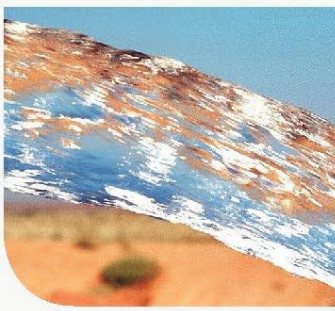

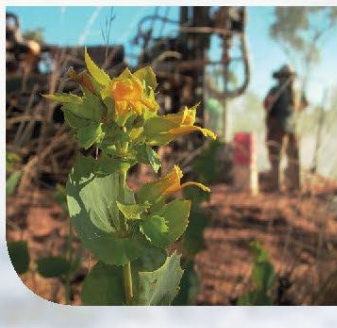

TABBA TABBA

LITHIUM-TANTALUM PROJECT

SUBTERRANEAN FAUNA ASSESSMENT

REPORT FOR
WILDCAT RESOURCES LIMITED

NOVEMBER 2024

Report No. 422.0/24/01

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Executive Summary

Wildcat Resources Limited (Wildcat) is currently seeking approval to mine the Tabba Tabba Lithium-Tantalum Deposit, located about 57 km southeast of Port Hedland in the Pilbara region of Western Australia. The Tabba Tabba Project (The Project) will require groundwater abstraction for a water supply, as well as for dewatering of the deposit in advance of open pit mining. Groundwater extraction and open pit mining has the potential to affect any subterranean habitat, as well as any resident species and communities that may occur there. Rockwater was engaged by Wildcat to undertake a subterranean fauna assessment at Tabba Tabba.

A desktop habitat assessment, combined with previous surveys of the area, indicate that prospective subterranean habitats are present for both stygofauna and troglofauna at Tabba Tabba. Subterranean habitats in the vicinity of the Project include fractured rock, with limited areas of alluvium also present. Fractured rock habitats have typically been found to host depauperate, if any, subterranean fauna communities in the region, whereas alluvial aquifers can host rich stygofauna assemblages.

A field-sampling programme collected 48 stygofauna samples and 34 troglofauna samples from subterranean habitats of the Project area and surrounds, across two sampling rounds in 2024. This complemented an earlier detailed survey in 2013, where 37.5 stygofauna samples and 17 troglofauna samples were collected from similar habitats.

Field surveys recorded over 2,144 stygal specimens of 32 possible species over four sampling rounds. Twenty-five stygofauna species occurred in the Tabba Tabba Project area, indicating a moderately diverse stygofauna community. The major groups recorded included Amphipoda, Copepoda, Isopoda, Ostracoda, Syncarida, Annelida, Oligochaeta and Platyhelminthes. Regional sites up to 31 km from the Project yielded stygofauna of similar groups, with a high degree of overlap in species, across a range of geological conditions.

Results of the survey indicate that the distribution ranges of over 70% of stygofauna species recorded at Tabba Tabba also extend outside the mining “impact” area, which is defined by the drawdown extent associated with dewatering of groundwater in the vicinity of the planned open pit. Groundwater modelling has shown that drawdown will be localised as a steep cone of depression over a spatial extent of approximately 3,300 ha. The greatest drawdown extent will be radially along higher permeability zones of fractured rocks adjacent to the pit, particularly the Tabba Tabba Shear Zone and a dolerite dyke that bisects the planned open pit. The linear drawdown extents along these structures are 6.4 km and 5.9 km respectively.

Seven stygofauna species are currently known only from the mining impact area. These include an isopod, an ostracod, 3 syncarids, an oligochaete worm (juvenile specimens only) and a flatworm. These seven species have been recorded from only one or two survey sites, which provides very limited information about their distribution. The low abundance of the seven species is likely a function of sampling effort, rather than restricted distribution. That is, they are naturally occurring in low numbers in the Tabba Tabba stygofauna community, and extensive sampling would be required to demonstrate their presence regionally. Two of the seven species, the oligochaete and one syncarid, were recorded at a borefield site north of the planned mine pit, where only 10% of the aquifer thickness will be drawn down after an 11 year mine life. Based on demonstrated ranges of other species recorded by the Tabba Tabba survey, and from published records of the Pilbara and Yilgarn stygofauna, it is unlikely that any of the remaining five species would be restricted to the Project impact area.

The demonstrated ranges of three amphipod species, at least six copepod species, several ostracods and an oligochaete worm recorded at Tabba Tabba support the view that other species known only from the mine impact area are likely to be locally widespread. In addition, several species, including the melitid amphipod *Pilbarana* sp. B06, the ostracods *Penthesilenula brasiliensis, Cypretta seurati and Areacandona iuno*, and several copepods have demonstrated distribution ranges at a Pilbara-wide scale.

In the Pilbara region, distributions are usually restricted by surface drainage catchments, aquifer discontinuity, geological barriers or habitat preference. There is no evidence to suggest distribution ranges are limited at the project-scale by any such factors. The habitats sampled at Tabba Tabba are not unique in a regional context and there appear to be no real constraints of geological barriers or aquifer boundaries that would restrict dispersal of stygofauna more widely than the Project area. Consequently, none of the recorded species are likely to have distribution ranges limited to the localised extent of dewatering disturbance. The Tabba Tabba Project is unlikely to impact the local stygofauna values, or to threaten the conservation of any individual stygofauna species recorded by the survey.

The troglofauna community within the Project pit development area at Tabba Tabba was assessed to contain at least five species, and is considered depauperate. Four of the five troglofauna species recorded by the surveys are currently known only from the Project area. However, it is likely that these species have ranges that are more extensive, within continuous habitat beyond the planned open pit. A habitat assessment based on detailed geological interpretation has shown that similar conditions occur along strike, within the same geological unit that hosts the Tabba Tabba pegmatites. These geological conditions extend up to 18 km north-east and 22 km south-west of the Project pit development area. The pit represents only a 67 hectare disturbance envelope. Each of the four troglofauna species currently known only from the disturbance area are from groups that have median linear ranges at least ten times greater than the size of the planned pit. The Project is unlikely to impact the conservation status of the troglofauna identified.

TABLE OF CONTENTS

Tables

TABLE OF CONTENTS

(Continued)

Figures

Appendices

REVISION	AUTHOR	REVIEW	AUTHORISED	ISSUED
Draft	DS/NE	NE	NE	15/11/2024
Final	DS			

1 INTRODUCTION

Wildcat Resources Limited (Wildcat) is planning to redevelop the Tabba Tabba Lithium-Tantalum project (the Project), located about 57 km southeast of Port Hedland in the Pilbara region of Western Australia (Figure 1). The Project is located within the Wallareenya pastoral lease which is primarily used for cattle grazing. Four existing mining leases (M 45/375, M 45/376, M 45/377, and M 45/354) cover the Project area.

The project is an advanced lithium and tantalum exploration project in an area with a long mining history. Surface tantalum was mined at the site briefly in 2000, and a small pit was subsequently mined by Nagrom, Pilbara Minerals and Global Advanced Metals between October 2015 and January 2016, before being decommissioned and rehabilitated in 2019.

Current plans are for Tabba Tabba to be redeveloped and mined as a single open pit over an estimated 11-year period. The pit is expected to be approximately 980 m long, 820 m wide and 380 m deep. Wildcat is presently conducting environmental and technical studies to secure mining approval for the Tabba Tabba project.

Rockwater was engaged by Wildcat to assess the potential impact to subterranean fauna (both stygofauna and troglofauna) in the area (if present), via an assessment of the subterranean fauna values of the Tabba Tabba pit extension area.

This report presents the findings of a subterranean fauna desktop review and multiple-phase survey within the impact area (both the pit extension and dewatering zone) for both stygofauna and troglofauna.

2 SUBTERRANEAN FAUNA

Subterranean fauna is defined as fauna that lives and completes its lifecycle many metres below the natural ground surface, where suitable voids and humid conditions exist in natural rock formations, or in saturated habitats of groundwater aquifers. Subterranean fauna is divided into two groups:

stygofauna – aquatic and living in groundwater; and

troglofauna – air-breathing and living in caves and other subterranean voids

In the Western Australian setting, the Environmental Protection Authority (EPA) requires proponents of mining and other development projects to consider subterranean fauna as part of the environmental impact assessment (EIA) process. For the purposes of EIA, subterranean fauna species that are obligate inhabitants of subterranean habitats (stygobites and troglobites) are considered most likely to have restricted distribution ranges, and therefore, are most at risk from processes and activities that impact these habitats. With the exception of a few blind snakes and fish, the Western Australian subterranean fauna is comprised entirely of invertebrates. Subterranean animals have evolved with certain adaptations and characteristics to suit the cave and other underground habitats they occupy. Some of these include the loss or reduction of eyes, depigmentation, and elongation of appendages/sensory structures, reduced or absent wings, increased lifespan and a lower metabolic rate.

2.1 SUBTERRANEAN FAUNA POLICY AND GUIDANCE

The EPA's framework for consideration of subterranean fauna during EIA is outlined in its Technical Guidance - Subterranean fauna surveys for environmental impact assessment (EPA 2021). The document provides guidance on the level of survey required for proponents and the information required to understand impacts. Also relevant is the EPA's *Environmental Factor Guideline – Subterranean Fauna* (EPA 2016). Also relevant is the EPA's 2007 publication *Guidance for the Assessment of Environmental Factors – Sampling Methods and Survey Considerations for Subterranean Fauna in Western Australia* (EPA, 2007), which addresses survey design and sampling methods for subterranean fauna. The following report considers relevant guidance for assessment of subterranean fauna.

2.2 HABITAT REQUIREMENTS

The probability that a site contains a diverse subterranean fauna community is largely determined by the region in which a site occurs, and biophysical attributes such as local geology. Geological, topographical and hydrological features influence subterranean faunal assemblages by allowing, or restricting, dispersal between populations.

The presence of subterranean fauna is influenced by local geology with processes such as weathering and the presence of faults and shear zones providing opportunities for subterranean voids (caves, cavities, fractures, fissures, vugs, etc.) to develop. Rock types with an abundance or network of these voids support larger, more diverse assemblages of subterranean fauna compared to fresh or consolidated geological units. Weathered regolith and depositional cover typically provide greater opportunities for voids suitable for troglofauna and permeable aquifers such as calcretes and alluvium support the richest stygofauna communities.

The EPA notes that in the Pilbara bioregion, where the depth to water is less than 30 metres below ground level (bgl), there is a high probability of stygofauna presence (EPA 2021). Subterranean habitats in calcrete, alluvial formations and fractured rock are considered highly likely to contain habitats suitable to support stygofauna; and those in channel iron, calcrete, alluvium/colluvium and BIF are considered suitable for troglofauna.

2.3 POTENTIAL IMPACTS TO SUBTERRANEAN FAUNA

The obligate underground existence of subterranean fauna greatly increases the likelihood of short range endemism and the possibility that a species' conservation status may be impacted as a result of the implementation of a proposal.

Impacts to subterranean fauna may be **direct** or **indirect**. Direct impacts include the removal of habitat, drawdown of groundwater habitats, inundation, and water quality changes. The main threats include excavation of geologies known to support subterranean fauna; groundwater extraction for project water supply; dewatering to enable mining below the water table, and groundwater reinjection of waste or excess water.

Indirect impacts include changes to hydrology, siltation, void collapse, alteration to nutrient balance and contamination. The main threats include changed surface topography due to compaction or creation of hard surfaces (e.g. waste rock dumps and ore stockpiles) that can result in altered groundwater flow paths, increased runoff, and reduced infiltration and aquifer recharge; clearing of surface vegetation leading to sedimentation and changed nutrient inputs; potential leaks or leaching including tailings and waste water,

resulting in alterations to ground water chemistry and quality, and introduction of toxins or radiation; and salinisation due to intrusion of saline water into fresher aquifers and leaching from pit voids.

The potential impacts to stygofauna and troglofauna are summarised in Table 1.

Table 1: Potential Direct and Indirect Impacts to Subterranean Fauna

Impact Type	Impact area to be considered
Direct Impacts	Direct impacts to subterranean fauna due to borefield construction and groundwater drawdown due to borefield operations: • Direct habitat removal via pit construction • Groundwater drawdown • Annual change in groundwater depth across the drawdown area
Indirect Impacts	Impacts of proposed clearing and related activities, where such activities cause siltation, void collapse, alteration to nutrient balance and contamination, including clearing for: • Mine infrastructure and camp facilities • Water pipelines • Mine access roads
Cumulative Impacts	Impacts of proposal with consideration of other projects/users potentially impacting subterranean fauna. These include: • Neighbouring Pit Dewatering • Other groundwater users • Historical impacts of mining to subterranean fauna habitat in the region The extent of refugial habitat remaining during the life of the mine can be considered more widely, as a habitat-based assessment of groundwater impacts at the local catchment scale (for stygofauna). No agricultural activity is located near the proposed mine, climate change is unlikely to be a contributing factor.

There is a long mining and exploration history at Tabba Tabba. Alluvial tin and tantalum mining have occurred at Tabba Tabba since the early 1900s. Initial exploration began at Tabba Tabba in the 1980s, resulting in the discovery of high-grade pegmatite-hosted tantalum mineralisation at Tabba Tabba, and at the nearby Wodgina and Pilgangoora Projects (Wildcat Resources 2023). Surface tantalum was mined at the site briefly in 2000, and a small pit was subsequently mined by Nagrom, Pilbara Minerals and Global Advanced Metals between October 2015 and January 2016, before being decommissioned and rehabilitated in 2019. Two ore stockpiles were left in place from the historical operation.

The proposed site layout and mine infrastructure for the Tabba Tabba Lithium-Tantalum Project is shown in Figure 2. The mine pit will be separated from the associated infrastructure (camp, processing plant, tailings storage facility, waste dumps) by a distance of approximately 5 km. There is an existing water supply borefield located approximately two kilometres to the north-east of the proposed pit, within miscellaneous tenement L 45/. Wildcat is licensed under GWL 181791 to extract 100,000 kilolitres per annum (kL/a) from the fractured rock aquifer in the East Pilbara Subarea.

Mining of the pit is expected to intersect the water table from the first year of mining at about 14 m bgl. Pit dewatering is therefore required throughout mining operations. The pit dewatering will provide the processing plant and mine activities with the required water volumes, which will be achieved using a combination of in-pit sumps and production bores.

3 PROJECT SETTING

The project area lies within four mining tenements; M 45/375, M 45/376, M 45/377 and M 45/354, which cover an area of about 13.3 km^2, wholly on Wallareenya pastoral lease in the Port Hedland shire. Wallareenya is actively used for cattle grazing and groundwater is used to water stock throughout the station via a network of bores and wells.

3.1 CLIMATE

The climate is semi-arid, with hot, wet summers and mild, dry winters. The nearest weather station is at Wallareenya, where only rainfall is recorded. The mean annual rainfall at Wallareenya is 314.7 mm. Daily temperature maxima at Port Hedland range from 27°C in July to 37°C in December. Average monthly rainfall, evaporation and temperature data are given in Table 2.

Table 2: Average Rainfall at Wallareenya (BOM Station 004038), and Pan Evaporation and Temperature at Port Hedland (BOM Station 004032) (mm)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Av. Rainfall (1908-2024)	67.7	82.1	64.9	17.5	21.8	25.7	8.3	4.0	1.4	1.7	4.9	25.2	314.7
Pan Evap. (1967-2017)	322	270	288	264	229	195	205	233	267	329	345	353	3,285
Av. Temp (1948-2024)	36.4	36.3	36.8	35.3	30.7	27.7	27.4	29.4	32.5	35.1	36.3	36.8	33.4

Dam evaporation at Karara is about 73 % of pan evaporation (Luke, Burke and O'Brien, 1988) and this would apply to evaporation from pit lakes. Evaporation exceeds average rainfall in all months of the year, and by a factor of ten times, overall.

3.2 REGIONAL GEOLOGY

The Pilbara Craton in the north-west of Western Australia comprises a mid-Archaean granite-greenstone terrane and the overlying late-Archaean volcano-sedimentary sequence of the Hamersley Basin. The Tabba Tabba Shear Zone is the major division between the East and West Pilbara blocks of the Archaean Pilbara Craton; it can be traced from north-east to south-west across the central part of the Pilbara Craton. The regional geology shown in Figure 3 shows the Project location in relation to the Tabba Tabba Shear Zone, which occurs approximately 500 m east of the proposed Tabba Tabba open pit (Figure 3).

The Millindinna Intrusion is the host to the pegmatites at Tabba Tabba. It belongs to the Sisters Supersuite which has an inferred age range of 2955 – 2940 Ma (Wildcat 2024). It consists of deformed mafic to ultramafic rocks and is present for over 90km of strike extent throughout the region. A significant portion of the Millindinna Intrusion is exposed at surface with minimal recent depositional cover obscuring the unit from surface as is seen at Tabba Tabba (Appendix V, Wildcat Resources 2024).

3.3 LOCAL GEOLOGY

The Millindinna unit is extensive throughout the mining leases at Tabba Tabba and is the main host to the pegmatite mineralisation. The proposed Tabba Tabba pit will mine into a series of southeast to northwest striking pegmatites, which dip to the northeast at 35-40°. The main pegmatite intrusion is up to 167 m thick, but due to its structural dip it is restricted to a depth of 300 mbgl (Wildcat, 2023). The pegmatites are intruded into a narrow zone of north-east to south-west trending medium to coarse grained, metamorphosed mafic rocks. The pegmatites appear to be locally offset by faulting and dyke intrusions at the southern pit boundary. A north-west to south-east trending dolerite dyke also extends across the middle of proposed pit (Figure 2). The greenstone rocks of the Millindinna unit are bounded to the northwest by metamorphic sediments and truncated in the southeast by the granitic rocks along the Tabba Tabba Shear Zone (Rockwater 2024).

3.4 HYDROGEOLOGY

Groundwater at Tabba Tabba primarily occurs above lithological contact zones that are fractured. The rate of groundwater inflow, or yields, in fractured rock aquifers are determined by the presence and interconnectivity of water-bearing, permeable fractures. These fractures enhance the rock's natural hydraulic conductivity, through processes like fracturing, dissolution, and chemical weathering. The storage capacity of fractured rock aquifers may however be limited, due to the limited storage capacity of the interconnected water-bearing structures (Rockwater 2024).

Review of Tabba Tabba's exploration drilling database suggests the bedrock is highly weathered to an average of 46 mbgl. Groundwater levels at Tabba Tabba occur at approximately 14 mbgl, so that the weathering profile is partially saturated.

The water level in the pit area lies at around 86 mAHD, where it then flows northeastward towards the water supply borefield where the water level is around 77 mAHD (Rockwater, 2015). This observed difference in water levels suggests a north-eastward flow of groundwater from the proposed pit area towards the borefield, consistent with the local topography.

3.4.1 GROUNDWATER QUALITY

The water quality at the pit area has near-neutral pH and marginal to brackish salinity and is primarily of sodium-chloride type. The measured salinity for 2024 groundwater samples taken from bores in the pit area and submitted to a NATA accredited laboratory for analysis, ranged between 1,040 and 7,740 mg/L TDS (Rockwater 2024). Field readings taken in 2014 from bores and open exploration drill holes ranged from 200-3,500 mg/L TDS at sites that yielded stygofauna (Rockwater 2014).

3.4.2 GROUNDWATER MODELLING

A groundwater model was constructed as part of the Tabba Tabba dewatering assessment (Rockwater, 2024) to predict the rate and volumes of pit dewatering, and also to outline the potential impacts to groundwater levels locally. The groundwater model predictions are summarised below:

Mine inflows peak at 59 L/s after 14 months, before decreasing to 11 L/s as mining advances below the weathered and fractured zone. The annualized dewatering requirements for the first and second years of mining are projected to be 34 L/s and 26 L/s, respectively.

Assuming a site water requirement of 32 L/s, Wildcat may only need to manage small volumes (2 L/s) of excess water from dewatering during the first two years of mining. However, depending on the actual site water requirement, or if pre-dewatering is required, the excess water requiring management could be more significant.

Pit inflows will decrease as mining progresses deeper into the pit, characterized by rocks with lower hydraulic conductivity and reduced groundwater inflows (7 to 16 L/s). As a result, additional water supplies of up to 25 L/s will likely be required to meet the site water demand during the latter stages of mining.

The extent of drawdown is predicted to extend up to 3 km radially from the pit at the end of mining.

The alluvium near Tabba Tabba is unsaturated and will not be impacted by groundwater drawdown, and there are no known Public Drinking Water Source areas, or potential terrestrial or aquatic groundwater-dependent ecosystems within the end-of-mine drawdown extent (Rockwater 2024).

4 SUBTERRANEAN FAUNA DESKTOP ASSESSMENT

The Pilbara region has been extensively studied for both stygofauna and troglofauna, usually associated with the development and EIA of mining projects. Significant stygofauna communities have been identified in the western part of the Pilbara at Robe Valley, to the south-west at Cape Range, offshore at Barrow Island, and inland at Ethel Gorge.

Stygofauna has been found to be widely associated with alluvial and calcrete aquifers through much of the Pilbara (Eberhard, Halse & Humphreys 2005). There are no calcrete aquifers within the project area; habitats almost entirely include fractured rock aquifers, with very limited shallow alluvial deposits. The shallow alluvial systems flow in a north-easterly direction towards Tabba Tabba Creek, approximately 1.9 km to the northeast of the project.

Significant troglofauna communities in the Pilbara have generally been associated with mesa formations and karstic limestone systems; however, they have also been recorded in lower abundance in banded and channel iron formations, pisolite, calcrete and alluvial systems.

4.1 PREVIOUS SURVEYS AT TABBA TABBA

As part of the 2013/14 environmental assessment for the 2014 mining campaign at Tabba Tabba, a desktop study and sampling programme were conducted prior to mining (Rockwater, 2014). These assessments included both the planned mine pit, and a borefield located 2.5 km to the north. A field survey comprising multiple phase stygofauna and troglofauna sampling was undertaken; the results for these studies are discussed below.

4.1.1 STYGOFAUNA

A targeted two-phase sampling programme was conducted in 2013 and included sites within the impact areas (mine pit and water supply borefield). Reference collections were also taken, from pastoral bores and wells which intersected the unconfined alluvial aquifers, both within and adjacent to the mine catchment area. The sampling effort for the survey is outlined in Table 3, together with summary results. A total of 1,474 stygofauna specimens representing at least 26 possible species were collected during the sampling programme. Within the impact areas, 17 possible stygofauna species (981 individuals) from seven higher taxonomic groups were recorded; the majority of these were from the water supply borefield, located

approximately 2.3 km north-northeast of the mine. The faunal groups recorded included Crustacea (comprising six copepod species, two amphipods, two syncarids, an isopod and three ostracods), Oligochaeta (two tubificid worms) and Nematoda (roundworms).

