharra Lithium Project
Client	Delta Lithium
Date	May 2024
Figure Number	574-1/24/02-12

Exploration Drilling
Priority 1a
Paleochannel Aquifer



Thirty Three Supersuite	Spring Camp Formation
Thirty Three Supersuite	Biddenew Formation
Thirty Three Supersuite	Biddenew Formation
Narimbunna Dolerite	Biddenew Formation
Kiangi Creek Formation	Moorarie Supersuite
Kiangi Creek Formation	Moorarie Supersuite
Kiangi Creek Formation	Moorarie Supersuite
Irregully Formation	Moorarie Supersuite
Yilgatherra Formation	Moorarie Supersuite
Gascoyne Province metamorphosed mafic intrusive unit	Leake Spring Metamorphics
Durlacher Supersuite	Leake Spring Metamorphics
Durlacher Supersuite	Leake Spring Metamorphics

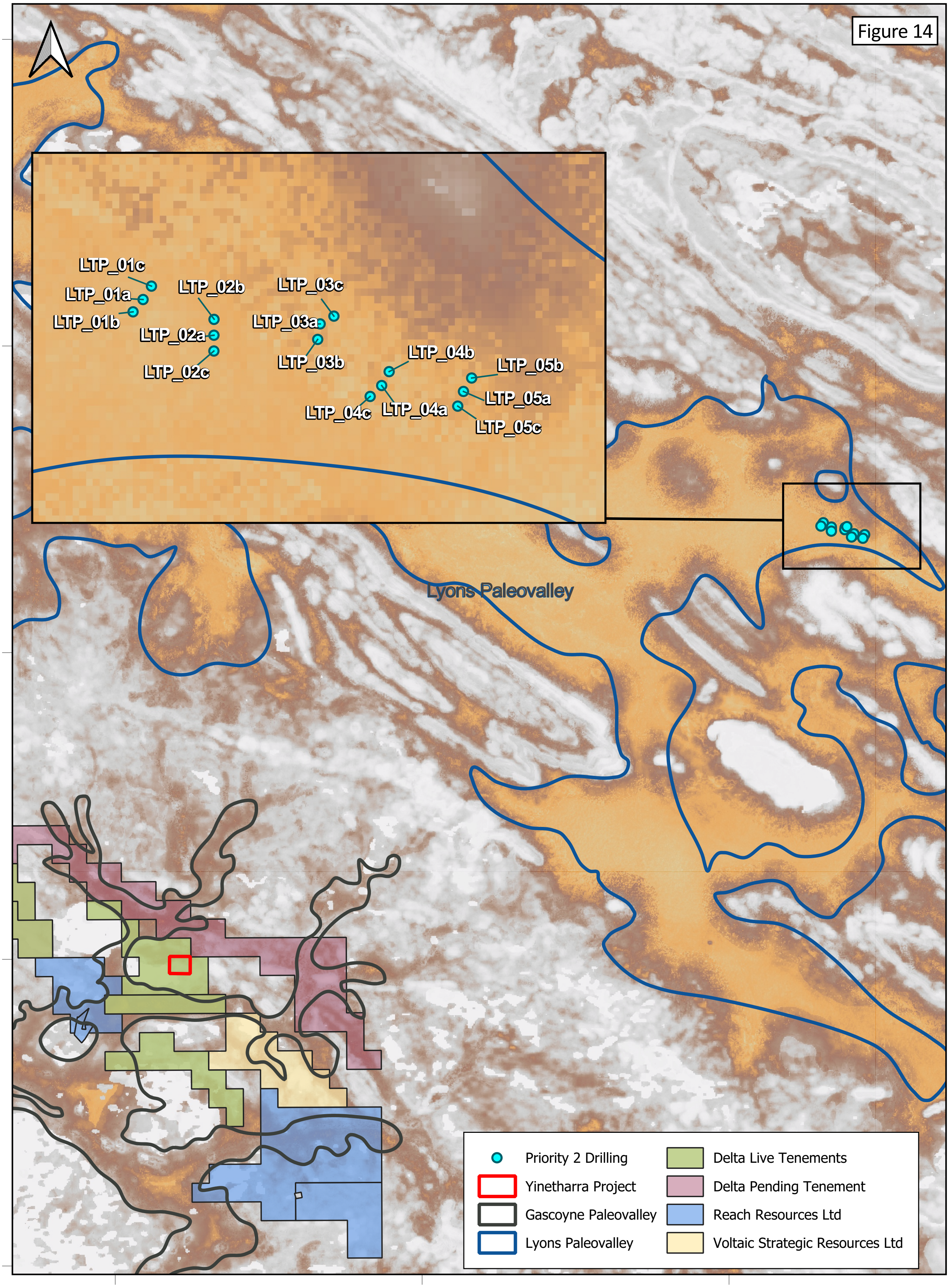
Rockwater

0 2 4 km

Coordinate System: GDA 2020
MGA Zone 50

Project	Yinnetharra Lithium Project
Client	Delta Lithium
Date	May 2024
Figure Number	574-1/24/02-13

