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ecologia ENVIRONMENT

TROPICANA JOINT VENTURE

TROPICANA GOLD PROJECT TROGLOFAUNA SURVEY

PHASES 6 AND 7

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TROPICANA JOINT VENTURE

TROPICANA GOLD PROJECT

TROGLOFAUNA SURVEY PHASES 6 AND 7

Document Status						
Rev	Author	Reviewer/s	Date	Approved for Issue		
				Name	Distributed To	Date
1	M. Davis	B. Bastow	2/3/2010	M. Davis	B. Bastow	4/3/2010

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ACRONYMS

List all acronyms used in the report here. Format alphabetically as follows:

DEC	Department of Environment and Conservation
EPA	Environmental Protection Authority
EPBC	*Environment Protection and Biodiversity Conservation Act 1950*
TJV	Tropicana Joint Venture
TPG	Tropicana Gold Project

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EXECUTIVE SUMMARY

The Tropicana JV (TJV) commissioned ecologia Environment (ecologia) to conduct troglofauna surveys in the proposed Tropicana Gold Project (Project) area as part of the preparation for a Public Environmental Review (PER) and to provide additional information subsequent to the completion of the PER.

The proposed Project is located approximately 330 km east north-east of Kalgoorlie on the western edge of the Great Victoria Desert (GVD). Since the discovery of the deposit in 2002, gold mineralisation has been identified over a strike length of approximately four kilometres with two areas of significant mineralisation, termed the Tropicana and Havana deposits (the Resource Area), which form the basis of the proposed TGP. It is currently proposed that the TGP would operate for approximately 10 - 15 years to realize the potential of the resource.

A five-phase troglofauna survey was initially undertaken within TGP: Phase 1 during September - November 2007 (40 holes); Phase 2 during April - June 2008 (100 holes); Phase 3 during August – October 2008 (43 holes, 42 recovered); Phase 4 during October – December 2008 (50 holes, 26 recovered); and Phase 5 during April – May 2009 (157 holes and 109 recovered). These five phases totalled a sample size of 317, of which 108 were located within the Operational footprint, thus satisfying the requirement of the EPA Guidance Statement 54a (60 samples).

Three definitive troglobitic species were discovered during these five phases – dipluran (Diplura), centipede (Chilopoda) and slater (Isopoda), of which only the slater was collected both inside and outside the Operational footprint, while the dipluran and the centipede presented singleton records within the Operational footprint.

Two additional survey phases were undertaken from new holes outside the Operational footprint, conducted as follows: Phase 6 during August – September 2009 (50 holes, 29 recovered) and Phase 7 during November 2009 - January 2010 (85 holes, 65 recovered). Phase 6 did not record any troglobitic species while Phase 7 produced one additional troglobitic species (cockroach, Blattodea) and one troglobitic species that was previously sampled during the first five phases (slater, Isopoda). Thus, a total sample size of 411 achieved in the seven phases, produced 14 individuals belonging to four definitive troglobitic species, of which two predatory species remain known only from within the Operational footprint. Such trapping results suggested that the troglobitic community within the region is sparse, or that the current trapping methods for troglofauna sampling have low trapping rates. An assessment of suitable troglobitic habitat was undertaken to gain better understanding of potential troglofauna distribution within the Operational Area and to compliment the trapping program.

Geological data were compiled for each drill hole with a troglofauna record and common geological strata identified. The results showed that all holes contained at least one geological stratum with pores or voids suitable for troglofauna habitation and that this stratum was adjacent to other, sometimes less prominent porous strata, which could act as ‘bridges’. The most common strata were: channel-fill sediment (80% of all holes), lower saprolite (80%), upper saprolite (70%), fine gravel (60%), coarse gravel (50%) and calcrete (50%). To put this information into greater perspective, geological profiles were also established for 14 lines (cross sections) across the Operational Area, utilising data from 288 drill holes. This contextual data showed that the alluvial deposits associated with historical drainage channels (channel-fill sediments) are the most prospective as troglofauna habitat due to their porosity, depth (approx. 10-30 m bgl) and immediate contact with similar strata such as laterite gravel, laterite, lag and coarse / fine gravel, or other porous strata such as calcrete. The habitat of channel-fill sediments, along with laterite gravel, laterite, lag and the coarse / fine gravel (unless the latter was located directly at the surface) has been, therefore, classified as ‘Prime’. The strata of calcrete (along with ferricrete and silcrete) and

some coarse / fine gravel were sometimes located very close to the surface (0-10 m bgl) and thus some parts of these strata may be too dry to be inhabited by troglofauna all year round (although they would be utilised after rainfall events due to influx of nutrients through percolation or root matts of surface vegetation). This habitat has been, therefore, classified as 'Likely'. The upper and lower saprolites, on the other hand, were clay dominated with low porosity or void space and were often located close to, or below, the ground water level and thus their use for troglofauna was assessed as limited. This habitat has been, therefore, classified as 'Marginal'. In summary, it is very likely that connectivity exists mainly along the channel-fill sediments, supplemented by gravel and calcrete strata 'bridges' above, and possibly upper and lower saprolites below. The troglobitic community is, therefore, expected to be distributed along these geological units, including the predatory dipluran and centipede. These predatory species are expected to follow their herbivorous/omnivorous prey (slater, cockroach) but – as with all predators - would occur in much lower densities.