Table 3: Summary statistics for 2013 stygofauna sampling at the Tabba Tabba Project

	Number of Samples			Total Specimens	Specimens per Sample ($\bar{x}$)	Total Species	Species per Sample ($\bar{x}$)
	Phase 3	Phase 4	Total				
Project Area	8.5	14	22.5	753	33.5	17	0.76
Reference		15	15	735	49	18	1.2
Total	8.5	19	37.5	1,488			

Stygofauna was recorded from each of the four production bores at the water supply borefield, and also from eight sites in the mine pit area. Twelve of 17 species of stygofauna (70%) recorded in the mine area were also recorded at the borefield, or are known from previous Pilbara surveys; the exceptions were the isopod Microcerberidae sp. B06 and the bathynellid syncarid (*Bathynella* sp. B08).

Of six species collected only from the project area, one syncarid (*Billibathynella* sp. B07) was recorded from sites at both the Tabba Tabba borefield and mine pit area and the remaining five species (Melitidae sp. B06, Microcerberidae sp. B06, Enchytraeidae sp., Phreodrilidae sp. and *Bathynella* sp. B07) were collected as singleton records (species recorded from only one site).

4.1.2 TROGLOFAUNA

Seventeen samples were collected from the Project area as part of the 2013 pilot study. Troglofauna was not recorded in the impact area of the planned mine pit and it was concluded that the Tabba Tabba project is unlikely to have significant troglofauna values.

One thysanuran (Nicoletiinae sp.) was collected as by-catch in a stygofauna sample at site TTRC1312, which occurred just outside the proposed mine pit. The specimen was a fragment only and could not be identified further.

4.2 LITERATURE REVIEW

A literature review was conducted to gather information on subterranean fauna near to the Project Area. The review includes previous studies and publicly available technical reports and government publications. The results are presented in Table 4.

Subterranean fauna of the Pilbara region has typically only been well documented by previous studies for resource development projects, particularly those targeting water supplies or impacting alluvial and fractured rock aquifers. There is generally a low potential for significant stygofauna or troglofauna communities within fractured rock. However, there have been occasional records of troglofauna from fractured rock habitats; mostly related to banded ironstone (Table 4). When present, stygofauna has generally been found to occur in alluvial aquifers, and individual species have been shown to be widespread and unlikely to have restricted distribution ranges (at individual project scales).

Table 4: Stygofauna Studies in the vicinity of Tabba Tabba

Site	Distance to Tabba Tabba	Reference / Year	Study Level	Results
Port Hedland Outer Harbour Development	58 km north-west	Bennelongia 2009	Risk Assessment	A desktop assessment was undertaken to delineate the potential athalassic habitat with the various project areas. The study concluded that the saline to hypersaline groundwaters are unlikely to support significant stygofauna, and if present are likely to be marine species with widespread distributions.
North Star (Stage 2)	69 km south	Bennelongia 2022, Subterranean Ecology 2012	Desktop and Survey	A 2021 survey yielded 332 stygofauna specimens from at least 11 species, including copepods, oligochaete worms, syncarids, ostracods and nematode worms 102 troglofauna specimens from at least 16 species were collected during the survey including beetles, spiders, isopods, cockroaches, centipedes, palpigrads, pseudoscorpions, diplurans, silverfish and millipedes
Mulga East	150 km south-west	Bennelongia 2021	Baseline	Four rounds of stygofauna sampling were conducted from 2009-2020 at Mulga East, a project located in the Chichester and Hamersley Ranges. The sampling targeted the overlying colluvium and alluvium, and the underlying Wittenoom and Marra Mamba Iron Formations. A total of 106 stygofauna species were collected, with 26 species found only within the project area. Of those, 13 species were collected only from one site; the remaining showed distributions of 3 to 22 km.
Christmas Creek	240 km south-west	Bennelongia 2010	-	Sampling revealed a moderately rich stygofauna community within the fractured banded iron formations. Sixty eight species belonging to 13 higher taxonomic groups were recorded including turbellarians, nematodes, rotifers, gastropods, oligochaetes, polychaetes, mites, ostracods, copepods, spelaeogriphacids, syncarids, amphipods and isopods. The Christmas Creek community is characterised by widespread species, with only 10 of the 68 species (15%) potentially having restricted distributions. Six species were collected as singletons, suggesting that they are present in low abundance in the community and are likely to be collected infrequently by sampling.
West Turner Syncline Section 10 orebody	270 km south-west	Biota 2008	-	A stygofauna assessment concluded that there was a low likelihood of stygofauna occurring in the habitats associated with the Brockman Iron Formation. Results of downhole camera surveys and inspection of drill core for this assessment, used to characterise subterranean habitats, showed that core-habitat for subterranean fauna was not present and the likelihood of stygofauna occurrence was low
Hardey Iron Ore Project	300 km south-west	Rockwater 2011	Level 1	A pilot study, followed by six phases of sampling identified a moderately diverse stygofauna community in the fractured rock aquifers of the Hardey Project. A total of 18 potential stygofauna species were identified at the project from six orders including Amphipoda, Copepoda, Oligochaeta, Ostracoda, Isopoda and Bathynellacea. Regional stygofauna sampling confirmed that alluvial aquifers surrounding the project were considerably more diverse than the fractured rock aquifers sampled within the Hardey project area
West Pilbara Iron Ore Project	325 km south-west	Biota 2010	-	A stygofauna assessment undertaken for seven ore bodies recorded 37 stygal taxa representing eight orders and 16 families. Nineteen of 20 species collected from the impact area were shown to occur more widely and the risk of impacts to the remaining species beyond localised population level impacts was considered to be low.

Table 5: Troglofauna Studies in the vicinity of Tabba Tabba

Site	Distance to Tabba Tabba	Reference / Year	Study Level	Results
Port Hedland Outer Harbour Development	58 km north-west	Bennelongia 2009	Risk Assessment	The desktop assessment concluded that, given the very shallow water table (<4m) and limited potential habitat, trogolofauna were unlikely to occur in significant numbers.
Mulga East	150 km south-west	Bennelongia 2021	Baseline	Four rounds of stygofauna sampling were conducted from 2009-2020 at Mulga East, a project located in the Chichester and Hamersley Ranges. The sampling targeted the underlying Wittenoom and Marra Mamba Iron Formations, however by default also included the overlying colluvium and alluvium. A total of 70 troglofaunal species were collected in the survey; 60 of which are within the project area. Of these, 18 species were only collected within the inferred resource boundary, and nearly all were collected as singletons.
Hardey Iron Ore Project	300 km south-west	Rockwater 2011	Desktop and Sampling	The desktop assessment identified potential troglofauna habitat in the zones of iron-enrichment. A sampling programme confirmed that troglofauna was not present at the Hardey Project.

4.3 DATABASE SEARCHES

Database searches were undertaken to detail any stygofauna or troglofauna previously recorded within or near to the Project area, and to identify if any threatened or priority ecological communities (TEC's and PEC's) relating to subterranean fauna occur in the vicinity of the project. The database search areas are specified in Table 4 and/or plotted on Figure 4.

Database sources included:

- Department of Biodiversity, Conservation and Attractions (DBCA) Threatened Fauna and TEC/PEC databases;
- Dandjoo Database of Western Australia;
- Atlas of Living Australia (ALA); and

Table 6: Defined Search Parameters of Database and Internet Sources

Data Source	Search Area	No of records (un-screened)	No of records (screened for subterranean habitats)
DBCA TEC/PEC	80 km radius	2	0
DBCA Threatened Fauna	100 km radius	3,065	0
DBCA Dandjoo Database		708	213
ALA		1,867	83

DBCA Threatened and Priority Ecological Community (TEC/PEC) database search

A search of the DBCA TEC/PEC Database was conducted for communities occurring in 80 km radius of the project. The search produced no known occurrences of threatened or priority ecological communities relating to subterranean fauna.

DBCA Threatened and Priority Fauna

A search of DBCA's Threatened and Priority Fauna database was conducted within a 100 km radius of the Project. The results were screened for invertebrates and registered seven undescribed millipedes of the genus *Antichiropus*, which are listed as Priority 1 species and have been recorded in the central and eastern Pilbara. The species of *Antichiropus* are considered terrestrial short range endemics, and are not relevant to the subterranean fauna study at Tabba Tabba.

4.3.1 STYGOFAUNA

Search results from the DBCA Dandjoo and CSIRO ALA databases are presented in Tables 7 and 8 and in Figure 4.

Dandjoo Database

The Dandjoo search returned a total of 708 records, including 201 stygofauna records (Table 5). Most records were collected as part of the Pilbara Biological Survey (PSS) (2003) or from fauna returns (as a requirement of Reg. 17 licencing) The closest record was from the previous stygofauna sampling at Tabba Tabba, which included a regional sampling programme. Two nearby wells sampled as part of the PSS (Carlindi Creek and Murphy) yielded a diverse stygofauna community.

Table 7: Dandjoo Database Results Screened for Stygofauna

Class	Order	Family	Genus	No. Records	Closest Record To Tabba Tabba
Malacostraca	Amphipoda	-	-	5	0 (fauna return, Tabba Tabba previous sampling)
		Hadziidae	*Nedsia*	39	0 (fauna return, Tabba Tabba previous sampling)
		Melitidae	-	6	Carlindi Creek, 30 km east
		Paramelitidae	-	11	Grass Plain Well, 5 km south-west
	Isopoda	Microcerberidae	-	8	Carlindi Creek 30 km east
Maxillopoda	Cyclopoida	Cyclopidae	*Diacyclops*	52	0 (fauna return, Tabba Tabba previous sampling)
			Metacyclops	1	Murphy Well, 23 km south
	Harpacticoida	Ameiridae	*Stygonitocrella*	16	Murphy Well, 23 km south
		Canthocamptidae	*Elaphoidella*	12	Murphy Well, 23 km south
		Parastenocarididae	*Parastenocaris*	1	Murphy Well, 23 km south
Ostracoda	Podocopida	Candonidae	*Areacandona*	16	Strelley West Crossing, 19 km east
		Cyprididae	*Cypretta*	4	Murphy Well, 23 km south
	-	-	-	2	Carlindi Creek, 30 km east
Oligochaeta	Tubificida	Naididae	*Monopylephorus*	4	Carlindi Creek, 30 km east
			-	2	Carlindi Creek, 30 km east
		Phreodrilidae	*Insulodrilus*	2	Carlindi Creek, 30 km east
			-	18	Murphy Well, 23 km south
Polychaeta	-	Aeolosomatidae	*Aeolosoma*	2	Murphy Well, 23 km south
		Total		**201**	

Atlas of Living Australia

The ALA records compliment the Dandjoo database, as they include the Western Australian Museum database, however do not include the fauna returns from DBCA. This list was screened for stygofauna, with 65 records being confirmed stygobitic species. The community composition is similar to the Dandjoo database; dominated by crustaceans from the orders Malacostraca, Maxillopoda and Ostracoda. This result may be limited to the upkeep and availability of some of the WAM databases; the crustacean database is available on several platforms.

Table 8: ALA Database Results Screened for Stygofauna

Class	Order	Family	Genus	No. Records	Closest Record To Tabba Tabba
Malacostraca	Amphipoda	Hadziidae	*Nedsia*	4	Bore MBSLK388 North, 29 km east
	Bathynellacea	Parabathynellidae	*Atopobathynella*	3	40 km east
			-	2	40 km east
	Isopoda	Armadillidae	*Buddelundia*	16	20 km east
		-	-	3	22 km south-east
Maxillopoda	Cyclopoida	Cyclopidae	*Diacyclops*	3	Strelley West Crossing (PSS), 19 km north-east
	Harpacticoida	Ameiridae	*Megastygonitocrella*	1	Strelley West Crossing (PSS), 19 km north-east
		Canthocamptidae	*Elaphoidella*	3	Strelley West Crossing (PSS), 19 km north-east
Ostracoda	Podocopida	Candonidae	*Areacandona*	6	Strelley West Crossing (PSS), 19 km north-east
			Leicacandona	3	22.5 km west
		Cyprididae	*Bennelongia*	21	17 km north-east
			Total	**65**	

Summary

Database search results indicate that very few stygofauna collections have been made in the area, and those that have been documented are generally associated with alluvial aquifers.

4.3.2 TROGLOFAUNA

Dandjoo Database

Search results from the DBCAs Dandjoo Database were screened for troglofauna. The closest know record is from the West Strelley River, 19 km north-east of the project, listed in both DBCA's Pilbara Biological Survey Database and in WAMs Arachnid collection.

Table 9: Dandjoo Database Results Screened for Troglofauna

Class	Order	Family	Genus	No. Records	Data provider	Closest Record To Tabba Tabba
Arachnida	Araneae	Nephilidae	Trichonephila	2	WAM	19 km north north-east
	Oribatida	-	-	1	DBCA (PSS)	19 km north-east
	Trombidiformes	Arrenuridae	Arrenurus	2	DBCA (PSS) / WABSI)	
		Mideopsidae	Tiramideopsis	1	WAM	
Chilopoda	Scolopendromorpha	Cryptopidae	-	1	WAM	23 km south-east
Diplopoda	Polydesmida	Paradoxosomatidae	-	2	WAM	26 km north north-east
	Total			**9**		

Atlas of Living Australia

Few records are listed on the ALA database, which included mites, japygids and carabid bettles. The closest record appears to be the same record from the Dandjoo database, from the West Strelley River, 19 km north-east of the project.

Table 10: ALA Database Results Screened for Troglofauna

Class	Order	Family	Genus	No. Records	Data provider	Closest Record To Tabba Tabba
Arachnida	Trombidiformes	Mideopsidae	Tiramideopsis	1	WAM (PSS)	19 km north-east
Entognatha	Diplura	Japygidae	-	1	WAM	23 km north-west
		Parajapygidae	-	2	WAM	19 km north
Insecta	Coleoptera	Carabidae	-	3	WAM	23 km north-west
	Total			**7**		

Summary

Very few records of troglofauna have been entered into the relevant databases. The records that exist are appear to be largely by-catch from stygofauna studies, including the Pilbara Biological Study on stygofauna.

4.4 HABITAT ASSESSMENT

The potential for the presence of subterranean habitats at the Tabba Tabba deposit was assessed using geological data and other information supplied by Wildcat, including photos of diamond drill core at selected sites across the Project area. Diamond core photos were inspected in detail, and cross-referenced with lithological codes. The core photos were reviewed for any characteristic features such as vugs, fractures, holes, or pore spaces, pre-existing fractures (those show staining from groundwater, rather than fresh mechanical fractures from drilling), coarse gravel layers, or areas of significant core loss, which might indicate a subterranean cavity. The data was also inspected for key lithologies which, when sufficiently weathered or porous, are known to provide habitat for subterranean fauna in other parts of the Pilbara.

4.4.1 TROGLOFAUNA

Three diamond core holes drilled from surface at Tabba Tabba provide insitu profiles of the geological sequence above the water table. Groundwater occurs at approximately 10 to 22 metres below ground surface at the deposit and very little weathered overburden has been encountered within the mine impact area. In isolated parts to the north of the Tabba Tabba deposit, surface alluvium/colluvium extends to a maximum of 4 m (where present). This overlies fresh (mafic to ultramafic) rock of the Millindinna Intrusion. A significant portion of the Millindinna unit is exposed at surface with minimal recent depositional cover obscuring the unit from surface at Tabba Tabba (Wildcat, 2024).

Diamond drill core photographs for the unsaturated sections of three diamond holes are presented in Plates I-1 to I-3 (Appendix I) and the locations of the diamond holes are shown in Figure 2. The drill core photos show very limited weathering in the host rock that could provide suitable voids for troglofauna. In addition, analysis of RC chip trays indicate the pegmatite and host greenstone rocks show minimal weathered material in the surface 10 m of the profile (Wildcat 2024). The specific lithologies of the Tabba Tabba deposit, combined with shallow groundwater levels across much of the Project area, suggest that potential troglofauna habitat is not likely to be widespread in the local geological setting.

4.4.2 STYGOFAUNA

Measured groundwater levels in the vicinity of the planned open pit are typically 10 to 22m below ground level (bgl). Initial hydrogeological studies indicate that the groundwater is marginal to brackish, with Total Dissolved Solids (TDS) between 1,040 and 2,830 mg/L, and is circumneutral to slightly alkaline (pH 7.42-8.30, Rockwater 2024). These groundwater conditions appear to be conducive to stygofauna habitat, based on measured water quality ranges for groundwaters containing stygofauna in the Pilbara and other parts of Western Australia.

The existing Tabba Tabba borefield lies in the nose of a northerly-plunging syncline. The core of the syncline is composed of contact metamorphosed sediments and it limbs are composed of greenstone rocks including medium to coarse-grained, metamorphosed mafic rocks. Historical drilling from the northern borefield area indicates that alluvium in the area has a thickness of only two metres, and the water table occurs below the alluvium (Rockwater, 2015). Drilling at the southern boundary of the proposed pit (TAMB001, TAMB002, TAWB004 see Fig. 5), did not intersect alluvium, and rock outcrops were also observed along the creek. Consequently, alluvium associated with the local drainage lines are not considered to host significant groundwater reserves and therefore are unlikely to represent significant stygofauna habitat in the Tabba Tabba area, or be affected by dewatering of the proposed open pit.

Selected diamond core photographs from three diamond drill holes (locations shown in Figure 2) outline the geological sequences of saturated sections of the deposit within the planned pit. Broken and fractured sections of this unit may provide potential habitat for stygofauna. Plates II¬1 to II-3 (Appendix II) show sections of broken/fractured ground below the water table that indicates areas of higher permeability within the deposit. The most prospective areas appear to be at the lithological contacts (e.g. between the pegmatites and host rock), or where considerably more fracturing is noted (e.g. for holes intersecting faults or shear zones).

5 SAMPLING METHODOLOGY

The subterranean fauna sampling methodology implemented for the Tabba Tabba Project was prepared in accordance with relevant EPA guidelines (EPA 2021). The investigation constitutes a detailed study and the sampling effort complies with the requirements of the EPA. Sampling in 2024 replicated similar techniques used to sample stygofauna and troglofauna at Tabba Tabba in 2013.

Sampling was undertaken by Daisy Scott, Senior Environmental Scientist and Nick Evelegh, Principal Environmental Scientist (both of Rockwater Pty Ltd) from March 12 – 14 and April 29 – May 3, 2024 in accordance with Regulation 27 Permit No. BA27001014 (Fauna Taking (Biological Assessment) Licence), issued by DBCA.

5.1 STYGOFAUNA

The 2024 stygofauna sampling programme surveyed existing bores at the site, as well as open RC exploration holes and diamond drill holes that intersected the water table in the Project pit development area (Figure 5). Thirty-one impact samples were collected by the Tabba Tabba stygofauna survey across two sampling rounds (Table 11). The sampling programme also collected 17 regional samples, from station bores and wells on adjacent pastoral leases (Figure 6). These samples were considered representative of a range of aquifer conditions locally and regionally. The 2024 sampling effort complements previous sampling work at Tabba Tabba, during which 17 samples in total were collected in the pit area, together with 13 reference collections (Rockwater 2014).

Table 11: Sampling effort for Stygofauna at Tabba Tabba in 2024

Location	March 2024	April/May 2024	Total Samples
Tabba Tabba Impact sites	11	20	31
Reference Collections	-	17	17
TOTAL	**11**	**37**	**48**

Prior to stygofauna sampling at each bore, water quality was measured down-hole using a multi-parameter probe. Where the water level was greater than 20 m, a water sample was bailed. Water quality parameter readings (including conductivity, salinity, pH, dissolved oxygen and temperature) were recorded. Measurements of total depth, collar height, diameter and other bore details were also recorded, where possible.

Stygofauna sampling was undertaken using modified plankton nets. Each site was sampled using sampling nets with a diameter approximately two-thirds of the bore casing and filter mesh sizes 50 µm and 150 µm. Net samples were obtained by lowering sampling nets into each bore using a reel of braid until they reached the bottom of the bore, where they were agitated to disturb sediment and any animals that may be present. Each biological sample was taken using three net-hauls of the 50 µm stygofauna sampling net and three net-hauls of the 150 µm sampling net, which were combined and stored in 120 mL polycarbonate vials. Samples were preserved using 100% (absolute) ethanol.

To avoid contamination between sites, the sampling nets were thoroughly washed with a decontaminant solution (Decon 90) and then rinsed with distilled water. All samples were transported to Perth and forwarded to specialist stygofauna biologists for sorting and identification.

5.2 TROGLOFAUNA

A total of 33 troglofauna samples were collected across two sampling rounds at Tabba Tabba in 2024 (Table 12). This complemented 17 samples taken as part of a 2013 subterranean fauna survey at the site (Rockwater 2014). Locations of the 2024 survey sites are shown in Figure 7.

Table 12: Sampling effort for Troglofauna at Tabba Tabba in 2024

Location	March 2024	April/May 2024	Total Samples
Tabba Tabba Impact sites	27	3.5	30.5
Reference Collections	2	0.5	2.5
TOTAL	**29**	**8**	**33**

Trapping and net-scraping methods were used to sample troglofauna, with scrape samples being taken immediately before baited traps were set. Scrape and net samples from each site were processed separately, although they were considered to represent one sample. Most sites were both scraped and then baited with troglofauna traps; the exception being eight sites sampled in May 2024 using only the net-scraping technique. These were assigned a value of 0.5 sample units for the calculation of sampling effort (Table 12). Samples collected using only the scraping or trapping technique were assigned a value of 0.5 for the calculation of sampling efficiency (Table 12).

Troglofauna sampling was undertaken as follows:

- A scrape sample was taken from each uncased hole using reinforced stygofauna sampling nets prior to the installation of the baited trap.
- A baited trap(s) was installed at pre-determined depth to match prospective troglofauna habitat
- A cap or plug was placed over hole to minimise the amount of terrestrial fauna entering the traps, and to maintain a humid environment.
- Traps were retrieved after 8 weeks , when mulch was retrieved and immediately placed into sealed bags for transport to the laboratory.