Exploration Drilling
Priority 1b
Fractured Rock Aquifer



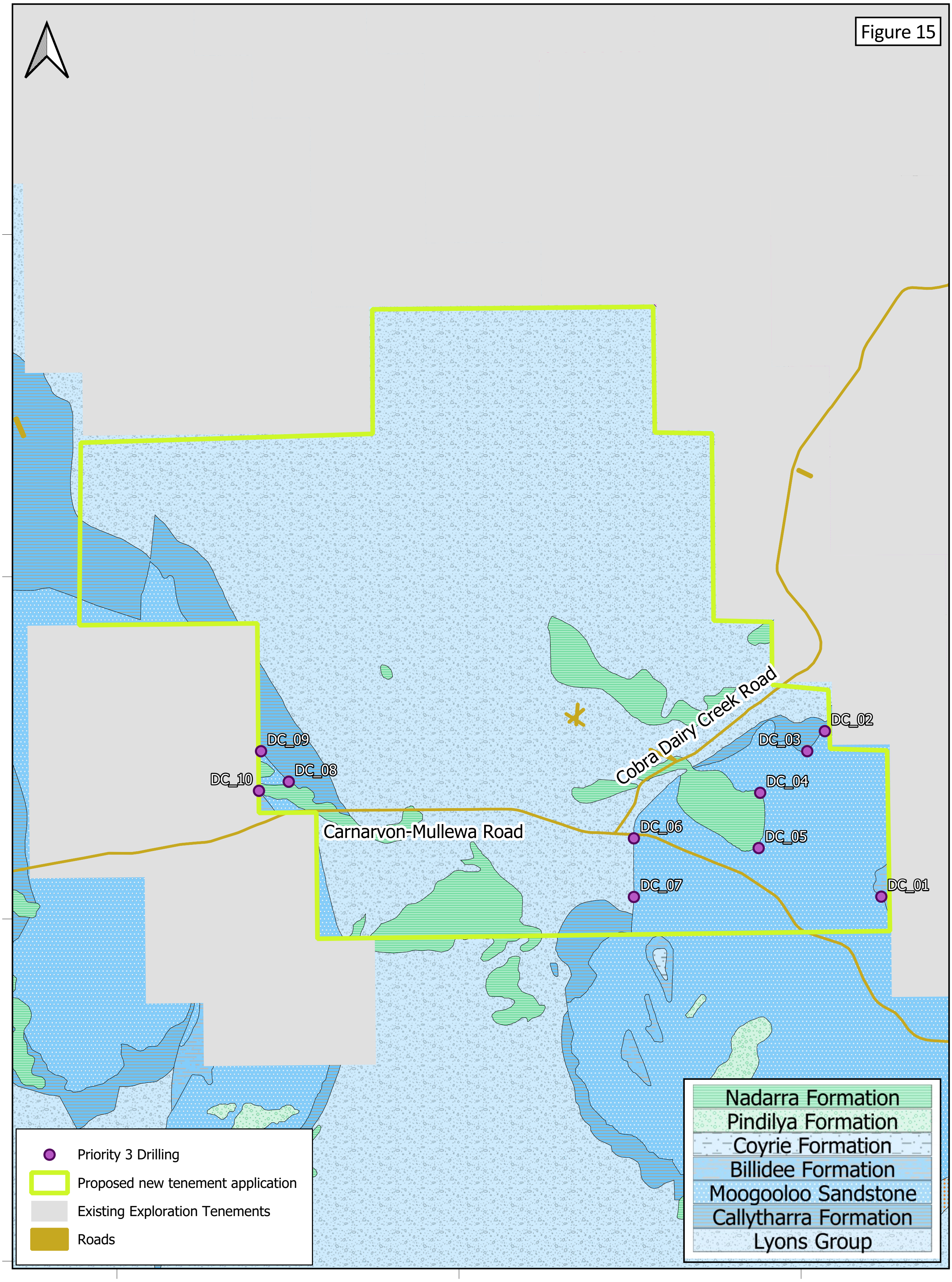
Rockwater

0 10 20 km

Coordinate System: GDA 2020
MGA Zone 50

Project	Yinnetharra Lithium Project
Client	Delta Lithium
Date	May 2024
Figure Number	574-1/24/02-14