An extrapolation of the suitable geological strata resulted in an estimate of 16,670 ha of troglofauna habitat within the TGP. The direct impact, as a result of excavation in the Resource Area, total 400 ha or 2% of the predicted troglofauna habitat within the TGP. Indirect (or secondary) impacts resulting from the clearing of vegetation for mine infrastructure (such as the waste landforms, plant and stockpiles) total 1328 ha or 8% of the predicted available troglofauna habitat. The overall impact of the Operational footprint on the troglofauna community within Operational Area is, therefore, estimated at 10%.

The habitat is likely to extend beyond the TGP Operational Area and suitable habitat may be widespread across lateralised weathering environments in Australia. The percentage impacts could, therefore, be considered as conservative.

The potential for the widespread distribution of troglobitic species within lateritic environments may be a conservation consideration in other areas. A number of recommendations derived from the TJV troglofauna trapping programs are provided.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

The proposed Tropicana Gold Project (Project) is located approximately 330 km east north-east of Kalgoorlie on the western edge of the Great Victoria Desert (GVD). Since the discovery of the deposit in 2002, gold mineralisation has been identified over a strike length of approximately four kilometres with two areas of significant mineralisation, termed the Tropicana and Havana deposits (the Resource Area), which form the basis of the proposed Project. It is currently proposed that the Project would operate for approximately 10 - 15 years to realize the potential of the resource.

The Tropicana JV is an agreement between AngloGold Ashanti Australia Limited (AngloGold; 70% share) and the Independence Group NL (30% share). AngloGold is the manager of the Tropicana JV and is acting as agent severally for each of the Joint Venturers in their respective percentage interests from time to time.

The Tropicana JV (TJV) commissioned ecologia Environment (ecologia) to conduct troglofauna surveys in the proposed Operational Area of the Tropicana Gold Project (Project) as part of the preparation for a Public Environmental Review (PER) and to provide additional information subsequent to the completion of the PER.

A five-phase troglofauna survey was initially undertaken within TGP (*ecologia* 2009). The timing and sample size of each phase were as follows:

- Phase 1: September - November 2007 (40 holes)
- Phase 2: April - June 2008 (100 holes)
- Phase 3: August – October 2008 (43 holes, 42 recovered)
- Phase 4: October – December 2008 (50 holes, 26 recovered); and
- Phase 5: April – May 2009 (157 holes and 109 recovered).

These five phases totalled a sample size of 317, of which 108 were located within the Operational footprint, thus satisfying the requirement of the EPA Guidance Statement 54a of 60 samples within the impact footprint.

Three definitive troglobitic species were discovered during these five phases – dipluran (Diplura), centipede (Chilopoda) and slater (Isopoda), of which only the slater was collected both inside and outside the Operational footprint, while the dipluran and the centipede presented singleton records within the Operational footprint.

1.2 SURVEY OBJECTIVES

The objective of additional surveying was to collect further data to satisfy the requirements documented in EPA's Guidance Statement 54 (EPA 2003), specifically:

- conducting troglofauna sampling across the TGP area, aiming to providing evidence of troglofauna distribution that is not restricted to the Operational footprint; and
- reviewing geological composition of the subterranean strata within TGP and define suitable habitat for troglofauna in the area

The legislative framework governing this report is outlined in Appendix A.

2 METHODOLOGY

2.1 SURVEY TIMING

Two additional survey phases were undertaken from new holes as well as previously sampled holes inside and outside the Operational footprint, conducted as follows:

- Phase 6: August – September 2009 (50 holes, 29 recovered)
- Phase 7: November 2009 - January 2010 (85 holes, 65 recovered)

A list of all drill holes used in Phases 6 and 7 is provided in Appendix B.

2.2 SITE SELECTION

Sites were selected from pre-existing exploration holes inside and outside the Operational footprint but within areas which offered potential habitat for troglofauna. All sites used in Phase 6 were Air Core (AC) drill holes while sites used in Phase 7 were a mixture of AC, Reverse-Cycle (RC) and Diamond drill holes.

2.3 SAMPLING METHODS

All sampling was conducted by troglofauna traps (1-3 traps per drill hole). This approach is consistent with the EPA guidance statement 54 (Technical appendix 54A), which states that "In Western Australia (WA) it is common to lower PVC pipe, usually closed at either end with aviary mesh and containing leaf litter… into the bore to align with fissures and voids in the surrounding habitat".