Troglofauna traps are constructed of 120-180 mm long sections of 65 mm diameter PVC pipe. Each trap has a series of 10-20 mm holes drilled into the side and a vented PVC cap to allow fauna to colonise the baited trap.

Traps were baited with a mixture of leaf litter sourced from nearby native vegetation. The litter was soaked in water and irradiated in a microwave oven on maximum power setting for 6 minutes (to kill any surface invertebrates and assist in breakdown) prior to use.

The positioning of traps was tailored to match either fracture zones or prospective strata identified from lithological logs, geological sections or diamond drill cores provided by Wildcat (see Section 4.4.1). All traps were placed within 13 m of ground surface based on the assessment of prospective habitat.

Samples were submitted to the laboratory for sorting and identification at the end of each sampling phase (scrape- and trap-sampling). Sorting and identification was undertaken by specialist subterranean biologists, Bennelongia Environmental Consultants.

6 RESULTS

6.1 PROSPECTIVE HABITATS AT TABBA TABBA

The desktop study confirmed that suitable conditions exist for both troglofauna and stygofauna at Tabba Tabba, based on the geological and hydrogeological setting of the Project, together with water groundwater conditions (water quality) measured during sampling, and historical records from local and regional surveys for subterranean fauna.

Troglofauna habitat at Tabba Tabba does not appear to be particularly well developed, with limited depositional cover/detritals or weathering of mineralised rocks, and a relatively shallow water table (approx. 11 – 22 m bgl across the deposit). Troglofauna habitat appears to occur in the pegmatites and the mafic to ultramafic basement rocks that host them, where suitable fractures, shears and other voids associated with faults, dykes and geological contacts occur.

Stygofauna habitat appears to be more widespread in the region, across a variety of rock types and aquifers. In the mine pit area, Groundwater occurs above lithological contact zones that are fractured. Fractured rock aquifers have yielded stygofauna communities of low to moderate diversity in other parts of the Pilbara.

The results of water quality measurements taken during the field survey indicate that the groundwater conditions are within the ranges recorded for stygofauna habitat in previous surveys of stygofauna in the Pilbara and Yilgarn of Western Australia. Site details and water quality results for both sampling rounds are included in Appendix IV. Groundwater salinity across all sites (impact and reference) ranged from fresh (217 mg/L TDS) to saline (7,520 mg/L TDS), and pH was slightly acidic to slightly alkaline (6.4 to 8.2). Dissolved oxygen levels ranged from 0.4 to 6.2 mg/L (5.8-97.8 % saturation). Notably, the upper dissolved oxygen values were from pumped samples, and were not representative of in situ aquifer conditions.

6.2 STYGOFAUNA

Field surveys recorded over 2,144 stygal specimens (1,474 in 2013 and 670 in 2024) over four sampling rounds. The sampling yielded at least 32 stygofauna species in the broader Project area, which included bores and wells at reference sites up to 31 km from Tabba Tabba. The stygofauna community comprised largely of copepods and ostracods, with eleven and ten species respectively.

Twenty-five possible species were recorded from the Project “impact” area, defined by the modelled drawdown in groundwater levels associated with dewatering of the planned open pit at Tabba Tabba. Locations of the stygofauna results from impact and reference sites are presented in Figures 8 and 9 respectively.

The faunal groups recorded within the Tabba Tabba Project impact area included amphipods (3 species), copepods (7 species), an isopod, ostracods (6 species), syncarids (3 species) and subterranean worms (4 species) (Table 13). In addition, a further 4 ostracods, 2 cyclopoid copepods, a harpacticoid copepod and 2 oligochaete species were recorded only from regional sites. These additional results are excluded from Table 13 and have been presented in Appendix IV. Any taxonomic changes or updates to specimens collected from impact sites in 2013 are shown in parenthesis in Table 13. Interestingly, 10 stygofauna species were also recovered from troglofauna scrape samples at three exploration drill holes within the impact area.

Three amphipods were recorded in the mine impact area, with two of these also being recorded from reference sites up to 30 km away, and the third known to occur widely across the Pilbara region. Two species of cyclopoid copepod and five species of harpacticoid copepod were collected from 20 impact sites at Tabba Tabba. None of the seven copepod species were restricted to the mine area.

Of six ostracods recorded at Tabba Tabba, five are known to occur outside the impact area. The remaining species, *Humphreyscandona* BOS1889, was recorded as a singleton collection, from impact site TARC093 at the southern end of the planned mine pit. Another species of *Humphreyscandona* was recorded from a single regional well to the west of Tabba Tabba (Appendix IV).

Table 13: Results of stygofauna sampling at Tabba Tabba Tantalum Project (2013 and 2024)

	Order	Family	Taxon	n	Project Area[1]	Regional sites/distribution
CRUSTACEA						
Amphipoda	Amphipoda	Melitidae	*Pilbarana* sp. B06 (Prev. Melitidae sp. B06 sp.1 group)	1	Bore A	Widespread across Pilbara
	Amphipoda	Melitidae	*Nedsia shawensis*	102+12	Bore A, TTRC1307, TARC093	Boundary Well, Claypan Well, Concrete Well, Grass Plain Well, Old Yards, Solar Mill, Strelley West Crossing, Peerinya Well, Bug Well
	Amphipoda	Melitidae	Paramelitidae Genus 2 sp. B14	37+6	TARC093	Bluff Well, Boundary Well, Grass Plain Well, Old Yards, Homestead Well, Toodigrrina
Copepoda	Harpacticoida	Ameiridae	*Megastygonitocrella trispinosa*	52+186	Bore A, TABH002, TARC093, TARC129, TARC138, TARC143B, TARC220D, TARC241	Boundary Well, Claypan Well, Concrete Well, Grass Plain Well, Homestead Well, Old Yards, Tabba Bore, Toodigrrina, Strelley West Crossing, Malindra Well, Peerinya Well, Claypan Bore
	Harpacticoida	Canthocamptidae	*Elaphoidella humphreysi*	445+1	Bores A, C & D, TTRC1303, 1305, 1307, 1308, 1322, 1325 & 1329	Homestead Well, Old Yards, Strelley West Crossing, Toodigrrina, Catho Well (Biota 2010), Boundary Well
	Cyclopoida	Cyclopidae	*Diacyclops* BCY109' (prev. *D. cockingi*)	249+70	Bores A, C & D, TTRC1303, 1305, 1307, 1308 & 1325, TARC093, TARC129, TARC138, TARC143B, TARC144, TARC220D and TARC241	31 Mile, Concrete Well, Grass Plain Well, Old Yards, Strelley West Crossing, Coogie Well, Claypan Well, Munda Well
	Cyclopoida	Cyclopidae	*Diacyclops scanloni*	40+6	Bore A, TTRC1305, TTRC1307, TARC093, TARC129, TARC143B	Strelley West Crossing
	Cyclopoida	Cyclopidae	*Diacyclops* sp. (juveniles)	4	Bore A, TTRC1324	-
	Cyclopoida	Cyclopidae	*Halicyclops* CALM	105+7	TARC093	31 Mile, Old Yards, Solar Mill, Pilbara region
	Cyclopoida	Cyclopidae	*Goniocyclops* nr *uniarticulatus*	29	Bores C & D, TTRC1305	45 km NNE of Paraburdoo (Bennelongia, unpub. data)
	Cyclopoida	Cyclopidae	*Microcyclops varicans*	24+13	Bore B	Grass Plain Well, Homestead Well, Tabba Bore, Toodigrrina, Bluff Well, Coogie Well, Malindra Well
Isopoda		Microcerberidae	*Coxicerberus* sp. B06 (prev. Microcerberidae sp. B06)	1+2	TTRC1307, TARC241	-
Ostracoda	Podocopida	Cyprididae	*Cypretta* sp.	5	Bores A, B, D	Claypan Well, Solar Mill
	Podocopida	Darwinulidae	*Penthesilenula brasiliensis*	10+6	Bore D	Boundary Well, Grass Plain Well
	Podocopida	Darwinulidae	*Vestalenula marmonieri*	7	Bore D	Grass Plain Well
	Podocopida	Candonidae	*Areacandona iuno*	33	TARC093, TARC241	Northern Pilbara distribution, Strelley West Crossing, Claypan Bore

	Order	Family	Taxon	n	Project Area[1]	Regional sites/distribution
	Podocopida	Candonidae	*Areacandona BOS365*	13	TARC093	Bug Well, Strelley West Crossing, Bluff Well
	Podocopida	Candonidae	*Humphreyscandona* BOS1889	1	TARC093	
Syncarida	Bathynellacea	Bathynellidae	*Bathynella* sp. B08	1	TTRC1312 (outside pit)	-
	Bathynellacea	Parabathynellidae	*Billibathynella* sp. B07	2	Bore D, TTRC1324	-
	Bathynellacea	Parabathynellidae	*Atopobathynella* sp. (juv.)	1	TARC093	
ANNELIDA						
Polychaeta	Incertae sedis	Aeolosomatidae	Aeolosoma sp.	12	TARC220D	Coogie Well, Toodigrrina, Malindra Well
OLIGOCHAETA						
Oligochaeta	Tubificida	Enchytraeidae	Enchytraeidae sp.	1	Bore D	-
	Tubificida	Enchytraeidae	Enchytraeidae '3 bundle' s.l. (short sclero)	12	TARC132	Malindra Well,
	Tubificida	Phreodrilidae	Phreodrilidae with dissimilar ventral chaetae (fragments)	2	Bore D	
	Tubificida	Naididae	Monopylephorus sp. nov. WA29 (ex Pristina WA3) (PSS)	28	TARC129, TARC220D	Peerinya Well
PLATYHELMINTHES						
Turbellaria	-	-	Turbellaria sp.*	1	TARC093	
			TOTAL	992 +414		

Stygofauna species recorded only at regional sites (i.e. not from the Tabba Tabba mine area) have been removed from Table 13 and are included in Appendix III.
Highlighted sites and abundance data relate to 2024 collections
* Denotes taxa not assessed during EIA (EPA, 2016)
[1] Borefield bores A–D were previously considered reference sites, but will be affected by drawdown associated with pit dewatering

Three syncarids have been recorded from the impact area at Tabba Tabba; two were collected in 2013, and one from the current study. None of the syncarids have been recorded outside the impact area of the Project. Two species were collected as singleton records, meaning that they are only known to occur at a single site. The third, a parabathynellid species (*Billibathynella* sp. B07), has been recorded from two sites over a range of approximately 2.5 km.

Subterranean aquatic worms recorded from impact sites included one annelid (Aeolosoma sp.) and three oligochaetes (Enchytraeidae '3 bundle' s.l. (short sclero), Phreodrilidae with dissimilar ventral chaetae (fragments) and *Monopylephorus* sp. nov. WA29 (ex *Pristina* WA3) (PSS). An indeterminate enchytraeid collected from the borefield in 2013 is possibly the same enchytraeid collected from one impact and one regional site (Enchytraeidae '3 bundle' s.l. (short sclero)). This species is known to have a distribution range at least one order of magnitude greater than the dewatering zone of influence in groundwater levels. A second oligochaete recorded from the borefield in 2013 (an incomplete phreodrilid, Table 13), is the only subterranean aquatic worm known only from the Tabba Tabba impact area. This was a poorly developed (juvenile) specimen and it is not possible at this stage to determine the taxonomy or distribution range of the species.

The isopod Coxicerberus sp. B06 was first recorded as a singleton collection in 2013. It was also recorded in 2024 from a second site, approximately 0.32 km from the initial record, but is currently known only from the impact area.

The turbellarian cannot be identified to species level due to the lack of taxonomic framework for the phylum Platyhelminthes.

6.3 TROGLOFAUNA

Five potential troglofauna species are known from the Tabba Tabba area, which represents a depauperate troglofauna community. Four species were recorded at Tabba Tabba by the current survey; two millipedes (Dalodesmidae and Lophoproctidae), a centipede (Cryptopidae), and a pauropod. In addition, a silverfish (Nicoletiidae) was collected as stygofauna by-catch at the deposit in 2013 (Rockwater 2014).

With the exception of Lophoturus madecassus, which is known to have a cosmopolitan distribution (Car, Short, Huynh and Harvey 2013), none of the troglofauna recorded by the survey has been recorded outside of the proposed Tabba Tabba area. The silverfish and the pauropod were recorded from a site which was just outside of the 2013 mine pit (Figure 10); however they are within the current Tabba Tabba pit development area. The two remaining species (Dalodesmidae 'BDI085' and Cryptops 'BSCOL120') are also only known from the Project impact area.

Table 14: Results of troglofauna sampling at Tabba Tabba Tantalum Project

	Order	Family	Taxon	n	Project Area	Reference
MYRIAPODA						
Pauropoda	Tetramerocerata	Pauropodidae	Pauropodidae sp. B01 s.l.	1	TTRC1312	-
Diplopoda	Polydesmida	Dalodesmidae	Dalodesmidae `BDI085`	2	TARC135	-
Diplopoda	Polydesmida	Lophoproctidae	Lophoturus madecassus	3	TARC143B	Deep Bore
Chilopoda	Scolopendrida	Cryptopidae	Cryptops `BSCOL120`	1	TADD004	-
HEXAPODA						
Insecta	Zygentoma	Nicoletiidae	Nicoletiinae sp.	1	TTRC1312	-

7 DISCUSSION

7.1 STYGOFAUNA

The stygofauna community recorded at Tabba Tabba is moderately diverse compared with many other parts of the Pilbara and Yilgarn. A total of 32 possible stygofauna species were recorded by the survey, with 25 of these species recorded within the zone of dewatering influence/impact area (defined by the modelled 1.0 m groundwater level drawdown extent). The Tabba Tabba stygofauna is typical of the Pilbara region, with nearly half of the species richness comprising of copepods and ostracods (Halse 2018).

Results of the survey indicate that the distribution ranges of over 70% of stygofauna species recorded at Tabba Tabba also extend outside the mining impact area. Seven stygofauna species are currently known only from the mining impact area. These include an isopod, an ostracod, 3 syncarids, an oligochaete worm and a flatworm. These seven species are considered to be at higher risk of impacts associated with mining related drawdown based on current survey records. Each of the species has been recorded from only one or two survey sites; however, this is likely a function of sampling effort. That is, these species are naturally occurring in low abundance in the Tabba Tabba stygofauna community, and extensive repeated sampling would be required to demonstrate their wider occurrence.

The oligochaete "Phreodrilidae with dissimilar ventral chaetae (fragments)" and the syncarid "*Billibathynella* sp. B07" were recorded at a borefield site north of the planned pit, where 3.5 m drawdown has been estimated in an aquifer with at least 53 m saturated thickness. Therefore, at least 90% of the aquifer remains as stygofauna habitat at this location.

Phreodrilid oligochaetes have been recorded in stygofauna assemblages throughout Western Australia. Phreodrilidae inhabit groundwater and a range of surface water systems, including springs, spring-fed creeks and pools, and large surface water systems (Pinder 2008). A small number of species are known to have catchment-scale distributions and others have been found to be widespread, occurring over multiple catchments (Biota 2010, Pinder 2008). Further assessment of the Tabba Tabba specimens is not possible due to both their condition (incomplete/fragments) and the limited taxonomic framework for this group.

Based on known distribution ranges of syncarids in Western Australia, none of the Tabba Tabba syncarids are likely to be restricted exclusively to the impact area associated with dewatering drawdown. It is also likely that the isopod, flatworm and ostracod recorded only from impact sites have more extensive ranges than the modelled impact area at Tabba Tabba, based on known distribution ranges of other species within these taxonomic groups. Five of the six ostracod species from Tabba Tabba have been shown to occur more widely. Other microcerberid isopods in the Pilbara have shown distribution ranges of up to 30 km in fractured rock aquifers (e.g. Biologic 2020). Stygal isopod, syncarid and ostracod species in the Pilbara may have distributions that are limited at a major river catchment scale, but are unlikely to be restricted at a project scale (Halse et al. 2014).

The stygofauna survey has demonstrated that continuous habitat with a range of groundwater conditions occurs beyond the Project area, with some stygofauna species from the Project area recorded at reference sites up to 31 km away. Additionally, many of the Tabba Tabba species have also been shown to be widespread across the Pilbara region.

In the Pilbara region, distributions are usually restricted by surface drainage catchments, aquifer discontinuity, geological barriers or habitat preference. There is no evidence to suggest distribution ranges are limited at the project-scale by any such factors. The habitats sampled at Tabba Tabba are not unique in

a regional context and there appear to be no real constraints of geological barriers or aquifer boundaries that would restrict dispersal of stygofauna more widely than the Project area.

The impacts to groundwater levels as a result of dewatering the deposit are represented by a steep cone of depression centred on the open pit. Groundwater modelling has shown that drawdown will be localised over a spatial extent of approximately 3,300 ha. The greatest drawdown will be radially along higher permeability zones of fractured rocks, particularly along the Tabba Tabba Shear Zone and a dolerite dyke that bisects the planned open pit. Here, linear drawdown extents of 6.4 km and 5.9 km respectively have been modelled for the fractured rock aquifer (Figure 2, Rockwater 2024). The dolerite dyke and other structural features such as fractured lithological contact zones are not unique to the mine pit development area of the Project and extend well beyond the pit. The most significant of these structures is the Tabba Tabba Shear Zone, which is a major structural feature extending over several hundred kilometres across the central portion of the Pilbara Craton, with a maximum width of 2 km (Beintema *et al.* 2003).

The Tabba Tabba stygofauna assessment has shown that there is stygofauna present in the groundwater habitats of the Project area, and in the alluvial aquifer system associated with the Tabba Tabba and Strelley West Creeks. The presence of more than 70% of the species recorded at Tabba Tabba from reference sites in the surrounding catchment suggests that there is hydraulic connection between the habitats sampled. Furthermore, there are no biogeographical factors or geological features that would limit the distribution of stygofauna to the mine development area.

7.2 TROGLOFAUNA

The primary potential impact to troglofauna is direct removal of habitat within the proposed mine pit development area at Tabba Tabba. The Tabba Tabba open pit will be 1 km long and 0.85 km wide, and represents a disturbance area of 67 hectares (Figure 7). The direct impact of mining the Tabba Tabba lithium-tantalum deposit on subterranean habitat is considered minor in both a local and regional context.

Four troglofauna species, all collected as singleton records at Tabba Tabba, are currently known only from the mine pit area. A millipede (Dalodesmidae ‘BDI085’) and a centipede (Cryptops ‘BSCOL120’) are highly unlikely to be restricted to an area the size of the Tabba Tabba mine pit. Both species are likely to be present in low abundance in the Tabba Tabba troglofauna community. The median linear ranges of other troglofauna species from these groups (Diplopoda and Chilopoda) within mineralised rock habitats of the Pilbara are 4.5 km and 6.2 km respectively (Halse 2018). Halse (2018) also reported that pauropods and silverfish recorded from subterranean habitats in the Pilbara have median linear ranges of 6.6 km and 11 km respectively. The Tabba Tabba specimens from these groups are unlikely to represent troglofauna species that have very narrow ranges, and none is expected to be limited to the Project area. Based on previous surveys and published data, the indicative linear ranges for the four troglofauna species recorded only from the impact area at Tabba Tabba are likely to be at least ten times greater than the size of the open pit. The very localised impacts to troglofauna habitat as a result of mine pit development are unlikely to impact the conservation of individual troglofauna species. This is supported by the continuity of similar subterranean habitats in adjacent areas.

A habitat assessment using geological interpretation has shown that similar geological conditions within the mafic to ultramafic rocks of the Milindinna Unit that hosts the Tabba Tabba pegmatites extend over a strike length exceeding 90 km (Wildcat 2024). The habitat assessment (provided as Appendix V) outlined relevant geological considerations relating to the extent of prospective troglofauna habitat in the region. There is potential for troglofauna habitat to extend along strike for at least 22 km south-west, and 18 km north-east of the Tabba Tabba deposit, in adjacent parts of the Millindinna Unit.

8 SUMMARY

Dewatering of the Tabba Tabba deposit to maintain dry mining conditions will impact up to 3,300 ha of potential stygofauna habitat. The impacts to groundwater levels as a result of dewatering the deposit are represented by a steep cone of depression, which will extend for a maximum of 6.4 km across the Project area. Stygofauna habitat in the surrounding area has been shown to be extensive, and to contain over 70% of the species recorded in the mine pit area. None of the recorded species are likely to have distribution ranges limited to the localised spatial extent of dewatering disturbance. Consequently, the Tabba Tabba Project is unlikely to impact the local stygofauna values, or to threaten the conservation of any individual stygofauna species recorded by the survey.

Despite suitable subterranean habitats being found to occur in the Project area, the Tabba Tabba troglofauna community is considered to be depauperate. Furthermore, the mafic to ultramafic rocks that host the Tabba Tabba pegmatites extend over a strike length exceeding 90 km, providing similar geological conditions and prospective habitat for troglofauna regionally. The impacts associated with the Project development are unlikely to impact the conservation status of the troglofauna identified by the Tabba Tabba subterranean fauna assessment.