Exploration Drilling
Priority 2
Paleochannel Aquifer



Rockwater

0 2 4 6 km

Coordinate System: GDA 2020
MGA Zone 50

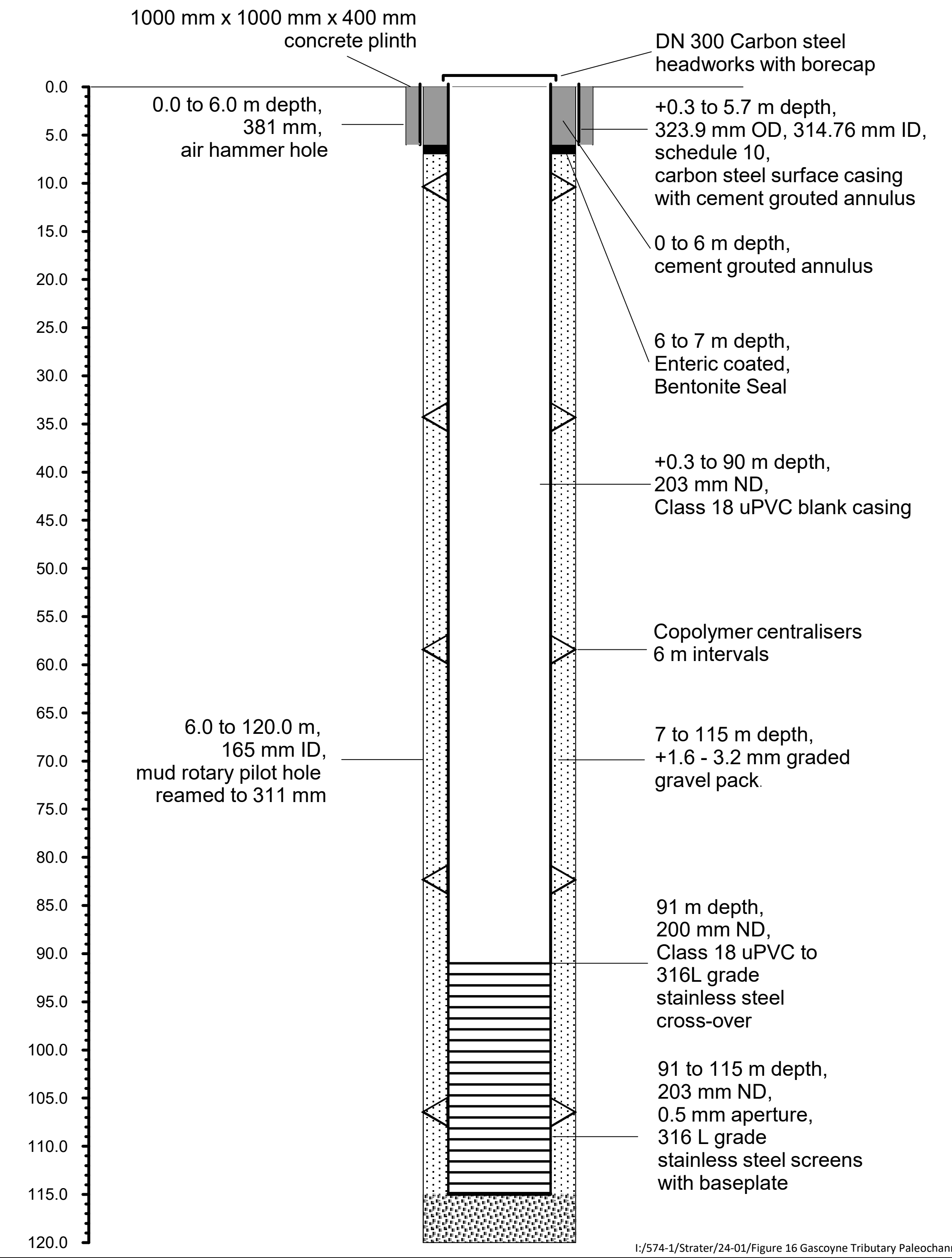
Project	Yinnetharra Lithium Project
Client	Delta Lithium
Date	May 2024
Figure Number	574-1/24/02-15

Exploration Drilling
Priority 3
Sedimentary Aquifer

Figure 16

Rockwater
CONSULTANT HYDROGEOLOGISTS

Bore Design



I:/574-1/Strater/24-01/Figure 16 Gascoyne Tributary Paleochannel Conceptual Bore Design.srt