Each phase consisted of trap deployment, colonisation period (~60days in Phase 6 and 80 days in Phase 7) and trap collection.

In order to sample a range of depths and habitats, each RC/Diamond drill hole contained two to three ecologia traps (80 mm diameter) at approximately ten metre (10 m) intervals (i.e. at 10 m, 20 m and 30 m below ground level). Narrower AC holes were sampled using one longer, thinner trap designed by Tropicana field staff (50 mm diameter). These traps were placed at either 10 or 20 m depths depending on the total depth and geology of the hole.

Each trap was filled with damp leaf litter sourced from the area so as to represent the natural habitat sources. The leaf litter was sterilised using a microwave in order to ensure that no contaminates (bacteria or surface invertebrates) could colonise the traps. Using this technique also promotes the breakdown of leaf litter, in turn creating a more inviting environment for any troglobitic species. During Phase 7, one of the traps in each drill hole was also baited with a small piece of banana to attract troglobitic herbivores.

Traps were retrieved after at least 60 and 80 days in Phase 6 and 7, respectively. The contents of each trap were transferred into a separate plastic zip lock bag and then stored in a cool, dry environment until returning to the laboratory. Samples were then placed in Tullgren funnels which utilises a 40 Watt light bulb that encourages the movement of invertebrate species away from the light/heat source. As they burrow into the leaf litter to escape the light / heat, they fall into vials of 70% ethanol, where they are preserved for taxonomic identification. Prospective troglobitic species were sorted under a microscope by ecologia invertebrate zoologists. In addition, after extraction in the Tulgreen funnels, all dried leaf litter was inspected under magnifying glass for any dead specimens that may not have ended in the ethanol-filled vial.

2.4 SURVEY TEAM

The *ecologia* staff involved in planning and coordination of the TGP Troglofauna Survey Phase 6 and Phase 7 are listed in Table 2.1.

Table 2.1 – Ecologia Staff Involved With The Survey

Name	Qualification	Position
Magdalena Davis	BSc., MSc, PhD (Zoology)	Manager Invertebrate Sciences
Laura Quinn	BSc., MSc (Entomology)	Invertebrate Zoologist

2.5 SPECIES IDENTIFICATION AND CURATION

All potential troglofauna were examined and vouchered for future reference. Initial taxonomic identification was conducted by ecologia invertebrate zoologists; troglobitic species were submitted to experts for taxonomic confirmation. A list of taxonomic experts is provided in Table 2.2.

Table 2.2 – List of Taxonomic Experts Used For Identification Purposes

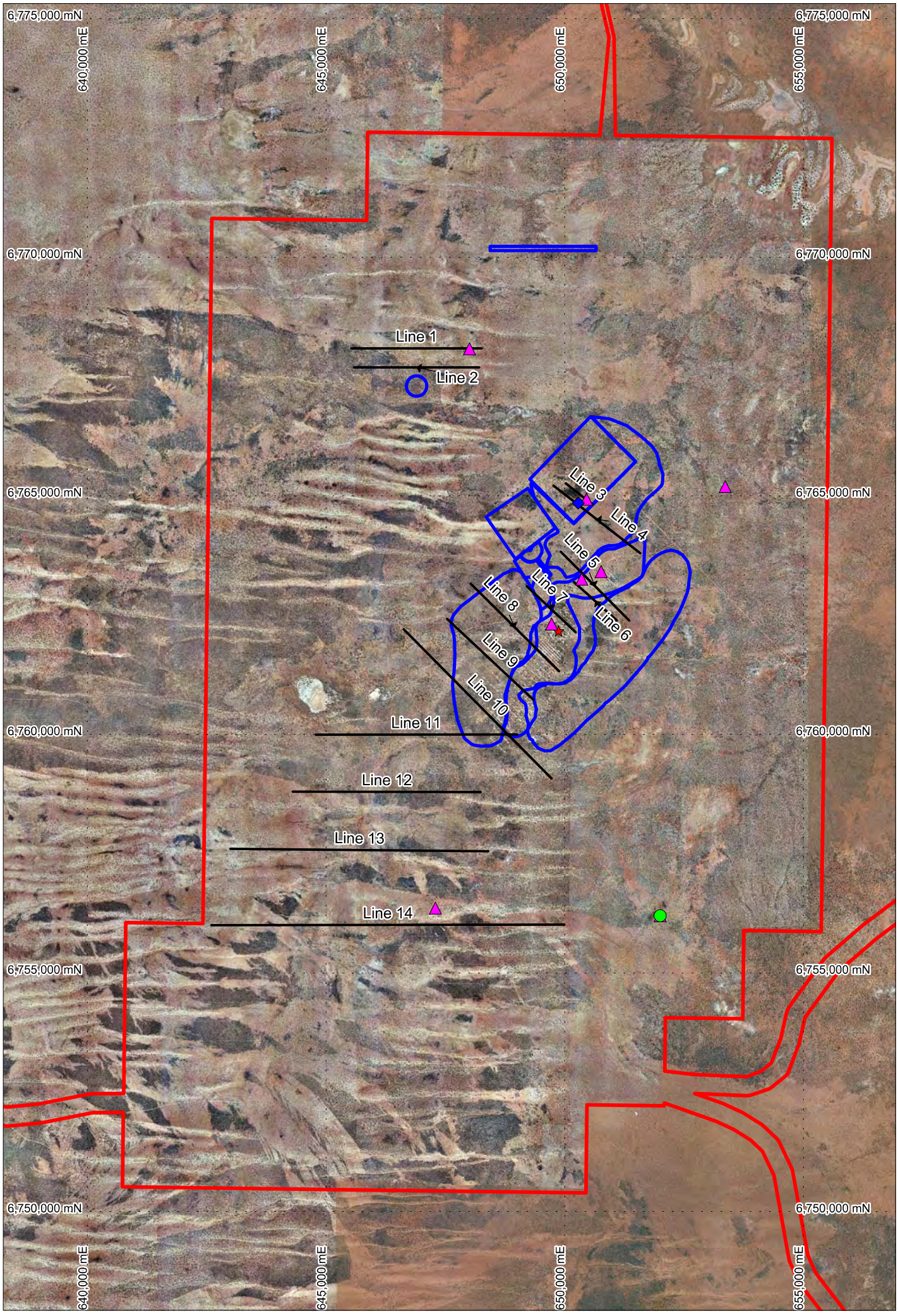
Taxa	Expert	Institution
Isopoda (slaters)	Dr Simon Judd	Edith Cowan University
Blattodea (cockroaches)	Julianne Waldock	WA Museum
Acarina (mites)	Owen Seeman	Queensland Museum