Dated: 15 November 2024

ROCKWATER PTY LTD

Daisy Scott
Senior Environmental Scientist

Nick Evelegh
Environmental Scientist

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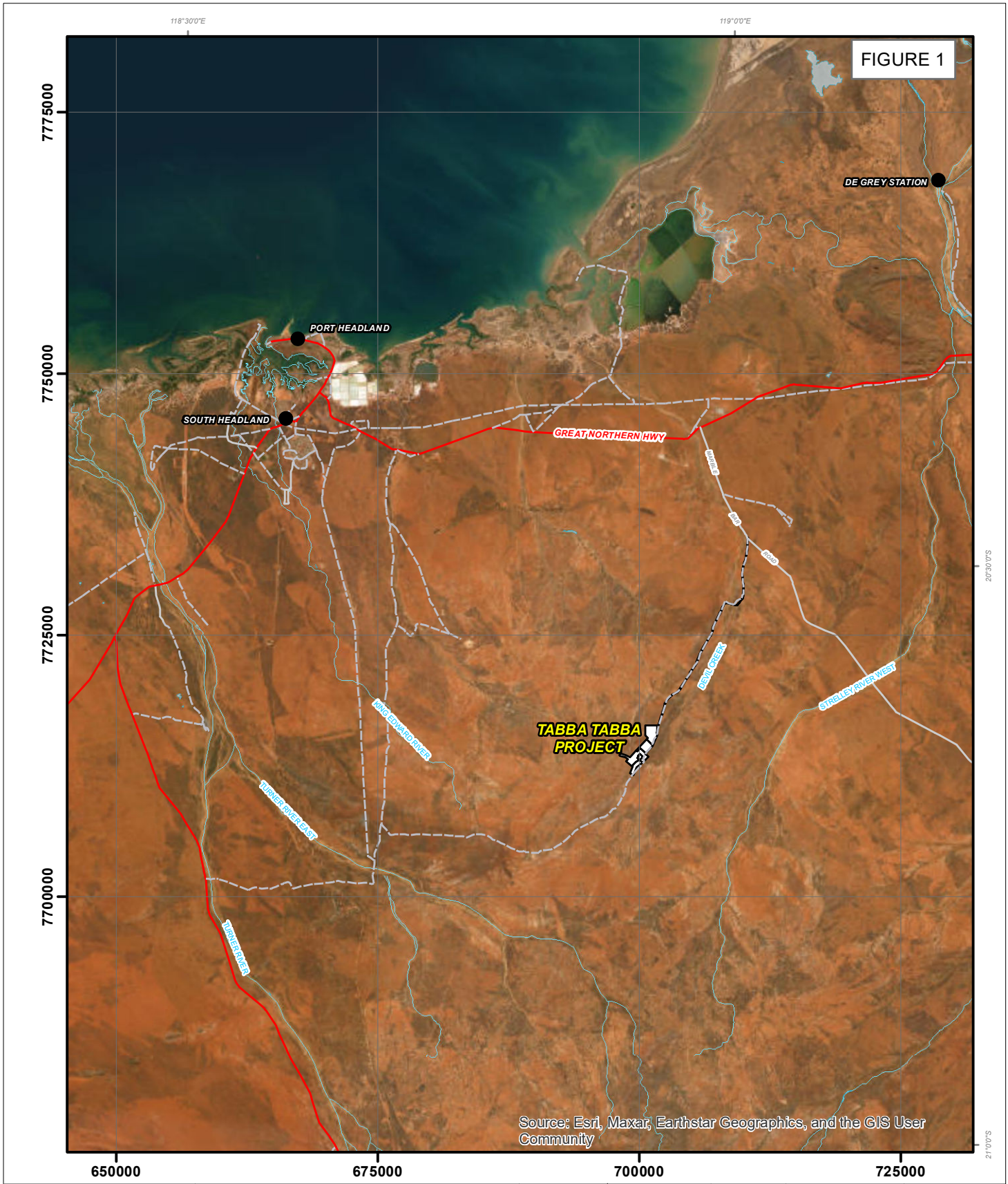
FIGURES



Data Source:

L:/GIS Projects/422-0 - Tabba Tabba/
Fig. 2024_1-1 - Locality.mxd

Global Advanced Metals Tenure
Lakes
Rivers_DoW

Roads/Tracks
Principal Road
Secondary Road
Minor Road

1:500,000
A4

Grid: MGA 1994
Zone 50

Client: Wildcat Resources

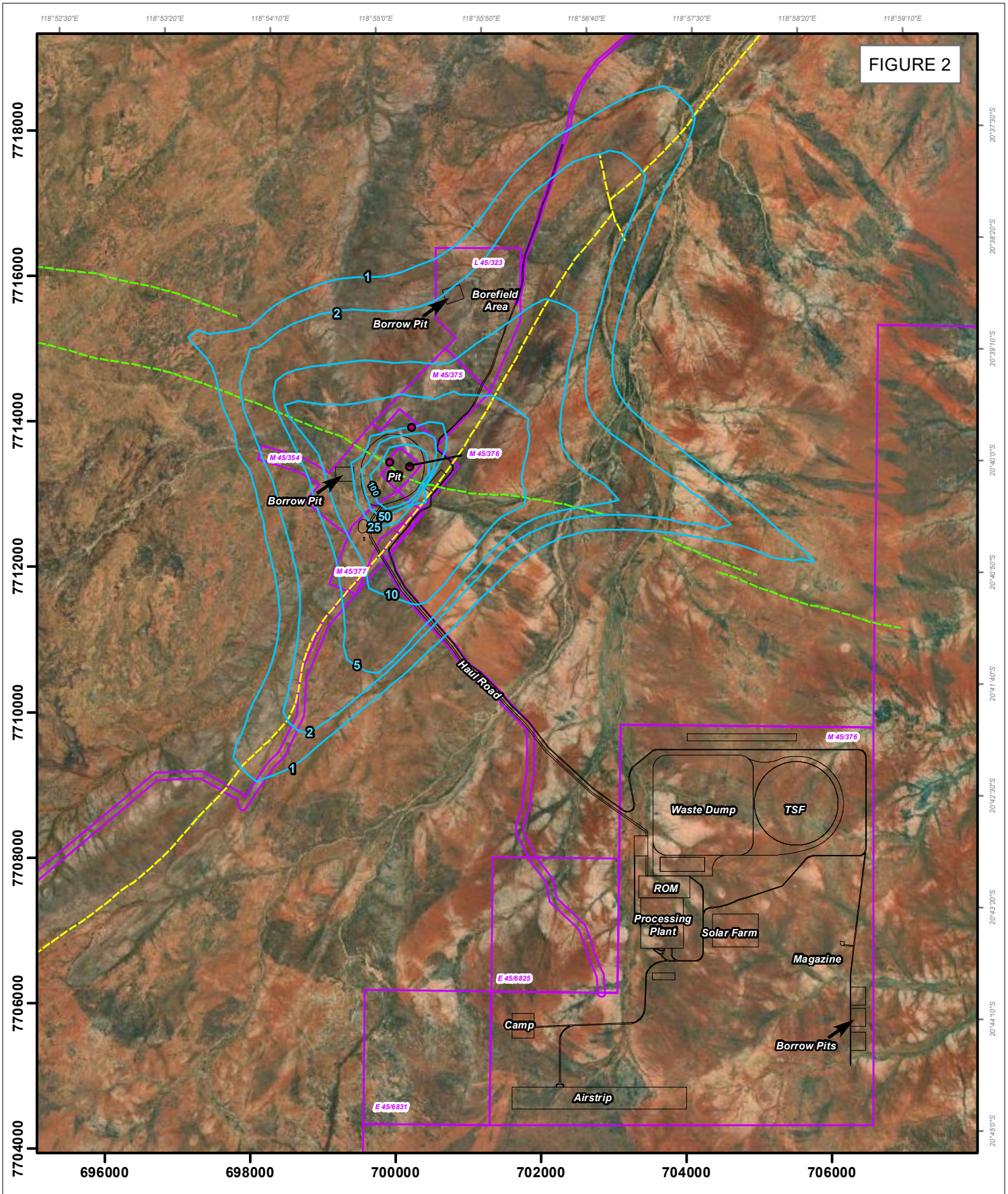
Project : Tabba Tabba - Subterranean Fauna

Date: October 2024

Dwg. No: 422-0/24/1-1

SITE LOCALITY

Rockwater



Data Source: Wildcat Resources (2024)
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

L:/GIS Projects/422-0 - Tabba Tabba/
Fig. 2024_1-2 - Sampled Sites.mxd

- Inspected Diamond Core Hole
- Modelled Drawdown Contour (Rockwater, 2024)
- Round Hummock Dolerite
- Tabba Tabba Shear Zone
- Infrastructure (20240823)
- Wildcat_Tenements (20240116)

1:70,000
A4

Grid: MGA 1994
Zone 50

Client: Wildcat Resources

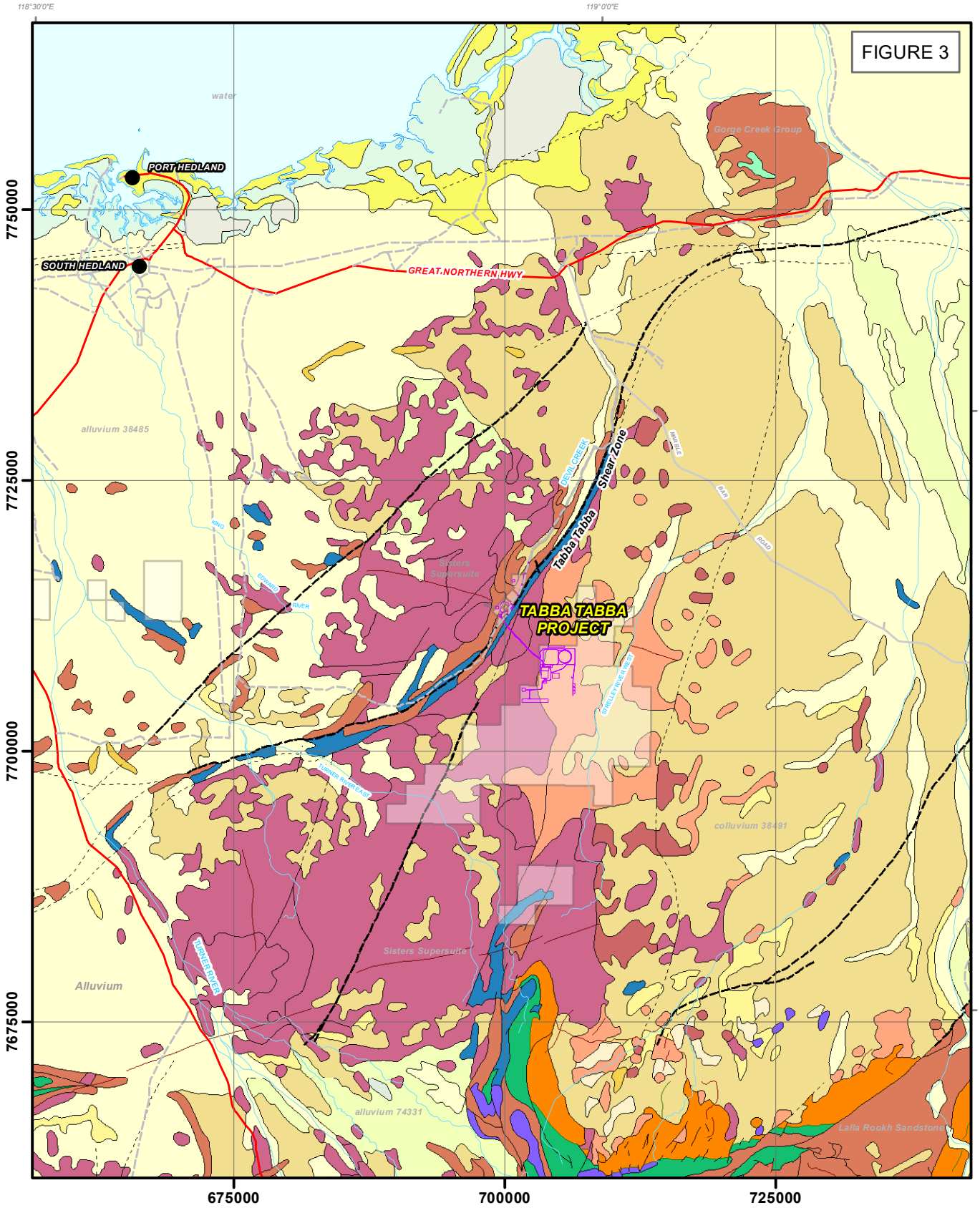
Project : Tabba Tabba - Subterranean Fauna

Date: October 2024

Dwg. No: 422-0/24/1-2

DISTURBANCE AREAS & MODELLED DRAWDOWN

Rockwater



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L:/GIS Projects/422-0 - Tabba Tabba/ 2024 Update/Fig. 2024_1-3 - Geology.mxd

Rivers_DoW
Infrastructure (20240823)
Wildcat Tenements (20240116)
LIVE

Roads/Tracks
Principal Road
Secondary Road
Minor Road

1:500,000
A4

Grid: MGA 1994 Zone 50

Client: Wildcat Resources

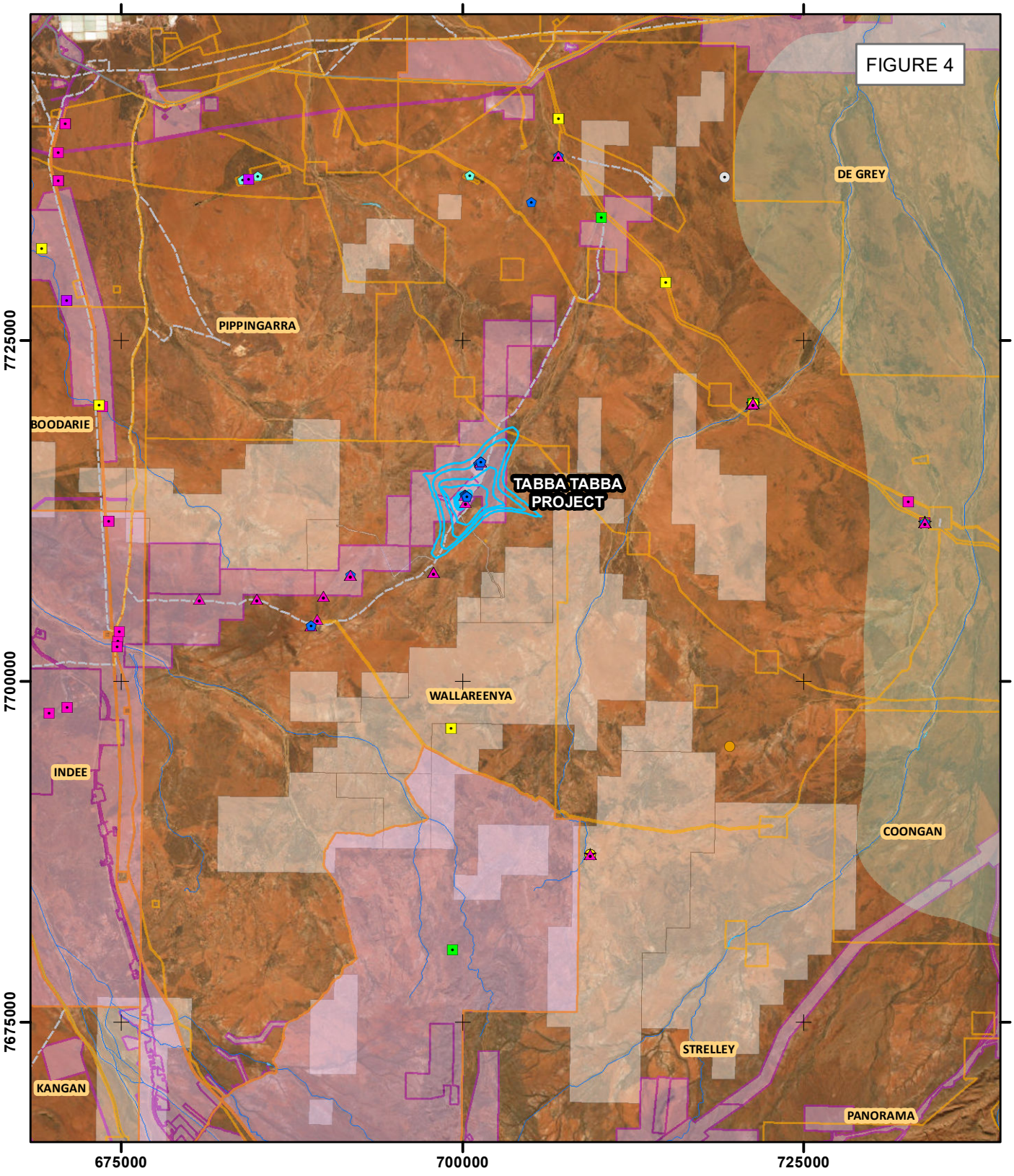
Project : Tabba Tabba - Subterranean Fauna

Date: October 2024

Dwg. No: 422-0/24/1-3

REGIONAL GEOLOGY

Rockwater



Dandjoo_Database
- Arachnida
- Chilopoda
- Diplopoda
- Malacostraca
- Maxillopoda
- Oligochaeta
- Ostracoda
- Polychaeta

ALA_Database
- Arachnida
- Entognatha
- Insecta
- Malacostraca
- Maxillopoda
- Ostracoda

- Pastoral_Stations_DPLH_083
- Populated place
- Rivers_DoW
- Paleovalleys
- Active GWL
- Wildcat_Tenements_20240116

Roads/Tracks
- Principal Road
- Minor Road

N

1:400,000

A4

Grid: MGA 1994 Zone 50

Client: Wildcat Resources

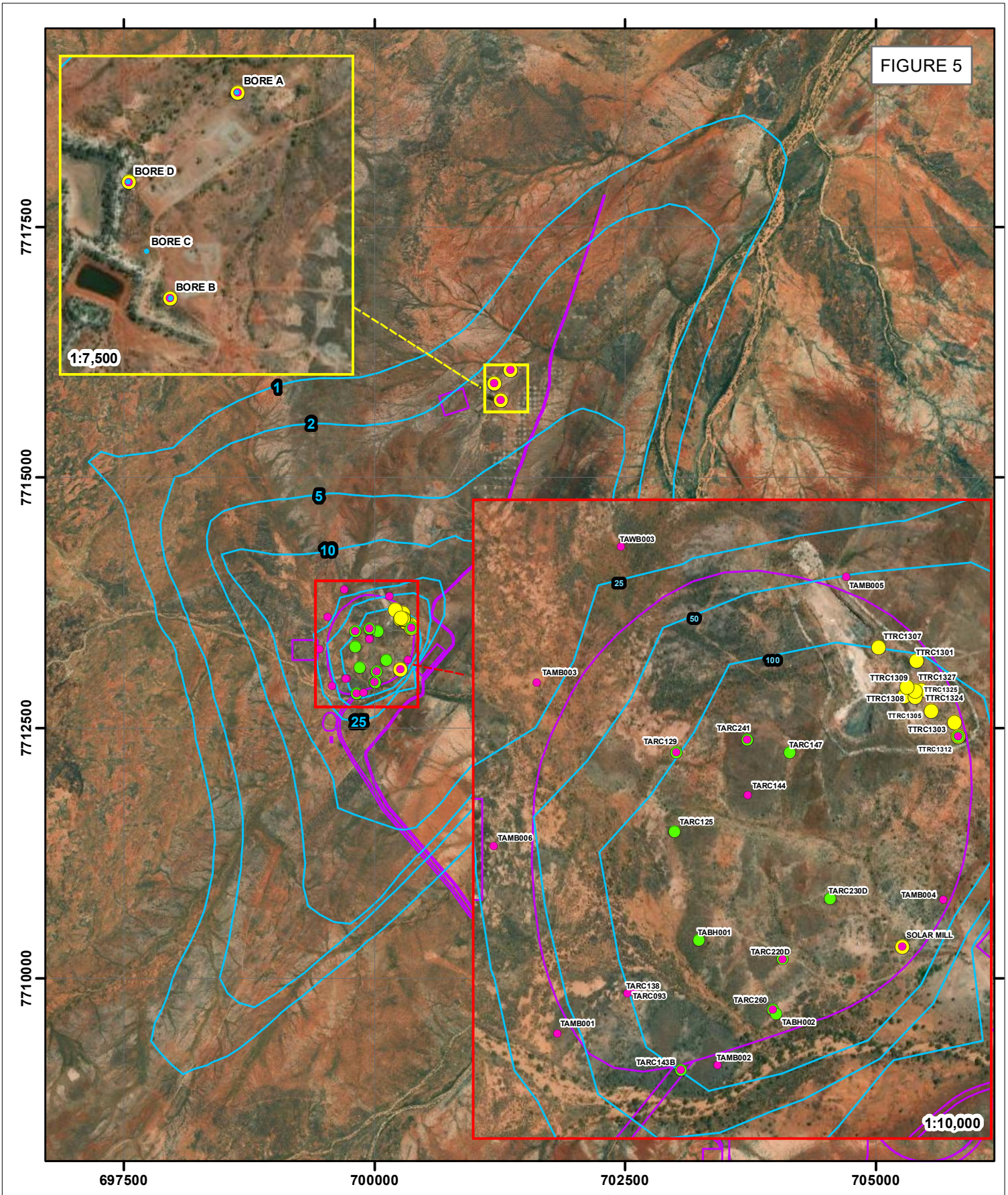
Project : Tabba Tabba - Subterranean Fauna

Date: October 2024

Dwg. No: 422-0/24/1-4

DATABASE SEARCHES

Rockwater



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Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