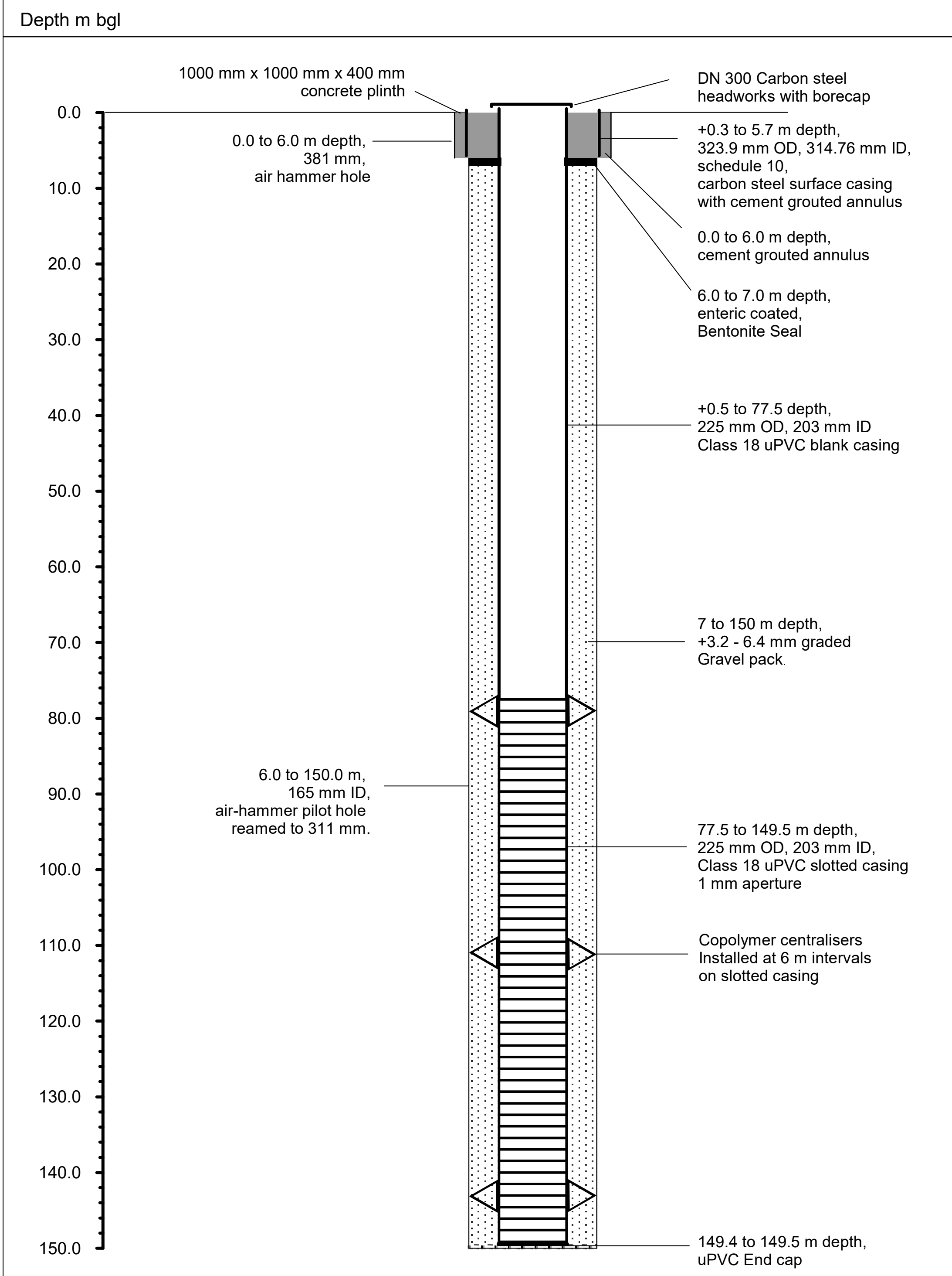
CLIENT:	Delta Lithium Limited
PROJECT:	Yinnetharra Lithium Project
DATE:	May 2024
FIG No.:	574-1/24/02-16

GASCOYNE TRIBUTARY PALEOCHANNEL CONCEPTUAL BORE DESIGN

Rockwater

Figure 17

Bore Design



I:/574-1/Strater/24-01/Figure 17 Ti Tree Shear Zone Fractured Rock Conceptual Bore Design.str

CLIENT: Delta Lithium Limited	TI TREE SHEAR ZONE FRACTURED ROCK CONCEPTUAL BORE DESIGN
PROJECT: Yinnetharra Lithium Project	
DATE: May 2024	
FIG No.: 574-1/24/02-17	