2.6 SUBTERRANEAN HABITAT ASSESSMENT

Geological data were compiled for each drill hole with a troglofauna record to identify common geological strata. To put this information into greater perspective, geological profiles were also established for 14 lines (cross sections) across the TGP, utilising data from 288 drill holes (Figure 2.1). Once all geological strata were identified and mapped, they were grouped and classified as follows:

- Prime habitat - abundant strata of high porosity or void space connected to other, similarly structured strata
- Likely habitat – less abundant and / or close to the surface strata of high porosity or void space connected to other, similarly structured strata
- Marginal habitat - low porosity or void space strata
- Unsuitable habitat - geological strata at the surface (i.e. sand) or below the ground water level

The distribution of the suitable habitats (Prime and Likely) as recorded in the 14 lines (cross sections) were then used to extrapolate the total suitable troglofauna habitat within Operational Area.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3 RESULTS

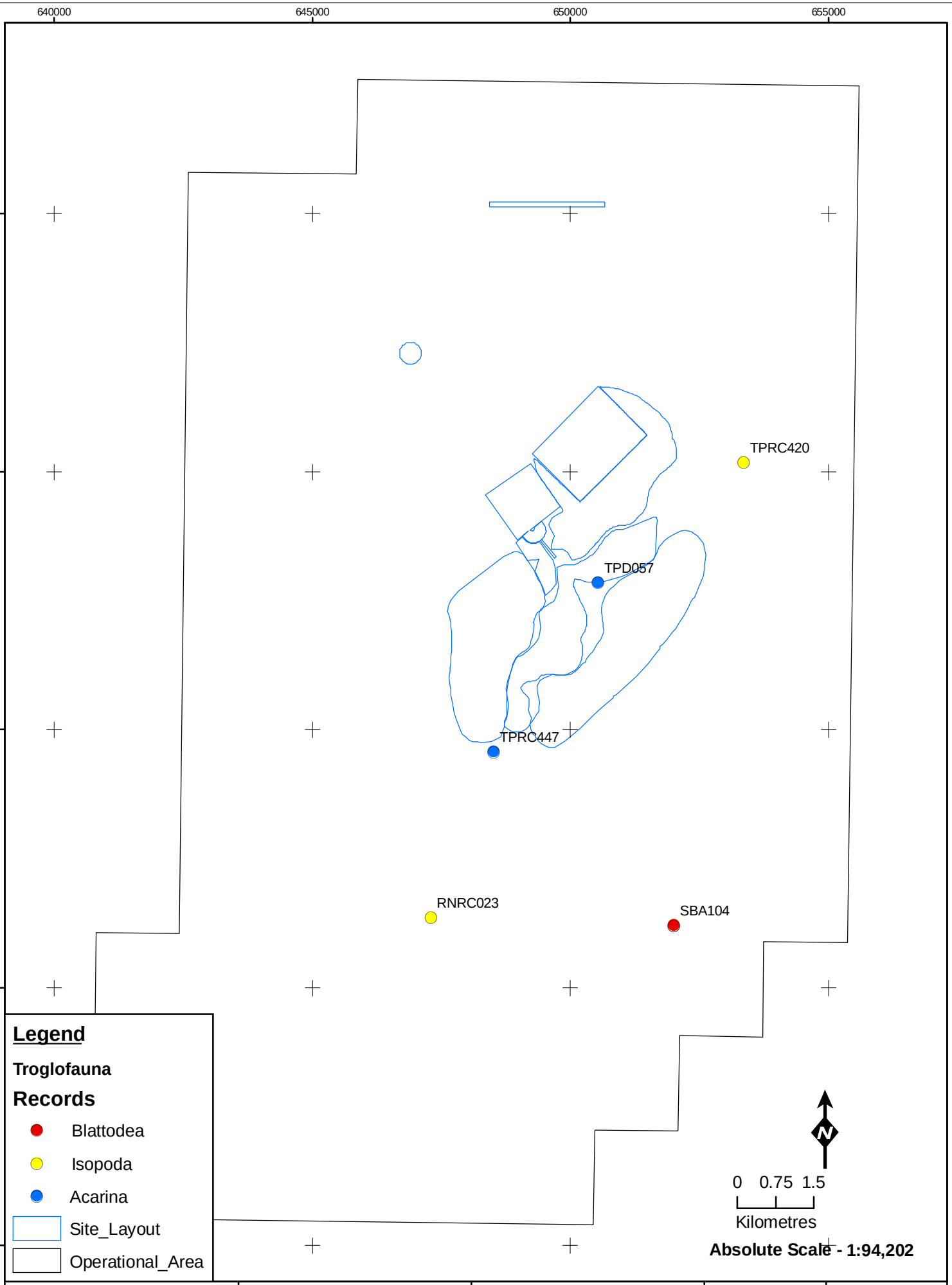
3.1 TROGLOFAUNA TRAPPING

Phase 6 did not yield any troglobitic species while Phase 7 produced one additional troglobitic species (cockroach, Blattodea) and one troglobitic species that was previously sampled during the first five phases (slater, Isopoda). Details are given below.

3.1.1 Cockroaches (Phylum Arthropoda, Class Insecta, Order Blattodea)

A single cockroach nymph was collected from site SBA 104 outside the Operational footprint (Figure 3.1, Figure 3.2). The specimen was pale and had reduced eye spots, indicating its troglobitic status. Troglobitic cockroaches display a range of eye reduction, from eyes completely missing to eyes partially or even fully developed, sometimes asymmetrically (one eye present, one eye missing) (T. Finston, UWA, pers. comm. 2009). Further taxonomic identification could not be achieved due to the specimen's juvenile state.