L:/GIS Projects/422-0 - Tabba Tabba/Fig. 2024_1-5 - Sampled Sites.mxd

Stygofauna Sampled Site / Round
- R4
- R3
- R2
- R1

Modelled Drawdown Contour (Rockwater, 2024)
Proposed Pit

1:10,000
A4

Grid: MGA 1994
Zone 50

Client: Wildcat Resources

Project : Tabba Tabba - Subterranean Fauna

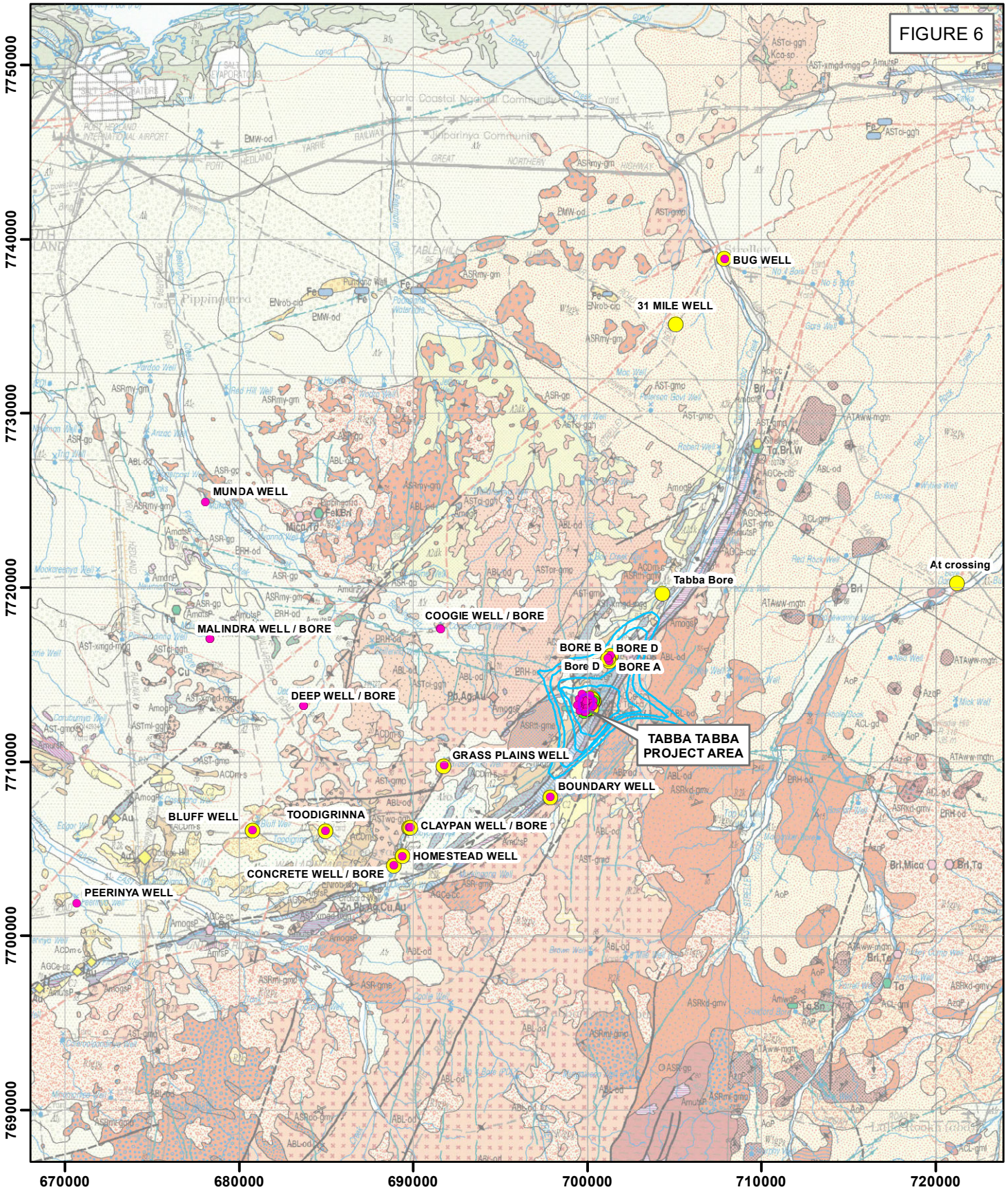
Date: October 2024

Dwg. No: 422-0/24/1-5

IMPACT AREA
STYGOFAUNA SAMPLED SITES
ROUNDS 1 & 2 (2013)
ROUNDS 3 & 4 (2024)

Rockwater

FIGURE 6



Data Source:
Wildcat Resources (2024)

L:/GIS Projects/422-0 - Tabba Tabba/
Fig. 2024_1-6 - Regional Sampled Sites.mxd

Tabba Tabba Pit Outline

Modelled Drawdown Contour (Rockwater, 2024)

Stygofauna Sampled Site / Round

R4

R3

R2

1:300,000

A4

Grid: MGA 1994
Zone 50

Client: Wildcat Resources

Project : Tabba Tabba - Subterranean Fauna

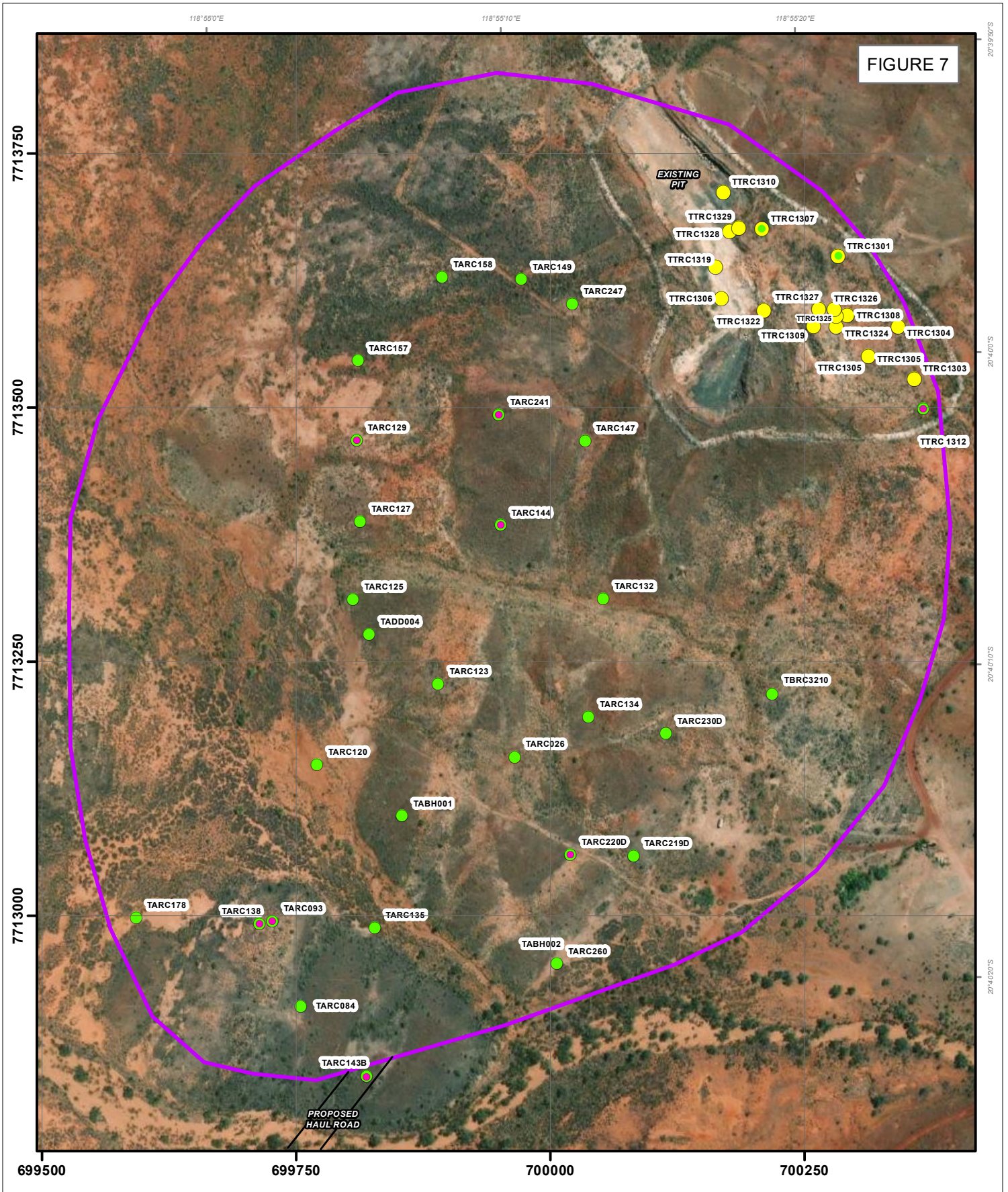
Date: October 2024

Dwg. No: 422-0/24/1-6

REGIONAL STYGOFAUNA SAMPLED SITES ROUNDS 1 & 2 (2013) ROUNDS 3 & 4 (2024)

Rockwater

FIGURE 7



Data Source: Wildcat Resources (2024)
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

L:/GIS Projects/422-0 - Tabba Tabba/
Fig. 2024_1-7 - Sampled Sites - Trog.mxd

Proposed Pit Outline (20240116)

Troglofauna_Sampled_Sites

- R4
- R3
- R1

1:5,000
A4

Grid: MGA 1994
Zone 50

Client: Wildcat Resources

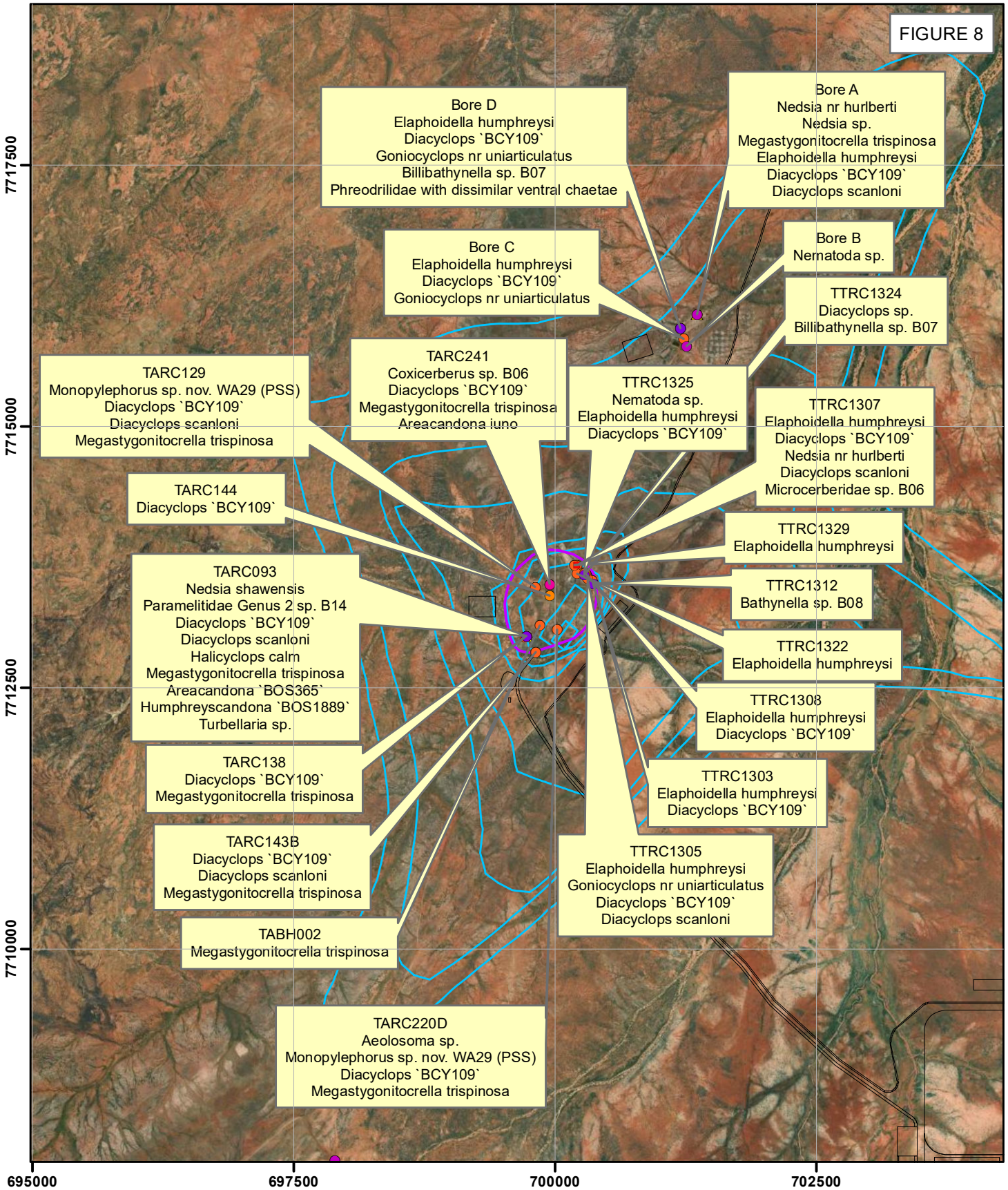
Project : Tabba Tabba - Subterranean Fauna

Date: October 2024

Dwg. No: 422-0/24/1-7

IMPACT AREA
TROGLOFAUNA SAMPLED SITES
ROUND 1 (2013)
ROUNDS 3 & 4 (2024)

Rockwater



Data Source: Wildcat Resources (2024)

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

L:/GIS Projects/422-0 - Tabba Tabba/ Fig. 2024_1-8 - Results Stygo Impact Sites.mxd

Stygofauna - Group, Order

- Amphipoda, Amphipoda
- Copepoda, Cyclopoidae
- Copepoda, Harpacticoida
- Ispoda, Ispoda
- Ostracoda, Candonidae
- Ostracoda, Podocopida
- Syncarida, Bathynellacea

Pit Outline

Modelled Drawdown Contour (Rockwater, 2024)

Infrastructure (20240823)

1:50,000

A4

Grid: MGA 1994 Zone 50

Client: Wildcat Resources

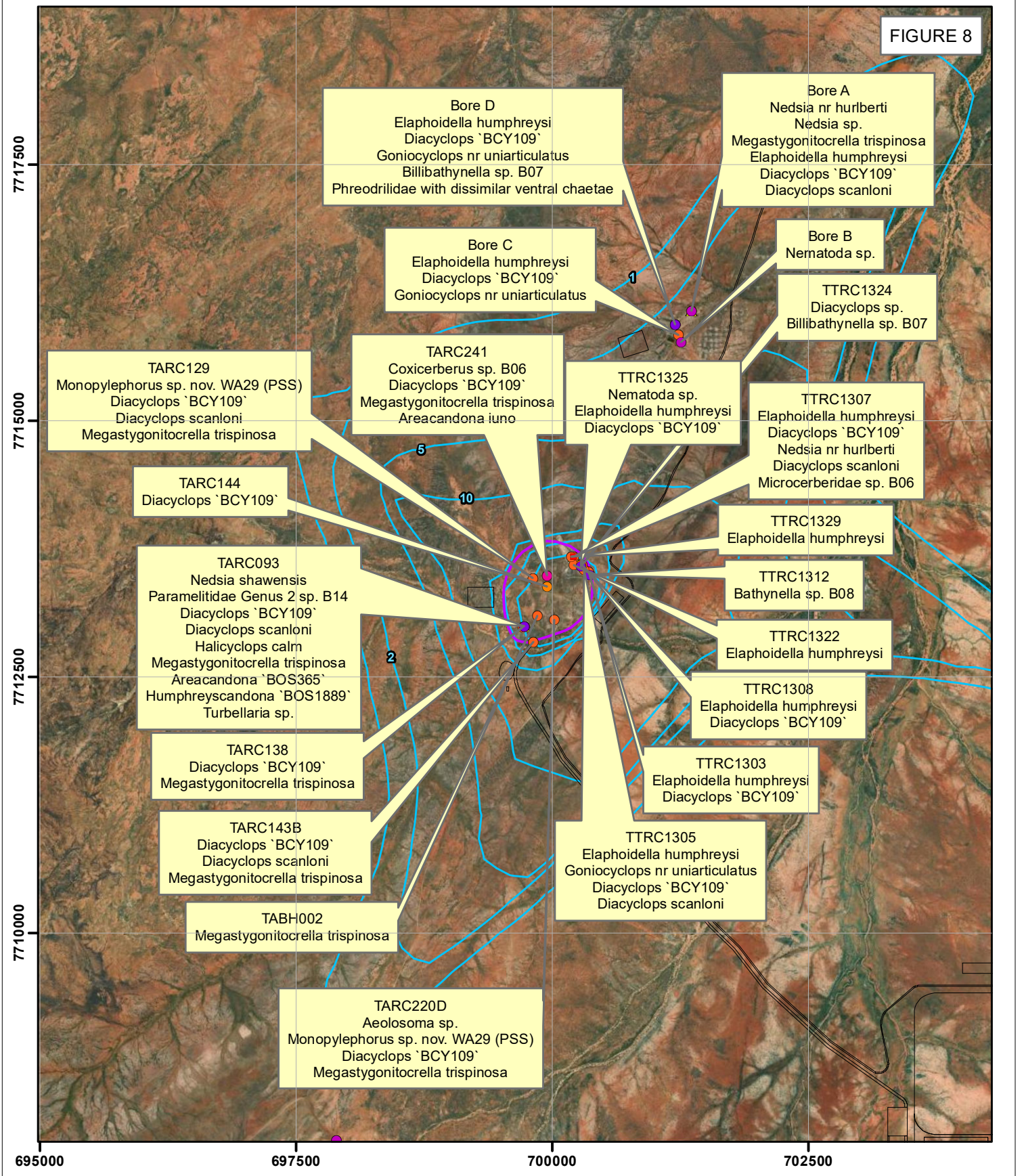
Project : Tabba Tabba - Subterranean Fauna

Date: September 2024

Dwg. No: 422-1/24/1-8

RESULTS
STYGOFAUNA IMPACT SITES
2013 & 2024

Rockwater



Data Source: Wildcat Resources (2024)

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

L:/GIS Projects/422-0 - Tabba Tabba/ Fig. 2024_1-8 - Results Stygo Impact Sites.mxd

Stygofauna - Group, Order

- Amphipoda, Amphipoda
- Copepoda, Cyclopoidae
- Copepoda, Harpacticoida
- Ispoda, Ispoda
- Ostracoda, Candonidae
- Ostracoda, Podocopida
- Syncarida, Bathynellacea

Pit Outline

Modelled Drawdown Contour (Rockwater, 2024)

Infrastructure (20240823)

1:50,000

A4

Grid: MGA 1994 Zone 50

Client: Wildcat Resources

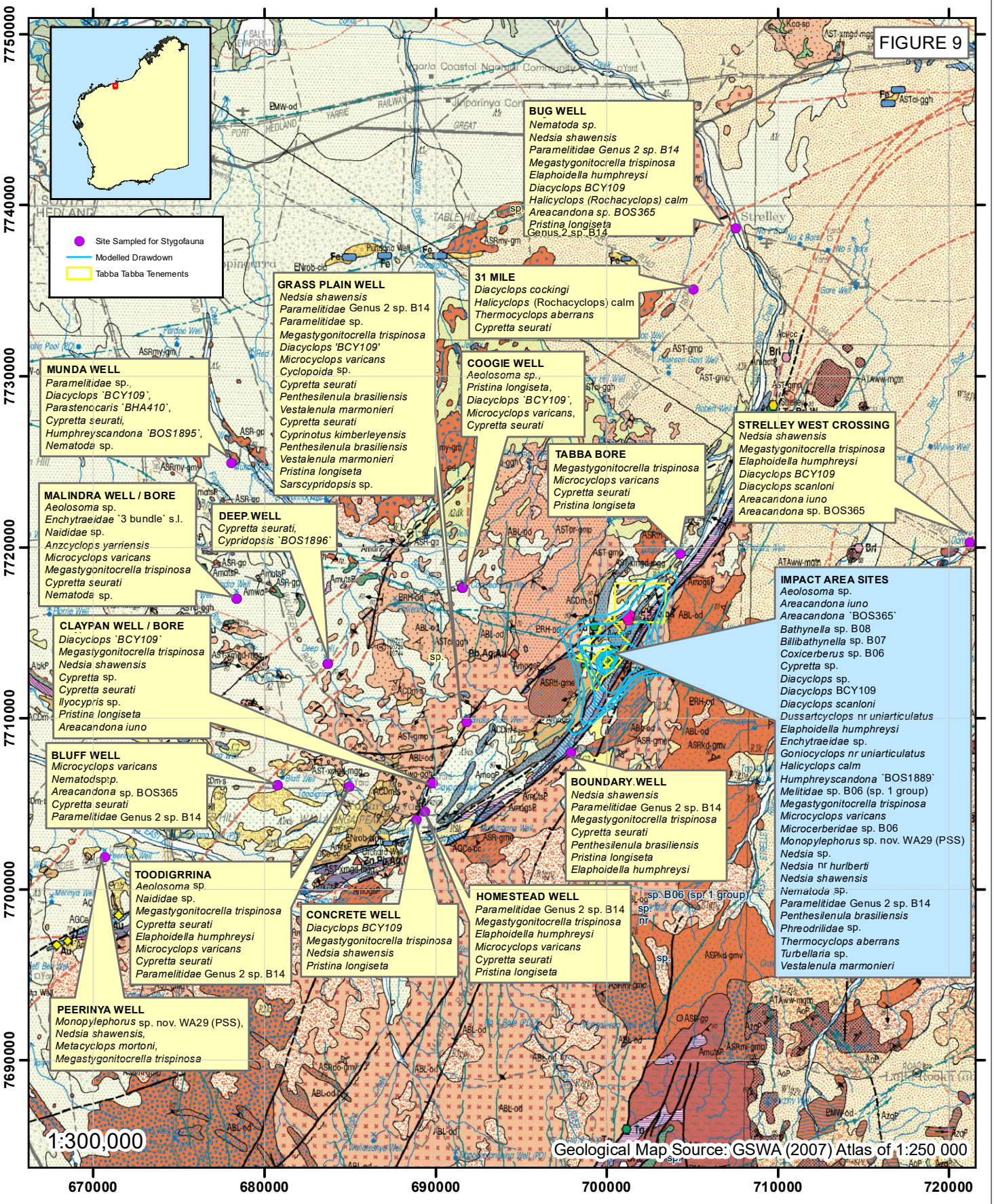
Project : Tabba Tabba - Subterranean Fauna

Date: October 2024

Dwg. No: 422-0/24/1-8

RESULTS
STYGOFAUNA IMPACT SITES
2013 & 2024

Rockwater



Client: Wildcat Resources

Project : Tabba Tabba - Subterranean Fauna

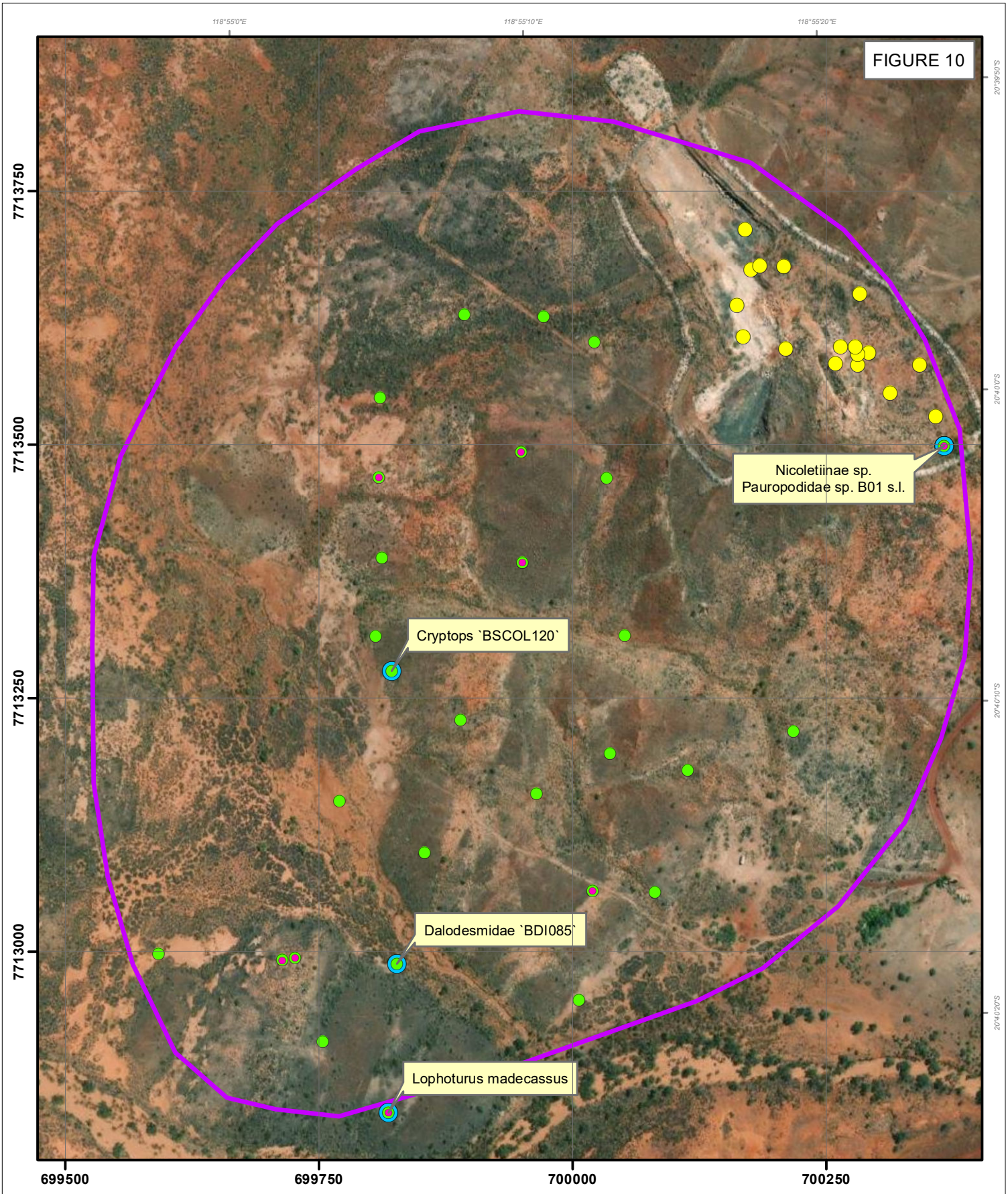
Date: October 2024

Dwg. No: 422-0/24/1-9

REGIONAL STYGOFAUNA RESULTS

Rockwater

FIGURE 10



Data Source: Wildcat Resources (2024)
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

L:/GIS Projects/422-0 - Tabba Tabba/
Fig. 2024_1-10 - Troglofauna Results.mxd

Troglofauna_Sampled_Sites
- R4
- R3
- R1

Troglofauna Present
Pit Outline

1:5,000
A4

Grid: MGA 1994
Zone 50

Client: Wildcat Resources

Project : Tabba Tabba - Subterranean Fauna

Date: October 2024

Dwg. No: 422-0/24/1-1

IMPACT AREA
TROGLOFAUNA SAMPLED SITES AND RESULTS
ROUND 1 (2013)
ROUNDS 3 & 4 (2024)

Rockwater

APPENDIX I

Troglofauna Habitat Assessment from Diamond Drill Core Interpretation

Three diamond core holes drilled from surface at Tabba Tabba provide insitu profiles of the geological sequence above the water table. Groundwater occurs at approximately 10 to 22 metres at the deposit.

Plate I-1: Unsaturated geological sequence at site TADD001 (0 to 20 m below ground level), located in the central part of the deposit.

Plate I-2 (cont.): Unsaturated geological sequence at site TADD001 (0 to 20 m below ground level), located in the central part of the deposit.

Plate I-3: Unsaturated geological sequence at site TADD009 (0 to 25 m below ground level), located north the of the deposit.

Plate I-4 (cont.): Unsaturated geological sequence at site TADD009 (0 to 25 m below ground level), located north the of the deposit.

Plate I-5: Unsaturated geological sequence at site TARC277D (0 to 13.75 m below ground level), located in the south-eastern part of the deposit.

APPENDIX II

Stygofauna Habitat Assessment from Diamond Drill Core Interpretation

Measured groundwater levels in the vicinity of the planned open pit are typically 10 to 22m below ground level (bgl

Plate II-1: Saturated geological sequence at site TADD001 showing the contact at the dolerite dyke (35.4 to 39 m bgl), and significant fracturing (water bearing) lower at 49.9 to 53.5 m bgl.

Plate II-2: Representative core photograph at site TADD009 (33 to 36.6 m below ground level), located north of the deposit.

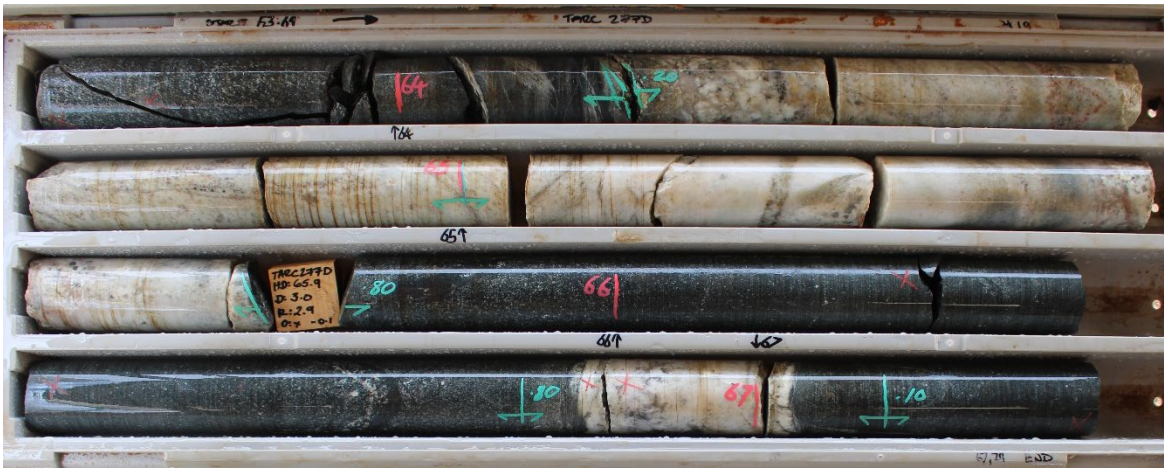


Plate II-3: Representative core photograph at site TARC277D (63.6 to 71 m below ground level), located in the south-eastern part of the deposit.

APPENDIX III

Subterranean Fauna Site and Sampling Details

Site Details											Sampling Details				Water Quality								
Site id	Zone	Easting	Northing	RL	Type	Status	Depth	WL (m)	Collar Height	Dip	Sampled Date	Sampled For	Number of Traps	Trap Depth	Method	Temperature (degrees)	Salinity (ppt)	EC (mS/cm)	pH	Turbidity NTU	ORP (mV)	DO (mg/L)	DO (% Sat)
ROUND 1																							
Bore A	50	701358	7716073	88	Production Bore	Impact	50	7.325	0.55	-90	17/04/2013	S	-	-	Down-hole	33.01	0.48	0.9161	6.53	0	192	4.71	65.7
Bore B	50	701258	7715768	91	Production Bore	Impact	33	9.84	0.43	-90	17/04/2013	S	-	-	Down-hole	31.73	0.26	0.5055	6.28	0	183	4.05	55.6
Bore C	50	701230	7715841	89	Production Bore	Impact	9.21	8.71	0.4	-90	17/04/2013	S	-	-	Down-hole	31.55	0.35	0.6866	7.21	51	161	4.58	62.7
Bore D	50	701197	7715940	89	Production Bore	Impact	60.75	7.76	0.61	-90	17/04/2013	S	-	-	Down-hole	29.73	0.18	0.3569	6.39	0	193	3.51	51.1
TTRC1301	50	700283	7713649	98	RC Hole	Impact	50	13.32	0	-90	18/04/2013	T	1	6.5	-	-	-	-	-	-	-	-	-
TTRC1303	50	700358	7713528	96	RC Hole	Impact	28	15.08	0.2	-90	18/04/2013	T	1	12.5	-	-	-	-	-	-	-	-	-
TTRC1304	50	700342	7713579	96	RC Hole	Impact	52	-	0	-90	18/04/2013	T	1	7.5	-	-	-	-	-	-	-	-	-
TTRC1305	50	700313	7713551	100	RC Hole	Impact	57	18.2	0	-60	18/04/2013	T	2	11, 15	-	-	-	-	-	-	-	-	-
TTRC1306	50	700168	7713607	114	RC Hole	Impact	20	DRY	-	-60	18/04/2013	T	1	9	-	-	-	-	-	-	-	-	-
TTRC1307	50	700208	7713676	101	RC Hole	Impact	56	16.06	0.01	-90	18/04/2013	T	2	9, 15	-	-	-	-	-	-	-	-	-
TTRC1308	50	700292	7713591	97	RC Hole	Impact	25	15.08	0	-90	18/04/2013	T	1	10	-	-	-	-	-	-	-	-	-
TTRC1309	50	700259	7713580	102	RC Hole	Impact	20	19.31	0	-90	18/04/2013	T	2	11, 17	-	-	-	-	-	-	-	-	-
TTRC1310	50	700170	7713712	110	RC Hole	Impact	22	DRY	0	-90	18/04/2013	T	1	9	-	-	-	-	-	-	-	-	-
TTRC1319	50	700162	7713638	111	RC Hole	Impact	27	DRY	0	-60	18/04/2013	T	2	9, 16	-	-	-	-	-	-	-	-	-
TTRC1322	50	700210	7713595	105	RC Hole	Impact	105	36.22	0.2	-60	18/04/2013	T	2	12, 28	-	-	-	-	-	-	-	-	-
TTRC1324	50	700281	7713579	105	RC Hole	Impact		17.85	-0.25	-60	18/04/2013	T	1	9	-	-	-	-	-	-	-	-	-
TTRC1325	50	700281	7713590	101	RC Hole	Impact	30	18.7	0.04	-60	18/04/2013	T	1	15	-	-	-	-	-	-	-	-	-
TTRC1326	50	700279	7713597	103	RC Hole	Impact	51	DRY	-	-60	18/04/2013	T	1	4.5	-	-	-	-	-	-	-	-	-
TTRC1327	50	700264	7713597	101	RC Hole	Impact	30	18.6	0	-60	18/04/2013	T	1	8	-	-	-	-	-	-	-	-	-
TTRC1328	50	700176	7713673	109	RC Hole	Impact	27	26.63	0.1	-60	18/04/2013	T	1	13	-	-	-	-	-	-	-	-	-
TTRC1329	50	700185	7713677	108	RC Hole	Impact	39	20.56	0.05	-60	18/04/2013	T	1	12	-	-	-	-	-	-	-	-	
ROUND 2																							
31 Mile Well (Strelley West Crossing)	50	705059	7735116	49	Well	Reference	6.4	6.19	-	-90	28/05/2013	S (N)	-	-	Down-hole	26.83	0.5	0.933	7.94	87	207	3.47	43.1
At crossing	50	721217	7720288	65	Water Bore (?Main Roads)	Reference	51	5.77	0.34	-90	27/05/2013	S (N)	-	-	Down-hole	31.56	0.4	0.808	6.92	0	190	3.59	48.5
Bluff Well	50	680767	7706064	93	Well	Reference	-	14.23	0.3	-90	29/05/2013	S (N +P)	-	-	-	-	-	-	-	-	-	-	-
Bore A	50	701358	7716073	88	Production Bore	Impact	50	8.3	0.55	-90	29/05/2013	S (N)	-	-	Down-hole	32.05	0.5	1.005	7.58	0	151	1.22	16.6
Bore B	50	701258	7715768	91	Production Bore	Impact	33	11.07	0.43	-90	30/05/2013	S (N +P)	-	-	Down-hole	31.16	0.4	0.745	6.52	0.7	175	1.17	15.7
Bore D	50	701197	7715940	89	Production Bore	Impact	60.75	9.1	0.61	-90	30/05/2013	S (N)	-	-	Down-hole	28.94	0.2	0.414	7.49	0	137	0.91	11.8
Boundary Well	50	697893	7707977	-	Station Well	Reference	-	7.09	0.3	-90	30/05/2013	S (N)	-	-	Down-hole	30.13	1	1.866	6.55	0	214	3.56	48.6
Concrete Well	50	688891	7704065	-	Well	Reference		7.17	-	-90	29/05/2013	S (N)	-	-	Down-hole	28.57	3.5	6.343	7.92	0.1	225	4.53	59.1
Grass Plain Well	50	691818	7707769	115	Well	Reference		8.21	0.5	-90	29/05/2013	S (N)	-	-	Down-hole	29.4	1.6	2.954	6.75	0	225	3.58	46.8
Homestead Well	50	689367	7704572	93	Station Well	Reference	14.76	6.72	0	-90	30/05/2013	S (N+P)	-	-	Pumped	30.91	1.3	2.426	6.73	1.2	217	4.56	61.1
Old Yards (Bug Well)	50	707054	7738496	-	Well	Reference	18	6.55	0.8	-90	28/05/2013	S (N)	-	-	Down-hole	30.43	1.8	3.369	7.22	0	214	4.99	66.5
Tabba Bore	50	704315	7719653	-	Stock Bore	?		4.11	0.3	-90	30/05/2013	S (N)	-	-	Down-hole	30.4	0.7	1.274	6.93	2.2	62	2.27	30
TTRC1301	50	700283	7713649	98	RC Hole	Impact	50	13.57	0	-90	30/05/2013	S (N)	-	-	Down-hole	31.2	0.7	1.406	6.81	3.3	163	1.34	18.1
TTRC1303	50	700358	7713528	96	RC Hole	Impact	28	15.17	0.2	-90	28/05/2013	S (N)	-	-	Down-hole	32.31	0.7	1.311	6.49	5.3	186	0.86	11.8
TTRC1305	50	700313	7713551	100	RC Hole	Impact	57	18.49	0	-60	28/05/2013	S (N)	-	-	-	-	-	-	-	-	-	-	-
TTRC1307	50	700208	7713676	101	RC Hole	Impact	56	16.29	0.01	-90	30/05/2013	S (N)	-	-	Down-hole	31.77	0.5	1	6.64	35.2	192	0.97	13
TTRC1308	50	700292	7713591	97	RC Hole	Impact	25	15.23	0	-90	30/05/2013	S (N)	-	-	-	-	-	-	-	-	-	-	-
TTRC1309	50	700259	7713580	102	RC Hole	Impact	20	16.98	0	-90	28/05/2013	S (N)	-	-	Down-hole	32.39	0.2	0.331	5.9	130.5	166	0.4	5.5
TTRC1312	50	700366.55	7713499.2		RC Hole	Impact	30	13.6	-	-90	28/05/2013	S (N)	-	-	Down-hole	32.2	0.7	1.316	6.28	0.9	183	1.56	21.3
TTRC1324	50	700281	7713579	105	RC Hole	Impact		18.14	-0.25	-60	28/05/2013	S (N)	-	-	-	-	-	-	-	-	-	-	-
TTRC1325	50	700281	7713590	101	RC Hole	Impact	30	18.95	0.04	-60	30/05/2013	S (N)	-	-	-	-	-	-	-	-	-	-	-
TTRC1327	50	700264	7713597	101	RC Hole	Impact	30	19	0	-60	30/05/2013	S (N)	-	-	-	-	-	-	-	-	-	-	-
Walla 1 (Solar Mill)	50	700255	7713084	-	Stock Bore	TBD	-	-	-	-90	28/05/2013	S (P)	-	-	Pumped	30.56	2.2	4.027	6.19	0	219	2.24	30.6
Walla 2 (Toodigrina)	50	684967	7706025	104	Well	Reference	-	6.89	-	-90	29/05/2013	S (N)	-	-	Down-hole	30.05	0.8	1.515	6.72	0.2	208	2.45	32.2
Walla 3	50	689769	7706216	108	Bore	Reference	-	10.19	0.7	-90	29/05/2013	S (N)	-	-	Down-hole	30.51	2.9	5.349	6.69	1.3	231	1.63	21.9
Walla 4 (Claypan Well)	50	689831	7706235	109	Well	Reference	-	10	1.2	-90	29/05/2013	S (N)	-	-	Down-hole	29.89	1.1	2.076	6.68	0	212	4.45	58.7
ROUND 3																							

Site Details											Sampling Details				Water Quality								
Site id	Zone	Easting	Northing	RL	Type	Status	Depth	WL (m)	Collar Height	Dip	Sampled Date	Sampled For	Number of Traps	Trap Depth	Method	Temperature (degrees)	Salinity (ppt)	EC (mS/cm)	pH	Turbidity NTU	ORP (mV)	DO (mg/L)	DO (% Sat)
TABH001	50	699853.83	7713098	101	BH	Impact	54	13.20	0	-90	12/03/2024	S / T	0	-	Bailed	32.8	-	2,564	6.4	-	-	0.42	5.8
TABH002	50	700000.82	7712959.7	76.8	BH	Impact	54	10.96	0.53	-90	13/03/2024	S	0	-	Pumped	33.2	-	3,807	6.6	-	-	2.76	38.5
TARC026	50	699964.58	7713156.2	99.1	RC	Impact	115	18.30	0	-60.07	14/03/2024	T	1	7.0	-	-	-	-	-	-	-	-	-
TARC084	50	699754.07	7712911	98.5	RC	Impact	90	DRY	0	-60	1/01/1900	T	-	-	-	-	-	-	-	-	-		
TARC093	50	699726.26	7712994.6	96.7	RC	Impact	18	14.39	0	-60	13/03/2024	T	1	8.0	-	-	-	-	-	-	-	-	-
TARC120	50	699770.26	7713148.8	93.4	RC	Impact	150	DRY	0	-55.84	14/03/2024	T	1	13.0	-	-	-	-	-	-	-	-	-
TARC123	50	699889.57	7713228.3	96.9	RC	Impact	204	DRY	0	-56.1	13/03/2024	T	1	11.0	-	-	-	-	-	-	-	-	-
TARC125	50	699805.73	7713311.3	94.6	RC	Impact	120	12.86	0	-56.52	14/03/2024	S / T	1	7.0	Bailed	31.0	-	6,237	7.10	-	-	1.67	21.7
TARC127	50	699812.52	7713388.2	96.2	RC	Impact	204	14.60	0	-54.36	13/03/2024	T	1	6.0	-	-	-	-	-	-	-	-	-
TARC129	50	699809.25	7713467.9	96.1	RC	Impact	150	-	0	-54.28	14/03/2024	S / T	1	8.0	Bailed	31.7	-	3,488	6.80	-	-	2.25	30.6
TARC132	50	700051.78	7713312	99.9	RC	Impact	336	17.71	0	-55.14	14/03/2024	T	1	6.5	-	-	-	-	-	-	-	-	-
TARC134	50	700037.2	7713195.6	102	RC	Impact	378	22.55	0	-55.11	13/03/2024	T	1	9.0	-	-	-	-	-	-	-	-	-
TARC135	50	699827.03	7712988	92.6	RC	Impact	216	DRY	0	-54.78	13/03/2024	T	1	6.5	-	-	-	-	-	-	-	-	-
TARC138	50	699713.52	7712992	96.8	RC	Impact	120	15.15	0	-56.21	13/03/2024	T	1	7.0	-	-	-	-	-	-	-	-	-
TARC143B	50	699818.85	7712841.6	97.5	RC	Impact	216	16.62	0	-55.19	14/03/2024	S / T	1	7.0	Bailed	32.0	-	3,862	7.10	-	-	5.01	68.7
TARC144	50	699950.61	7713384.3	101	RC	Impact	330	20.15	0	-55	13/03/2024	T	1	8.0	-	-	-	-	-	-	-	-	-
TARC147	50	700033.87	7713467.5	105	RC	Impact	366	23.02	0	-59.71	14/03/2024	S / T	1	10.0	Bailed	32.30	-	3,516	7.00	-	-	2.25	33.4
TARC149	50	699971.24	7713626.4	99.4	RC	Impact	300	18.31	0	-55.3	14/03/2024	T	1	7.0	-	-	-	-	-	-	-	-	-
TARC157	50	699810.39	7713546.5	96.2	RC	Impact	150	Wet	0	-54.82	13/03/2024	T	1	3.0	-	-	-	-	-	-	-	-	-
TARC158	50	699893.19	7713628.6	98.2	RC	Impact	150	16.84	0	-55	13/03/2024	T	1	8.5	-	-	-	-	-	-	-	-	-
TARC178	50	699592	7712998	99	RC	Impact		-	0	-55	14/03/2024	T	1	6.0	-	-	-	-	-	-	-	-	-
TARC219D	50	700081.4	7713059	97.1	RCDD	Impact	366	13.55	0	-58.01	14/03/2024	T	1	7.0	-	-	-	-	-	-	-	-	-
TARC220D	50	700019.57	7713060.3	94.8	RCDD	Impact	126	16.57	0	-55.57	12/03/2024	S / T	1	6.5	Bailed	32.5	-	2,099	6.6	-	-	2.6	35.7
TARC230D	50	700113.41	7713179.4	99.2	RCDD	Impact	192	19.49	0	-55	14/03/2024	S / T	~~1~~	~~10.0~~	Bailed	32.1	-	3,860	6.90	-	-	1.92	26.3
TARC241	50	699949	7713493	105	RC	Impact	300	18.77	0	-55.71	14/03/2024	S / T	1	10.0	Bailed	32.5	-	2,249	7.10	-	-	3.90	53.8
TARC247	50	700021.68	7713601.9	101	RC	Impact	348	19.33	0	-60.27	13/03/2024	T	1	7.5	-	-	-	-	-	-	-	-	-
TARC260	50	700006.15	7712952.5	93.1	RC	Impact	342	12.14	0	-55.54	13/03/2024	S / T	1	8.0	Bailed	30.7	-	3,500	6.8	-	-	1.98	26.3
TTRC1312	50	700366.55	7713499.2		RC	Impact	30	15.36	0.15	-90	13/03/2024	S / T	1	10.0	Bailed	32.20	-	1,328	6.60	-	-	2.50	34.1
TBRC3210	50	700218	7713218	100	RC	Impact	120	-	0	-66	13/03/2024	T	0	-	-	-	-	-	-	-	-	-	-
TADD004	50	699821.56	7713277	75.5	DD	Impact	219.1	18.46	0	-80.45	13/03/2024	T	1	8.0	-	-	-	-	-	-	-	-	-
ROUND 4																							
TABH002	50	700,001	7,712,960	76.8	BH	Impact	54	10.96	0.53	-90	30/04/2024	S	-	-	Pumped	33.2	-	3,807	6.6	-	-	2.76	38.5
TARC093	50	699,726	7,712,995	96.7	RC	Impact	18	14.39	0	-60	30/04/2024	S / T	-	-	Bailed	28.4	-	4,072	6.70	-	-	3.52	45.3
TARC129	50	699,809	7,713,468	96.1	RC	Impact	150	-	0	-54.28	29/04/2024	S / T	-	-	Bailed	31.7	-	3,488	6.80	-	-	2.25	30.6
TARC138	50	699,714	7,712,992	96.8	RC	Impact	120	15.15	0	-56.21	30/04/2024	S / T	-	-	Bailed	30.0	-	4,230	7.20	-	-	3.44	44.9
TARC143B	50	699,819	7,712,842	97.5	RC	Impact	216	16.62	0	-55.19	30/04/2024	S / T	-	-	Bailed	32.0	-	3,862	7.10	-	-	5.01	68.7
TARC144	50	699,951	7,713,384	101	RC	Impact	330	20.15	0	-55	30/04/2024	S / T	-	-	-	-	-	-	-	-	-	-	-
TARC220D	50	700,020	7,713,060	94.8	RCDD	Impact	126	16.57	0	-55.57	29/04/2024	S / T	-	-	Bailed	32.5	-	2,099	6.6	-	-	2.6	35.7
TARC241	50	699,949	7,713,493	105	RC	Impact	300	18.77	0	-55.71	29/04/2024	S / T	-	-	Bailed	32.5	-	2,249	7.10	-	-	3.90	53.8
TTRC1312	50	700,367	7,713,499		RC	REF	30	15.36	0.15	-90	30/04/2024	S / T	-	-	Bailed	32.20	-	1,328	6.60	-	-	2.50	34.1
BLUFF WELL	50	680,767	7,706,064		SW	REF	-	21.29	-	-90	1/05/2024	S	-	-	PUMPED	31.8	-	3,650	7.6	-	-	7.15	97.8
BORE A	50	701,358	7,716,073		PB	REF	-	15.18	-	-90	30/04/2024	S	-	-	Bailed	32.3	-	694	7.5	-	-	6.23	86.5
BORE B	50	701,258	7,715,768		PB	REF	-	18.46	-	-90	30/04/2024	S	-	-	Bailed	32.7	-	929	7.3	-	-	2.58	35.3
BORE D	50	701,197	7,715,940		PB	REF	-	16.38	-	-90	30/04/2024	S	-	-	Bailed	30.7	-	369	7.3	-	-	4.6	61.6
BOUNDARY WELL	50	697,893	7,707,977		SW	REF	-	9.70	-	-90	1/05/2024	S	-	-	Bailed	26.8	-	1,363	7.5	-	-	4.68	58.2
BUG WELL	50	707,543	7,738,660		SW	REF	-	9.99	-	-90	3/05/2024	S	-	-	Bailed	27	-	1,418	7.9	-	-	3.13	39.3
CLAYPAN BORE	50	689,771	7,706,217		SB	REF	-	13.99	0.7	-90	1/05/2024	S	-	-	Bailed	29.6	-	9,433	7	-	-	4.19	54.9
CLAYPAN WELL	50	689,831	7,706,235		SW	REF	-	13.80	-	-90	1/05/2024	S	-	-	Bailed	27.7	-	1,628	7.4	-	-	6.16	78
CONCRETE WELL	50	688,891	7,704,065		SW	REF	-	-	-	-90	1/05/2024	S	-	-	Bailed	31.4	-	241	7.3	-	-	6.01	82.6
COOGIE BORE	50	691,557	7,717,663		SB	REF	-	9.25	0.56	-90	1/05/2024	S	-	-	Bailed	30.5	-	3,699	7.1	-	-	1.68	22.4
COOGIE WELL	50	691,590	7,717,627		SW	REF	-	7.48	-	-90	1/05/2024	S	-	-	Bailed	30.5	-	3,699	7.1	-	-	1.68	22.4
DEEP BORE	50	683,712	7,713,191		SW	REF	-	-	-	-90	2/05/2024	S	-	-	-	-	-	-	-	-	-	-	-