Figure 3.1 – Troglobitic Cockroach Collected During Phase 7



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ANGLOGOLD ASHANTI

Phase 7 *locations*

Figure: 3.2
Project ID: 1158

Drawn: SG
Date: 10/2/2010

Coordinate System
Name: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

Unique Map ID: MXXX

A4

3.1.2 Slaters (Phylum Arthropoda, Subphyllum Crustacea, Class Malacostraca, Order Isopoda)

Three specimens were collected from three separate sites outside the Operational footprint (Figure 3.3, Figure 3.2) - site SBA 104 (12 m depth, 6.54 km SE of TPMB100), site TPRC 420 (18 m depth, 3.57 km NE TPRC 583) and site RNRC 023 (10 m depth, 6.45 km SW of TPMB100). All specimens were lodged with an expert for further advice.

Figure 3.3 – One of Three Troglobitic Slaters Collected During Phase 7

3.1.3 Springtails (Collembola) and Mites (Acarina)

Springtails and mites were recorded from a range of depths at several sites during the survey. Both groups inhabit the top layer of soil where they rely on decaying leaf matter for nutrition and are likely to be troglofiles or opportunistic feeders on the traps. Due to their typical near-surface habitat, they are not likely to be rare or restricted species. Two mites collected at sites TPD 057 (within Operational footprint) and TPRC 447 (outside Operational footprint) could represent troglobitic species (Figure 3.4 and Figure 3.2). These specimens were lodged with an expert for further advice. However, even troglobitic mites seem to be able to disperse widely (Biota 2006) and thus are not at threat from the Project.