Site Details											Sampling Details				Water Quality								
Site id	Zone	Easting	Northing	RL	Type	Status	Depth	WL (m)	Collar Height	Dip	Sampled Date	Sampled For	Number of Traps	Trap Depth	Method	Temperature (degrees)	Salinity (ppt)	EC (mS/cm)	pH	Turbidity NTU	ORP (mV)	DO (mg/L)	DO (% Sat)
DEEP WELL	50	683,712	7,713,191		SB	REF	-	-	-	-90	2/05/2024	S	-	-	Bailed	29.3	-	5,631	8.2	-	-	2.35	30.7
GRASS PLAINS WELL	50	691,815	7,709,771		SW	REF	-	12.57	-	-90	1/05/2024	S	-	-	Bailed	30.4	-	1,812	7.3	-	-	3.74	49.7
HOMESTEAD WELL	50	689,367	7,704,572		SW	REF	-	-	-	-90	1/05/2024	S	-	-	PUMPED	31.5	-	2,350	7.2	-	-	5.87	79.5
MALINDRA BORE	50	678,357	7,717,026		SB	REF	-	-	-	-90	2/05/2024	S	-	-	PUMPED	31.8	-	2,457	7.1	-	-	2.05	28.5
MALINDRA WELL	50	678,357	7,717,026		SW	REF	-	-	-	-90	2/05/2024	S	-	-	-	-	-	-	-	-	-	-	-
MUNDA WELL	50	678,081	7,724,930		SW	REF	-	6.30	0.3	-90	1/05/2024	S	-	-	Bailed	30.8	-	2,191	7.9	-	-	7.14	95.4
PEERINYA WELL	50	670,687	7,701,894		SW	REF	4.72	3.22		-90	2/05/2024	S	-	-	Bailed	29.9	-	12,650	7.8	-	-	5.39	71.6
SOLAR MILL	50	700,255	7,713,084		SW	Impact	-	11.32	0.64	-90	30/04/2024	S	-	-	Bailed	31.8	-	1,642	7.1	-	-	3.01	41.5
TAMB001	50	699,575	7,712,913		MB	Impact	-	11.98	-	-90	30/04/2024	S	-	-	Bailed	31	-	3,539	7.3	-	-	3.36	45.4
TAMB002	50	699,891	7,712,851		MB	Impact	-	13.88	-	-90	30/04/2024	S	-	-	Bailed	31.9	-	3,322	7.1	-	-	2.21	30.1
TAMB003	50	699,534	7,713,607		MB	Impact	-	11.28	-	-90	2/05/2024	S	-	-	Bailed	29.8	-	9,206	7	-	-	2.54	33.4
TAMB004	50	700,337	7,713,177		MB	Impact	-	21.22	0.8	-90	30/04/2024	S	-	-	Bailed	32.1	-	3,077	7.1	-	-	2.85	39
TAMB005	50	700,145	7,713,815		MB	Impact	-	20.53	0.64	-90	30/04/2024	S	-	-	Bailed	32	-	1,740	7	-	-	2.79	38.3
TAMB006	50	699,449	7,713,284		MB	Impact	-	11.88	-	-90	2/05/2024	S	-	-	Bailed	28.8	-	3,571	7.4	-	-	2.24	28.9
TAWB003	50	699,701	7,713,875		RC	Impact	-	12.26	-	-90	2/05/2024	S	-	-	Bailed	29.9	-	3,530	7.1	-	-	2.97	39.1
TOODIGRINNA WELL	50	684,967	7,706,017		SW	REF	-	-	-	-90	1/05/2024	S	-	-	PUMPED	31.4	-	1,593	7.1	-	-	3.99	53.5

APPENDIX IV

Complete results of stygofauna sampling at Tabba Tabba Tantalum Project (2013 and 2024)

	Order	Family	Taxon	n	Project Area[1]	Reference
CRUSTACEA						
Amphipoda	Amphipoda	Melitidae	*Pilbarana* sp. B06 (Prev. Melitidae sp. B06 sp.1 group)	1	Bore A	2 species within genus. Widespread across Pilbara
	Amphipoda	Melitidae	*Nedsia shawensis*	102+19	Bore A[1], TTRC1307, TARC093	Boundary Well, Claypan Well, Concrete Well, Grass Plain Well, Old Yards, Solar Mill, Strelley West Crossing, Peerinya Well, Bug Well
	Amphipoda	Melitidae	Paramelitidae Genus 2 sp. B14	5	TARC093	Bluff Well, Boundary Well, Grass Plain Well, Homestead Well, Toodigrrina
Copepoda	Harpacticoida	Ameiridae	*Megastygonitocrella trispinosa*	52+256	Bore A, TABH002, TARC093, TARC129, TARC138, TARC143B, TARC220D, TARC241	Boundary Well, Claypan Well, Concrete Well, Grass Plain Well, Homestead Well, Old Yards, Tabba Bore, Toodigrrina, Strelley West Crossing, Malindra Well, Peerinya Well, Claypan Bore
	Harpacticoida	Canthocamptidae	*Elaphoidella humphreysi*	445+1	Bores A, C & D, TTRC1303, 1305, 1307, 1308, 1322, 1325 & 1329	Homestead Well, Old Yards, Strelley West Crossing, Toodigrrina, Catho Well (Biota 2010), Boundary Well
	Harpacticoida	Parastenocaridae	*Parastenocaris* `BHA410`	11	-	Munda Well
	Cyclopoida	Cyclopidae	*Diacyclops* BCY109' (prev. *D. cockingi*)	249+117	Bores A, C & D, TTRC1303, 1305, 1307, 1308 & 1325, TARC093, TARC129, TARC138, TARC143B, TARC144, TARC220D and TARC241	31 Mile, Concrete Well, Grass Plain Well, Old Yards, Strelley West Crossing, Coogie Well, Claypan Well, Munda Well
	Cyclopoida	Cyclopidae	*Diacyclops scanloni*	40+9	Bore A, TTRC1305, TTRC1307, TARC093, TARC129, TARC143B	Strelley West Crossing
	Cyclopoida	Cyclopidae	*Diacyclops* sp. (juveniles)	4	Bore A, TTRC1324	-
	Cyclopoida	Cyclopidae	*Halicyclops* CALM	7	TARC093	31Mile, Old Yards, Solar Mill, Pilbara region
	Cyclopoida	Cyclopidae	*Goniocyclops* nr *uniarticulatus*	29	Bores C & D, TTRC1305	45 km NNE of Paraburdoo (Bennelongia, unpub. data)
	Cyclopoida	Cyclopidae	*Microcyclops varicans*	24	Bore B	Grass Plain Well, Homestead Well, Tabba Bore, Toodigrrina, Bluff Well, Coogie Well, Malindra Well
	Cyclopoida	Cyclopidae	*Anzcyclops yarriensis*	2	-	Malindra Well
	Cyclopoida	Cyclopidae	*Metacyclops mortoni*	27	-	Peerinya Well
Isopoda		Microcerberidae	*Coxicerberus* sp. B06	1+2	TTRC1307, TARC241	-
Ostracoda	Podocopida	Cyprididae	*Cypretta* sp.	5	Bores A, B, D	Claypan Well, Solar Mill
	Podocopida	Cyprididae	*Cypretta seurati*	122+134	-	Tabba Bore, 31 Mile, Bluff Well, Coogie Well, Claypan

	Order	Family	Taxon	n	Project Area[1]	Reference
						Well, Munda Well, Grassplain Well, Boundary Well, Homestead Well, Toodigrrina, Malindra Well, Deep Bore
	Podocopida	Cyprididae	*Cypridopsis* `BOS1896`	12	-	Deep Well
	Podocopida	Cyprididae	*Sarscypridopsis* sp.	1	-	Grassplain Well
	Podocopida	Darwinulidae	*Penthesilenula brasiliensis*	10+6	Bore D	Boundary Well, Grass Plain Well
	Podocopida	Darwinulidae	*Vestalenula marmonieri*	7	Bore D	Grass Plain Well
	Podocopida	Candonidae	*Areacandona iuno*	33	TARC093, TARC241	Northern Pilbara distribution, Strelley West Crossing, Claypan Bore
	Podocopida	Candonidae	*Areacandona* BOS365	13	TARC093	Bug Well, Strelley West Crossing, Bluff Well
	Podocopida	Candonidae	*Humphreyscandona* BOS1889	1	TARC093	
	Podocopida	Candonidae	*Humphreyscandona* BOS1895	3	-	Munda Well
Syncarida	Bathynellacea	Bathynellidae	*Bathynella* sp. B08	1	TTRC1312 (outside pit)	-
	Bathynellacea	Parabathynellidae	*Billibathynella* sp. B07	2	Bore D, TTRC1324	-
	Bathynellacea	Parabathynellidae	*Atopobathynella* sp. (juv.)	1	TARC093	
ANNELIDA						
Polychaeta	Incertae sedis	Aeolosomatidae	*Aeolosoma* sp.	10	TARC220D	Coogie Well, Toodigrrina, Malindra Well
OLIGOCHAETA						
Oligochaeta	Tubificida	Enchytraeidae	Enchytraeidae sp.	1	Bore D	-
	Tubificida	Enchytraeidae	Enchytraeidae '3 bundle' s.l. (short sclero)	12	TARC132	Malindra Well
	Tubificida	Phreodrilidae	Phreodrilidae with dissimilar ventral chaetae (fragments)	2	Bore D	
	Tubificida	Naididae	*Monopylephorus* sp. nov. WA29 (ex Pristina WA3) (PSS)	49	TARC129, TARC220D	Peerinya Well
	Tubificida	Naididae	Naididae sp.	6	-	Toodigrrina, Malindra Well
	Tubificida	Naididae	*Pristina longiseta*	82+52	-	Concrete Well, Grass Plain Well, Coogie Well, Boundary Well, Homestead Well
PLATYHELMINTHES						
Turbellaria	-	-	Turbellaria sp.*	1	TARC093	
			TOTAL	992		

* Denotes taxa not expected to be identified to species level (EPA, 2007)

[1] Bore A was previously considered a reference site, but will be affected by drawdown associated with pit dewatering

Highlighted sites (and abundance) relate to 2024 collections

Note:

APPENDIX V

Memorandum: Troglofauna habitat outside the Tabba Tabba mine designs (Wildcat resources 2024)

13/08/2024

MEMORANDUM

To: Matt Holmes, Nick Everlegh

From: Sam Hoppe

CC: Torrin Rowe, Ajanth Saverimutto

Subject: Troglofauna habitat outside the Tabba Tabba mine designs

Several troglofauna species were identified within exploration drillholes (sampling sites) at the Tabba Tabba project that will ultimately be impacted by mine pit designs. The purpose of this memo is to show evidence that the host geology is not unique and not confined strictly to the Tabba Tabba mine development area. Wildcat is of the opinion that the following are reasons similar troglofauna habitat would exist outside the mine designs:

- Wildcats modelling of the host geology outside of the mine designs is consistent with that which will be impacted.
- Standing water level is consistent across the project area which would create similar conditions for troglofauna habitat (subterranean voids in rock above the water table).
- The host geology is extensive throughout the region with much of it having an identical weathering regime which would match conditions at Tabba Tabba (minimal cover/fresh at surface).

Regional Geology

The Millindinna Intrusion is the host to the pegmatites at Tabba Tabba. It belongs to the Sisters Supersuite which has an inferred age range of 2955 – 2940 Ma. It consists of deformed mafic to ultramafic rocks and is present for over 90km of strike extent throughout the region. A significant portion of the Millindinna is exposed at surface with minimal recent depositional cover obscuring the unit from surface as is seen at Tabba Tabba (Figure 1).

Local Geology

The Millindinna unit is extensive throughout the mining leases at Tabba Tabba and is the main host to the pegmatite mineralisation. Troglofauna have been identified above the standing water level within this gabbroic unit. The Millindinna gabbro has been intersected extensively in drilling as evidenced by Figure 2 to Figure 5 below. Figures 2 to 4 show the potential pit design and sampling site locations where troglofauna was identified. Figure 5 shows a cross section example of one of the sampling sites at Tabba Tabba.

Similar regional analogues

King Col – De Grey Mining

De Grey's drilling at King Col 22km to the south-west has intersected what Wildcat considers very similar geological conditions. RC Drilling in 2017 intersected pegmatites hosted by Gabbro with a very similar regolith regime, nearly fresh from surface as evidenced by Figure 6 to Figure 8. The similar geology found at King Col is considered a similar habitat for troglofauna to that at Tabba Tabba.

Strelley – Wodgina Lithium Pty Ltd

Open file RC drilling at Strelley by Wodgina Lithium Pty Ltd intersected similar mafic package to that at Tabba Tabba 18km to the north-east. As evidenced by drill logs, Figure 9 and Figure 10 there is little to no cover present, and pegmatites are hosted within mafic to ultramafic rocks of the Milindinna intrusion. It is of the opinion that this geological environment is an analogue to that at Tabba Tabba and would provide a similar troglofauna habitat.

External References:

Wodgina Lithium Pty Ltd – Final Surrender Report - 2018

https://wamex.dmp.wa.gov.au/Wamex/Search/ReportDetails?ANumber=107830

De Grey Mining Ltd – Co-Funded Drilling report - 2018

https://wamex.dmp.wa.gov.au/Wamex/Search/ReportDetails?ANumber=118152

Figures:

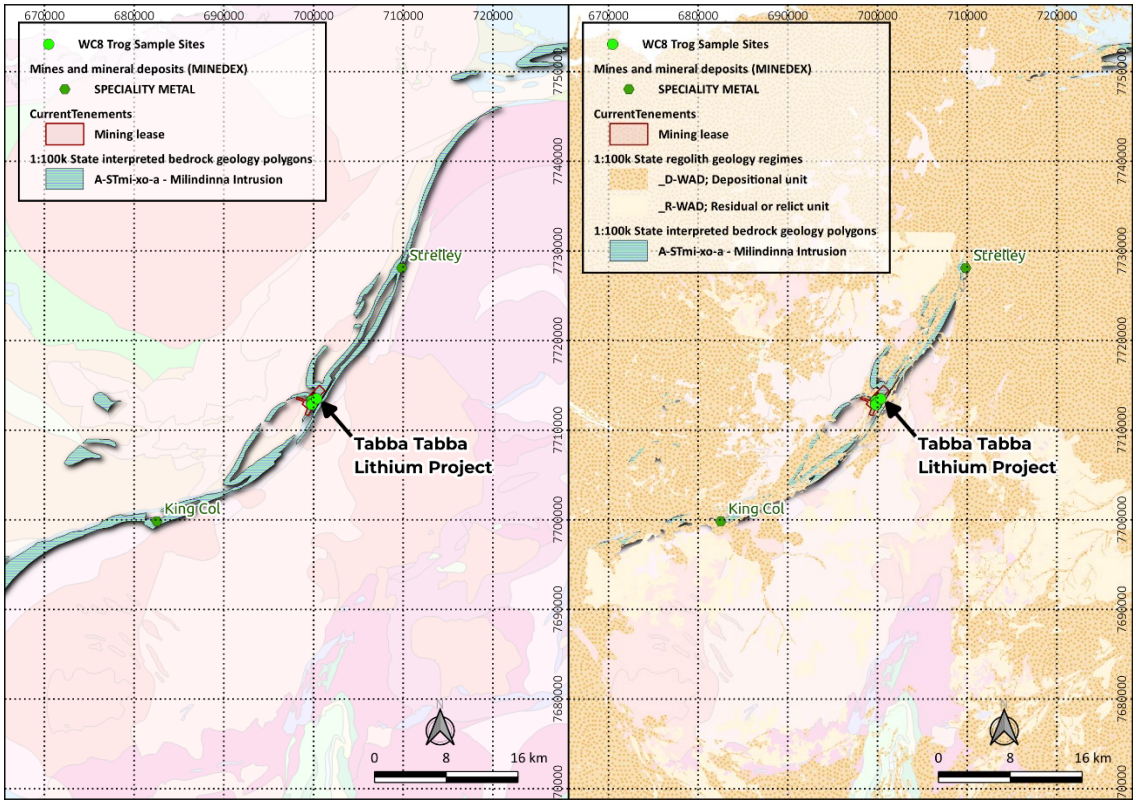


Figure 1: Regional geology highlighting the extent of the Millindinna intrusive along the length of the Tabba Tabba shear zone. Location of prospects with deeper drilling encountering similar geology are also shown.

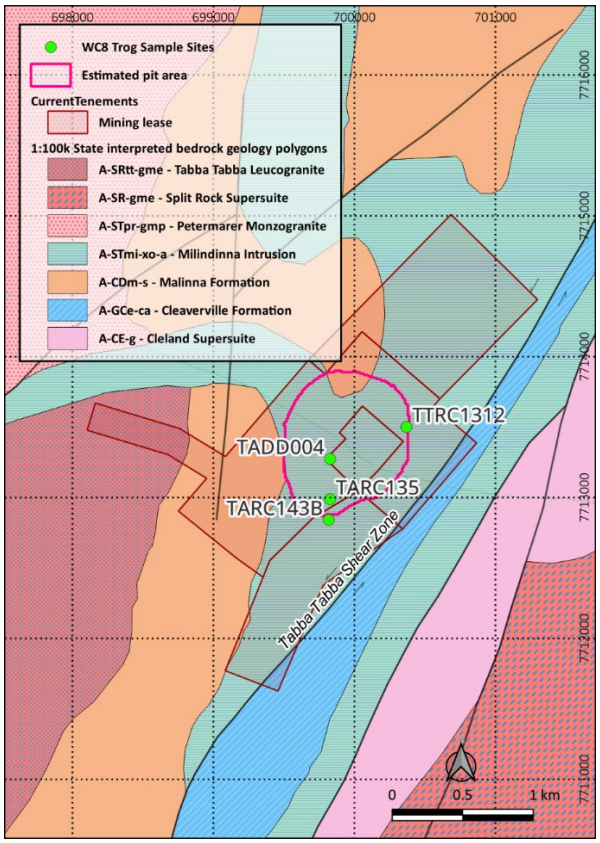


Figure 2: Local geology at the Tabba Tabba Project with troglofauna sample sites and preliminary pit design crest.