Figure 3.4 – One of the Potential Troglobitic Mites Collected During Phase 7

3.2 TROGLOFAUNA HABITAT ASSESSMENT

3.2.1 Classification of suitable habitat

The examination of drill holes with troglofauna record showed that all holes contained at least one geological stratum with pores or voids suitable for troglofauna habitation and that this stratum was adjacent to other, sometimes less prominent porous strata, which could act as 'bridges' (Table 3.1). The most common strata were: channel-fill sediment (80% of all holes), lower saprolite (80%), upper saprolite (70%), fine gravel (60%), coarse gravel (50%) and calcrete (50%) (Table 3.1). The contextual data from the 14 drill lines (cross sections) (Appendix C) showed that the alluvial deposits associated with historical drainage channels (channel-fill sediments) were the most prospective as troglofauna habitat within the Operational Area due to their porosity (Figure 3.5), favourable depth (approx. 10-30 m bgl), location above the water table, and immediate contact with similar porous strata such as laterite gravel, laterite, lag and coarse / fine gravel, or other porous strata such as calcrete. The habitat of channel-fill sediments, along with laterite gravel, laterite, lag and the coarse / fine gravel (unless the latter was located directly at the surface) has been, therefore, classified as 'Prime' (Table 3.1). The strata of calcrete (along with ferricrete and silcrete) and some coarse / fine gravel were sometimes located very close to the surface (0-10 m bgl) and thus some parts of these strata may be too dry to be inhabited by troglofauna all year round (although they would be utilised after rainfall events due to influx of nutrients through percolation or root matts of surface vegetation). This habitat has been, therefore, classified as 'Likely' (Table 3.1). The upper and lower saprolites, on the other hand, were clay dominated with low porosity or void space and were often located close to, or below, the ground water level and thus their use for troglofauna was assessed as limited. This habitat has been, therefore, classified as 'Marginal' (Table 3.1). The surface strata of sand grit, sand and soil was classified 'Unsuitable', as was fresh rock and / or the strata below ground water level (Table 3.1).

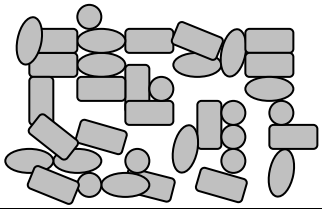
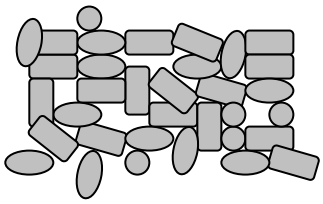
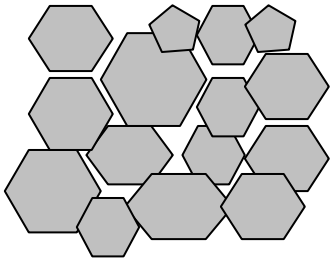
Interconnecting cavities in eroded, consolidated sand and gravel 	
Cavities on consolidated gravel at the base of channel 	
Cavities and fractures in reduced channel, weathered basement rock 	

Figure 3.5 – Example of Channel-fill Sediment Porosity

Table 3.1 – Summary Of Geological Data From Drill Holes With Troglofauna Record

	Line #			1	3	4	5	6	7	7	n/a	n/a	n/a
	Drill hole #			TPA 4270	TPA 3977	TPA 3981	TPRC 583	TPD 057	TPMB 100	TPMB 099	TPRC 420	RNRC 023	SBA 104
	Easting			648007	650460	650285	650358	650535	649865	650007	653363	647292	652000
	Northing			6768083	6764932	6764846	6763253	6762860	6762470.99	6762330.02	6765193	6756362	6756200
	Troglofauna			Isopoda	Isopoda	Diplura	Isopoda	Isopoda	Isopoda	Chilopoda	Isopoda	Isopoda	Isopoda & Blattodea
	Trap depth			13 m	17 m	20 m	20 m	10 & 20 m	stygofauna net	stygofauna net	18 m	10 m	12 m
	Location			outside	inside	inside	inside	inside	inside	inside	outside	outside	outside
Troglobitic Habitat	**Regolith units and materials:**		**% of holes with trog.**										
UNSUITABLE (surface)	Sand Grit		10%		✓								
	Sand		60%				✓	✓	✓	✓		✓	✓
	Soil		0%										
LIKELY	**Fine Gravel**		**60%**		✓	✓	✓	✓				✓	✓
	Course Gravel		**50%**	✓	✓	✓						✓	✓
	Silcrete		30%		✓	✓					✓		
	Calcrete		**50%**		✓	✓	✓	✓					✓
	Calcrete/Silcrete		0%										
	Ferricrete		20%		✓						✓		
PRIME	Lag & Silcrete, Calcrete Fragments		0%										
	Lag		10%						✓				
	Laterite		10%		✓								
	Laterite Gravel		20%									✓	✓
	Channel fill sediment		**80%**	✓	✓	✓	✓		✓	✓	✓		✓
MARGINAL	Basal Clay, Sand & Gravel		20%								✓		✓
	Mottled clay		30%		✓	✓	✓						
	Upper Saprolite		**70%**	✓				✓	✓	✓	✓	✓	✓
	Lower Saprolite		**80%**	✓		✓		✓	✓	✓	✓	✓	✓
	Saprock		50%	✓				✓			✓	✓	✓
UNSUITABLE (no voids, under water)	Fresh Rock		60%	✓		✓		✓			✓	✓	✓

3.2.2 Extrapolation of suitable habitat and impacts within TGP

An extrapolation of the suitable geological strata from the 14 drill lines resulted in an estimate of 16,670 ha of suitable troglofauna habitat within the Operational Area (Figure 3.6). The Operational Area components impacting on the suitable habitat are the:

- Resource Area (400 ha); and
- Mine Infrastructure (1,328 ha).