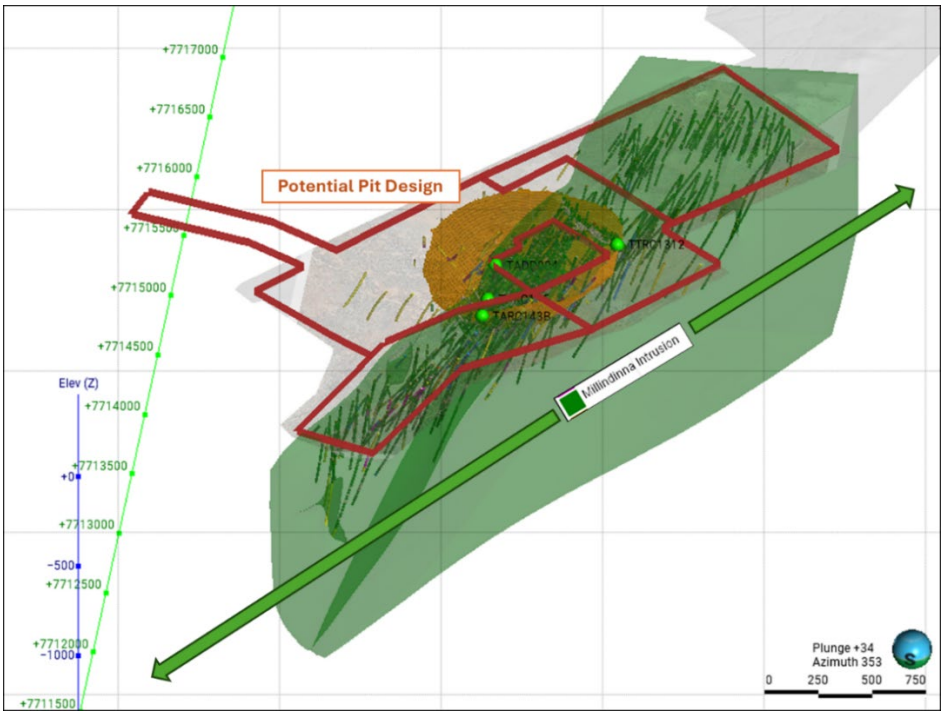


Figure 3: Wildcats modelling of the Millindinna intrusion (green in 3D and drill traces) at Tabba Tabba based on over 100,000m of drilling. Note that the modelling is clipped to Wildcats tenure only and the unit continues along strike SW-NE.

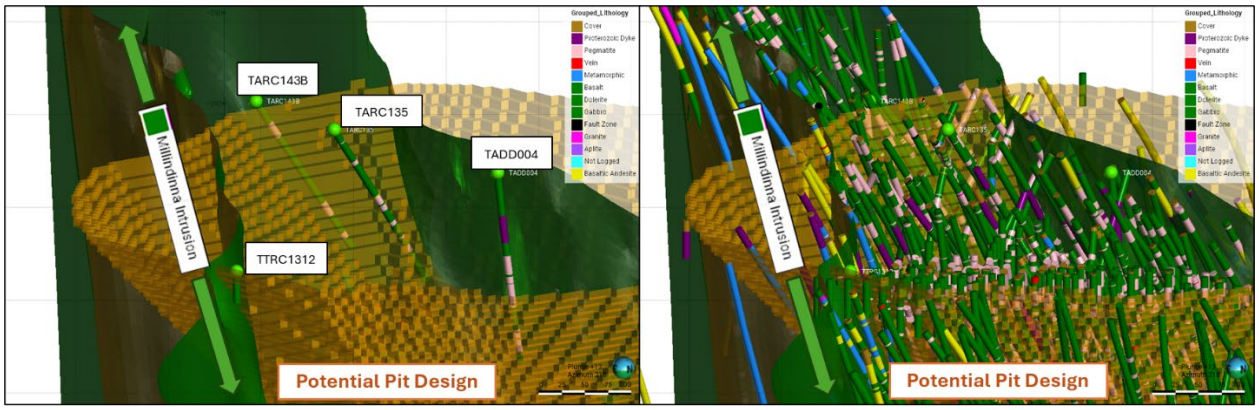


Figure 4: Isometric view looking south of left: holes sampled for troglofauna only and right: unfiltered drilling at Tabba Tabba.

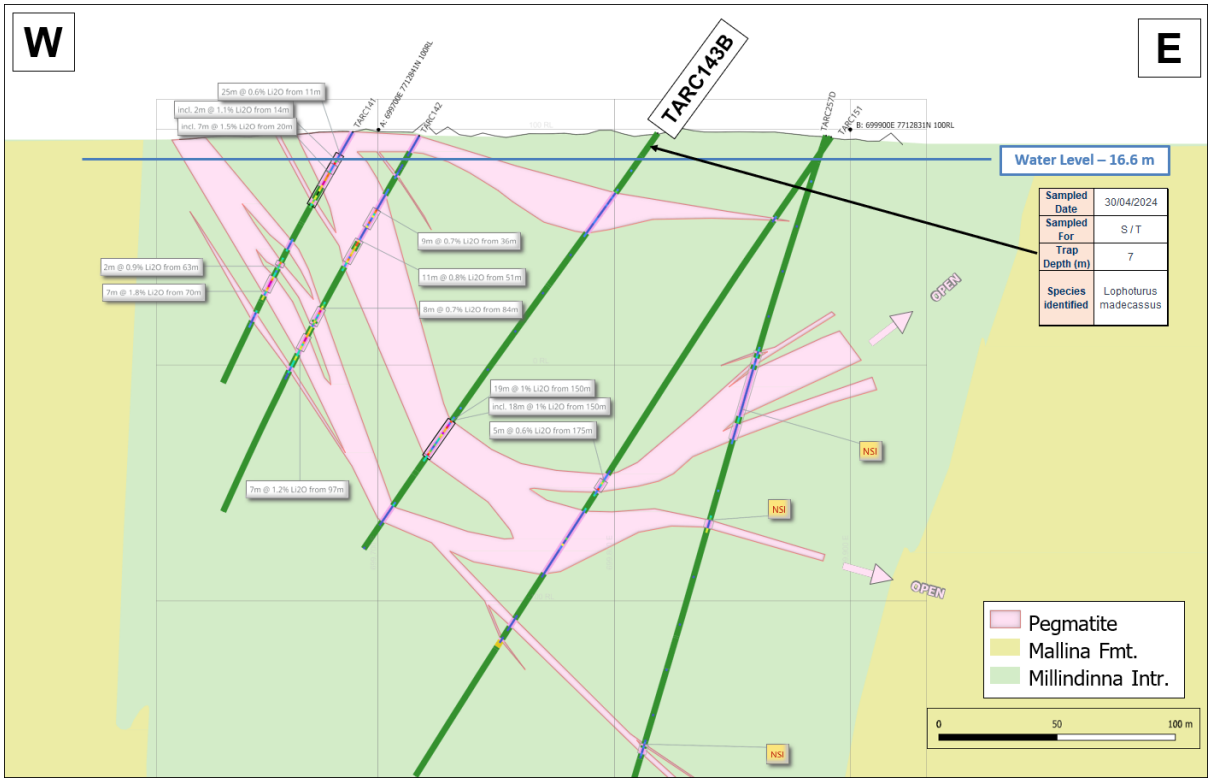


Figure 5: Cross section through TARC143B showing modelled geology, standing water level and troglofauna sampling location.

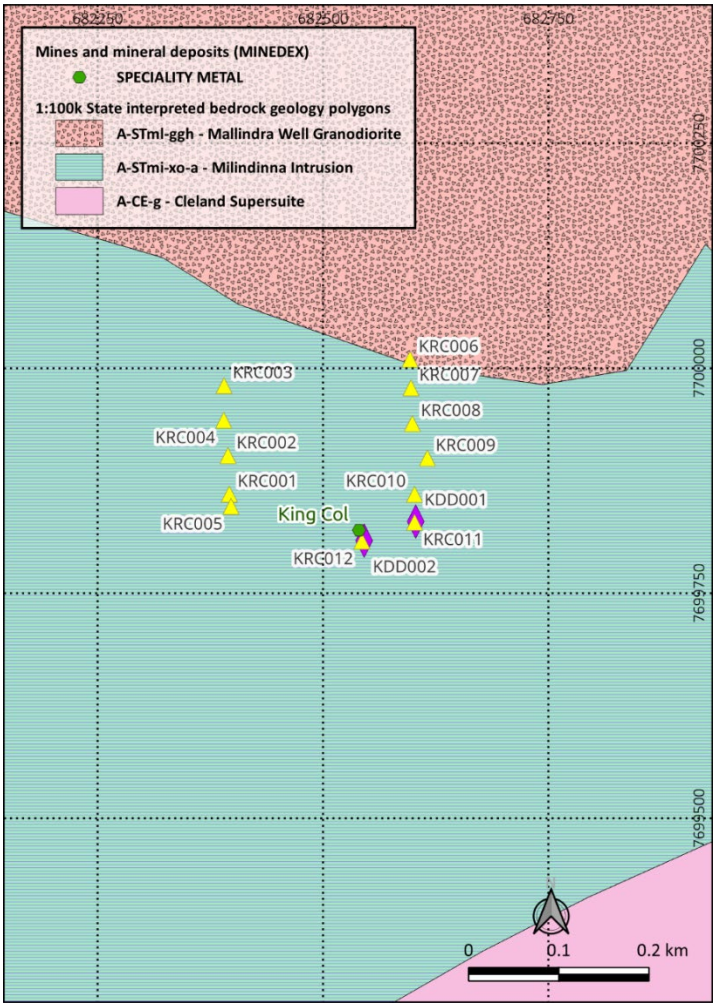


Figure 6: Prospect scale map of De Greys drilling at the King Col prospect.

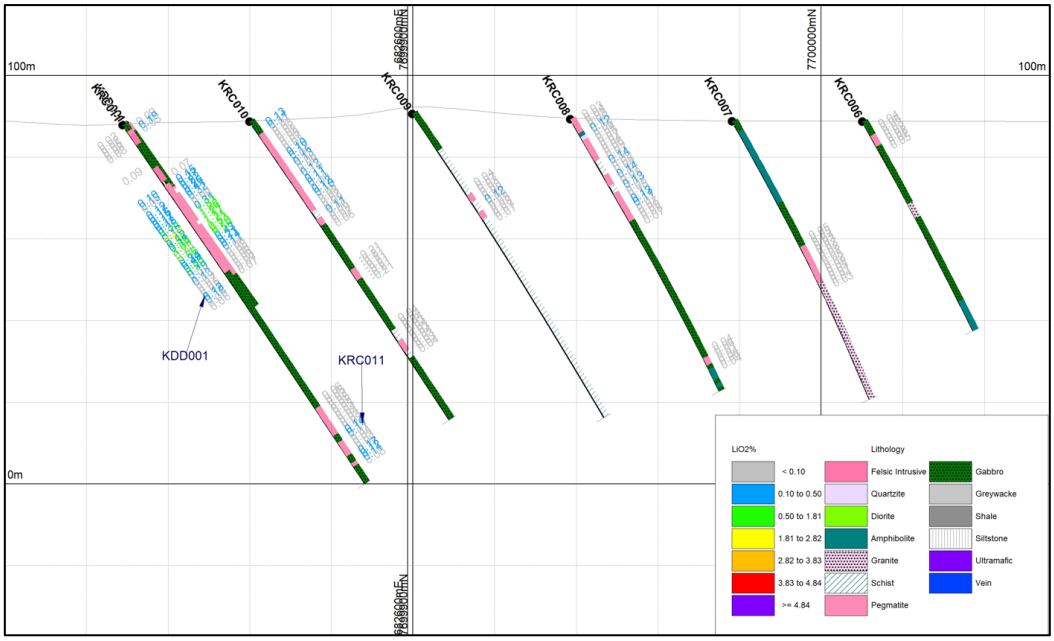


Figure 7: Abundant Millindinna gabbro and amphibolite in drill section KRC006 - KRC011 from De Greys King Col Prospect

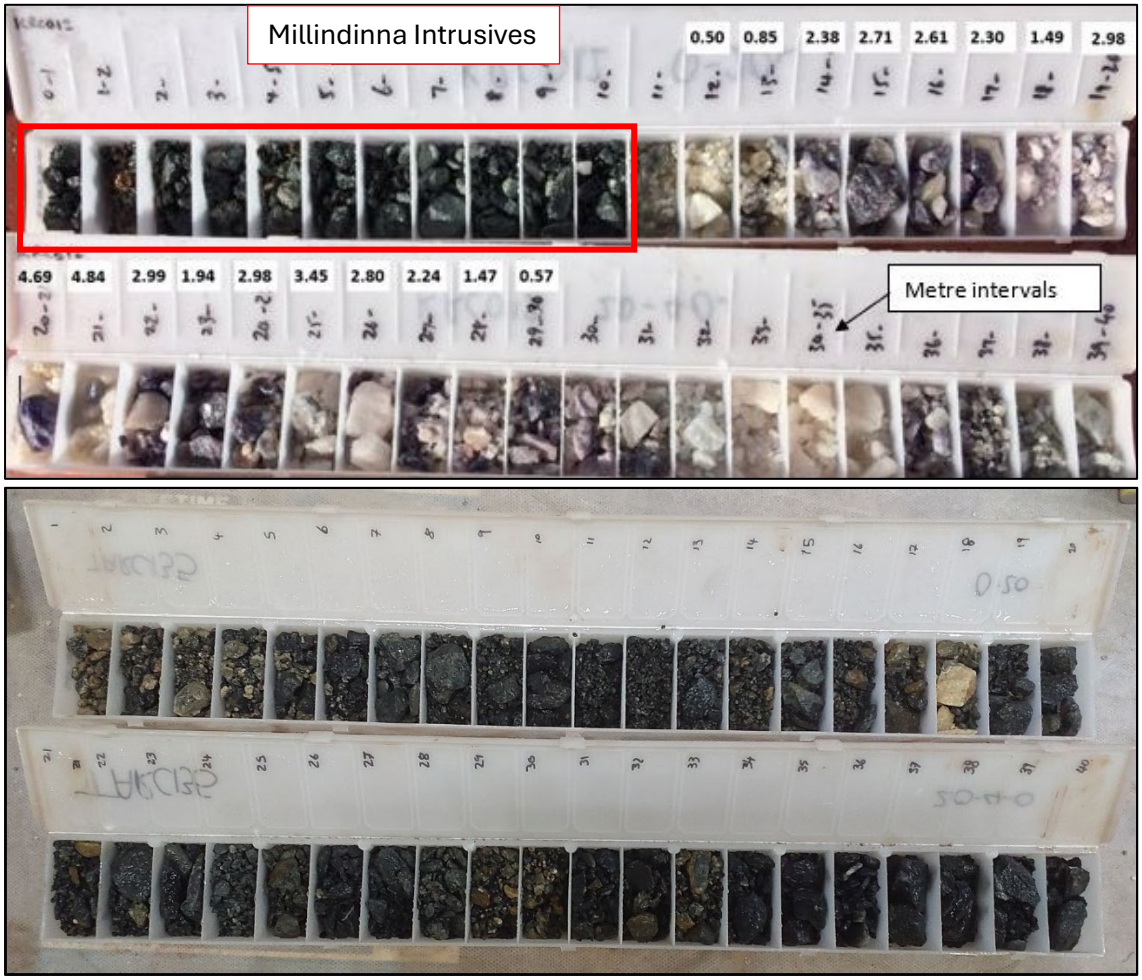


Figure 8: Photo of RC chip trays showing pegmatite hosted within gabbro from the King Col prospect (top) displays a very similar geology and weathering profile in the first 11m to that of Tabba Tabba. TARC135B (bottom) from Tabba Tabba collared into gabbro with minimal weathered material at surface. Both photos show the first 40m of the holes.

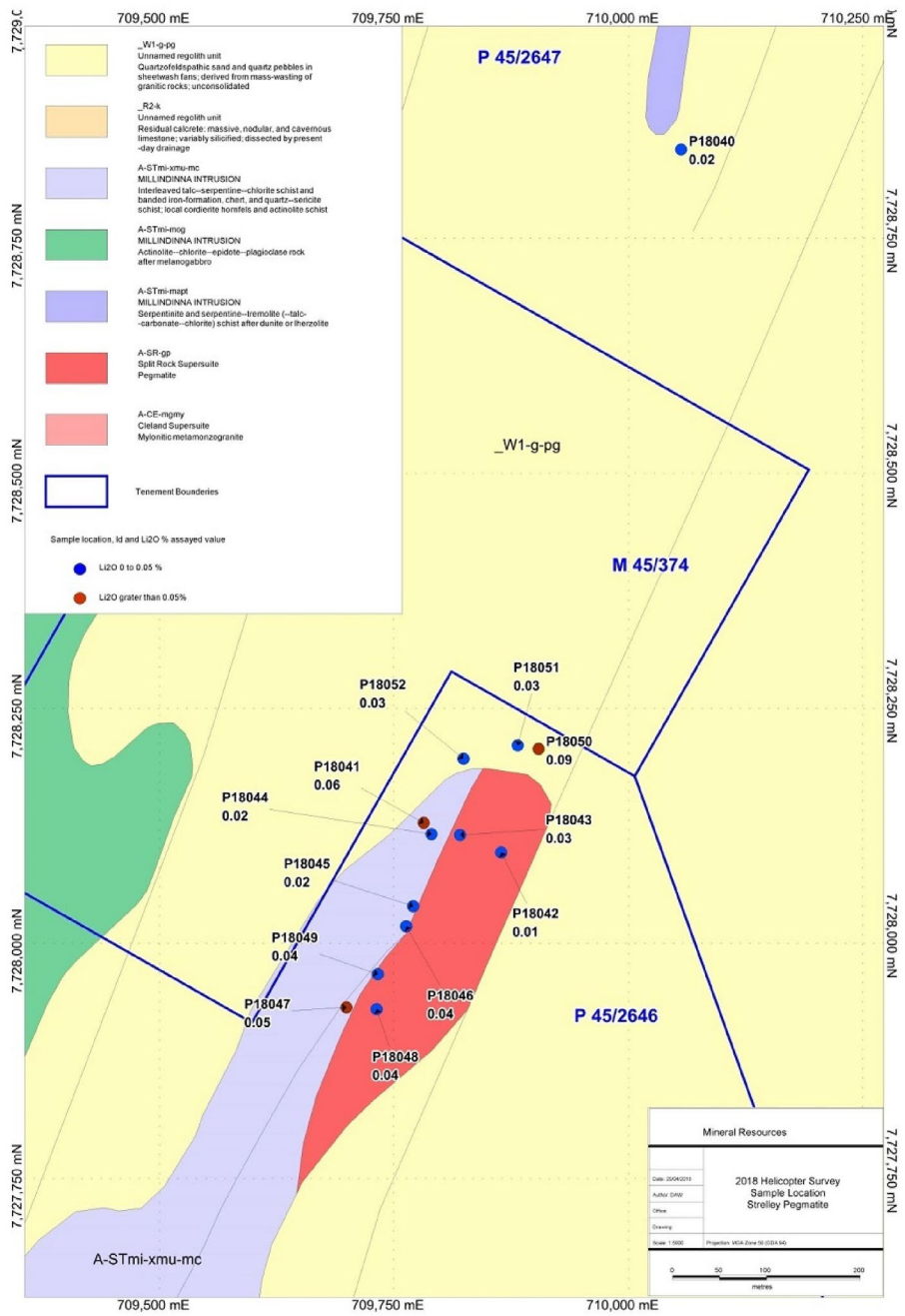


Figure 9: Wodgina Lithium's surface sampling at the Strelley prospect showing Millindinna mafics and ultramafics (green and purple) and pegmatite (pink) under shallow recent cover (yellow).

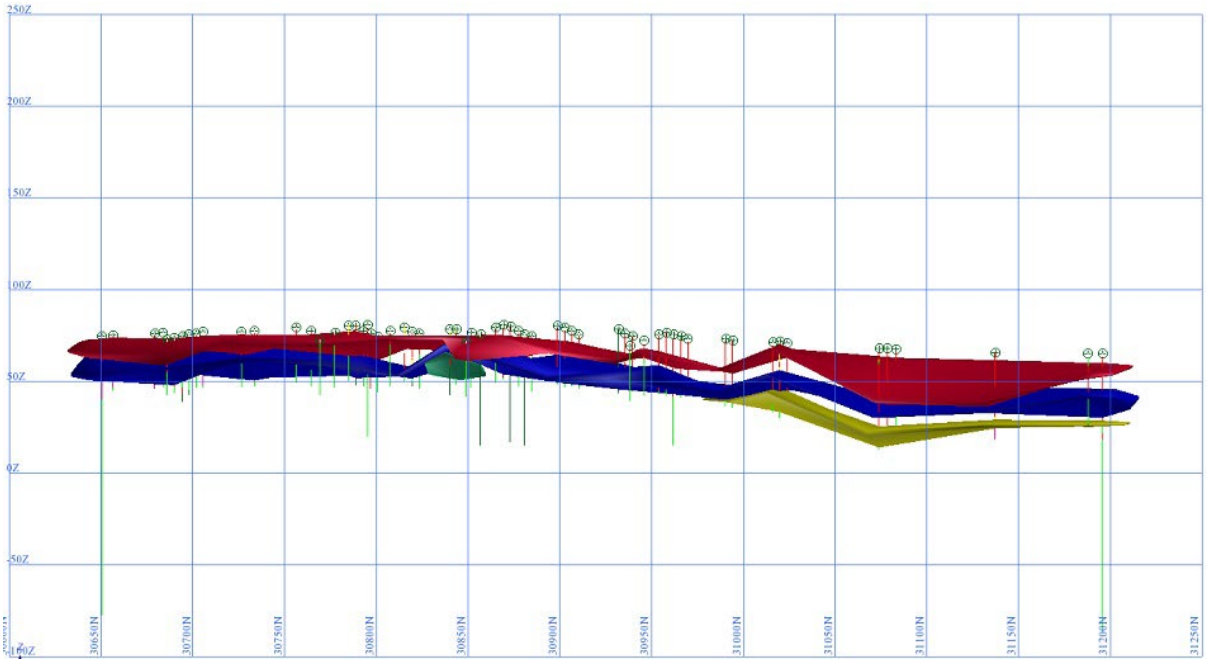


Figure 10: Long section view of the modelled pegmatite and drilling at the Strelley project. Note the abundant green colouring along drill traces in the pegmatite footwall indicating Millindinna Intrusives.