The direct impact, as a result of excavation in the Resource Area thus totals 2% of the predicted troglofauna habitat within the Operational Area. Indirect (or secondary) impacts resulting from the clearing of vegetation for mine infrastructure (such as the waste landforms, tailings storage facility, plant site and stockpiles) total 8% of the predicted available troglofauna habitat within the Operational Area. The overall impact of the Operational footprint on the troglofauna community within Operational Area is, therefore, estimated at 10% (Table 3.2, Figure 3.6).

Table 3.2 – Project Components and Impacts Within Troglofauna Habitat

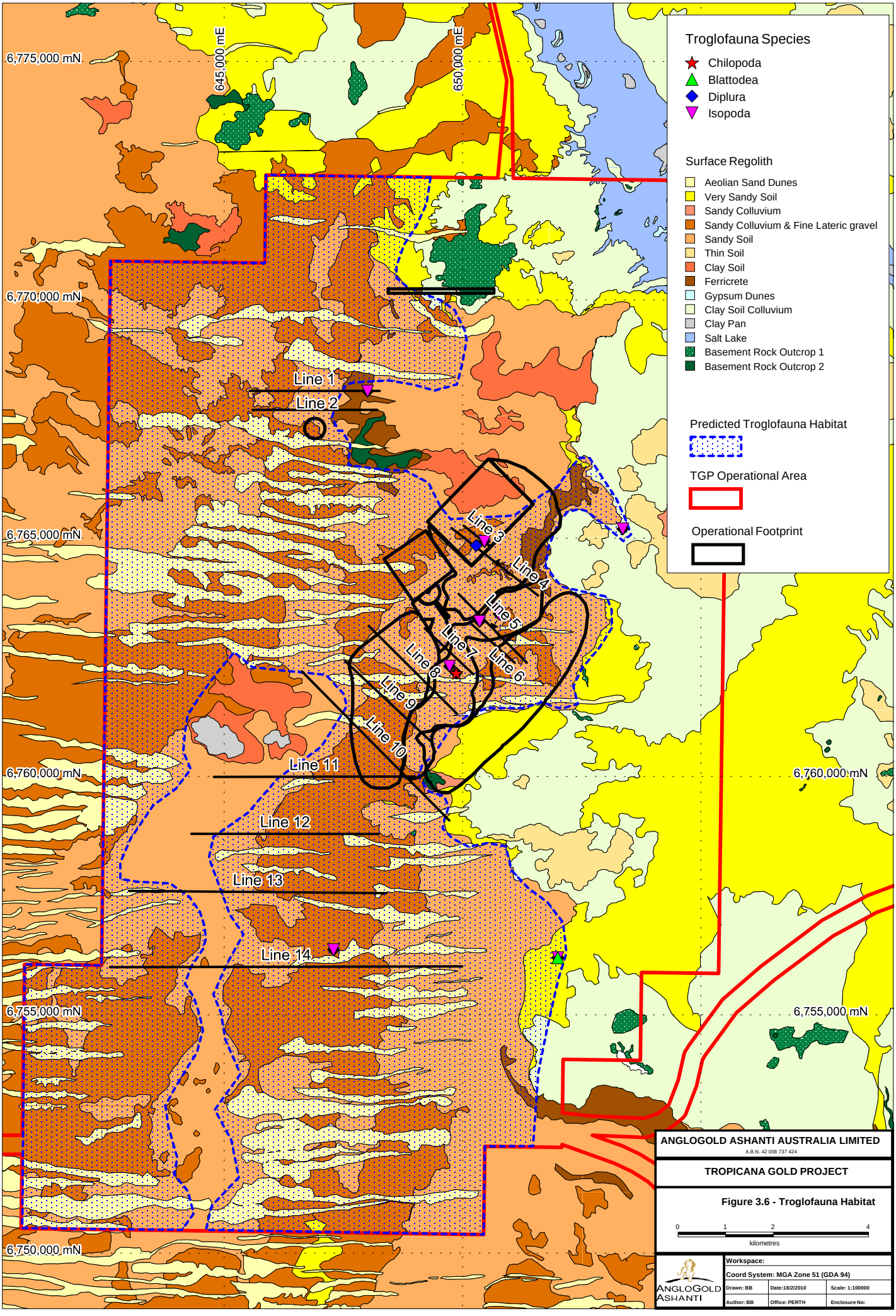
Project component	Impact type	Footprint (ha)	% Impact
Resource Area (within Troglofauna habitat)	Direct	400	2%
Mine Infrastructure (within Troglofauna habitat)	Indirect	1,328	8%
TOTAL	**Cumulative**	**1,728**	**10%**

3.2.3 Challenges and pitfalls experienced during troglofauna trapping for the Project

The troglofauna trapping conducted for the Project experienced a number of set backs, some of which may be useful to note for the benefit of future projects.

- The use of RC and Diamond drill holes for troglofauna trapping is preferable to Air Core drill holes because:
  - approx. 50% AC holes collapse with traps still deployed in them
  - the AC traps need to have a narrower diameter to fit in the narrow diameter AC hole, which may hinder the trap effectiveness

  Air Core drill holes are, however, much more widely utilised for exploration in some areas and typically drilled at an earlier stage of exploration and thus provide an opportunity for sampling over more extensive areas.
- Surface of troglofauna traps should be as rough as possible in order to enable troglofauna to climb onto them and colonise them;
- Troglofauna traps need to be packed firmly but lightly, leaving spaces in the leaf litter (or any other material used) for troglofauna to enter deeper into the trap.
- Baiting with a small piece of banana (approx. 1cm^3 per trap) proved useful for attracting herbivorous / omnivorous troglofauna into traps.
- Traps once removed from drill holes need to be managed carefully and transported appropriately and quickly to the laboratory to ensure the troglofauna remain alive. The death of animals during transit precludes the use Tullgren / Berlese funnels and may have contributed to the poor trap rates during some of the surveys at Tropicana.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Line 1
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Line 13
Line 14
Troglofauna Species
Chilopoda
Blattodea
Diplura
Isopoda
Surface Regolith
Aeolian Sand Dunes
Very Sandy Soil
Sandy Colluvium
Sandy Colluvium & Fine Lateric gravel
Sandy Soil
Thin Soil
Clay Soil
Ferricrete
Gypsum Dunes
Clay Soil Colluvium
Clay Pan
Salt Lake
Basement Rock Outcrop 1
Basement Rock Outcrop 2
Predicted Troglofauna Habitat
TGP Operational Area
Operational Footprint
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Figure 3.6 - Troglofauna Habitat
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Coord System: MGA Zone 51 (GDA 94)
Drawn: BB
Date:18/2/2010
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Office: PERTH
Enclosure No:

4 DISCUSSION AND RECOMMENDATIONS

A total sample size of 411 achieved in the five phases of the original survey (*ecologia* 2009) and two phases of this survey (Phases 6 and 7) produced 14 individuals belonging to four definitive troglobitic species, of which two (dipluran and centipede) present singleton records and remain to be known only from within the Operational footprint. Such trapping results suggest that a) the troglobitic community located within the Operational Area is sparse, or b) that the current trapping methods used in WA for troglofauna sampling have low trapping rates in lateritic environments like those observed within the Great Victoria Desert.

The assessment of suitable troglobitic habitat complimented the trapping program and provided better understanding of potential troglofauna distribution within the Project Operational Area. It is very likely that suitable habitat connectivity exists mainly along the channel-fill sediments, supplemented by gravel, silcrete, ferricrete and calcrete strata 'bridges' above, and upper and lower saprolites below. The troglobitic community is expected to be distributed along these geological units. This includes the dipluran and centipede, as these predatory species are expected to follow their herbivorous / omnivorous prey (slater, cockroach) but - as with all predators - would occur in much lower densities (Begon *et al.* 1996). The troglobitic habitat is likely to extend beyond the Projects Operational Area and suitable habitat may be widespread across lateralised weathered environments observed over significant areas in Australia. The total percentage impact of 10% predicted for the Project is, therefore, considered conservative.

The potential for the widespread distribution of trogobitic species within lateritic environments may be a conservation consideration in other areas. The surveys at Tropicana have identified troglobitic species within an area/environment that conventional desktop assessment classified as having a low probability of harbouring troglofauna. Thus, some of the knowledge gained for the mesa environments in the Pilbara (and other areas) may not be directly applicable to sampling within lateritic environments such as those found at the Tropicana. Recommendations to improve trapping efficiency and effectiveness based on knowledge and experience gained from the Tropicana surveys include:

- using RC and Diamond drill holes for troglofauna trapping rather than Air Core drill holes because approx. 50% AC holes collapse with traps still deployed in them, and the AC traps need to have a narrower diameter to fit in the narrow diameter AC hole, which may hinder the trap effectiveness;
- making surface of troglofauna traps as rough as possible in order to enable troglofauna to climb onto them and colonise them;
- packing troglofauna traps firmly but lightly, leaving spaces in the leaf litter (or any other material used) for troglofauna to enter deeper into the trap.
- baiting with a small piece of banana (approx. 1cm^3 per trap), which proved useful for attracting herbivorous / omnivorous troglofauna into traps.
- managing carefully traps and their quick transport to the laboratory once removed from drill holes in order to ensure that the troglofauna remain alive. The death of animals during transit precludes the use Tullgren / Berlese funnels.

The low trapping rates in the Project Operational Area may partially reflect one or more of these issues with "false negative" results generated as a result of deficiencies in trapping methodology.

It may be useful to future proponents that the EPA reviews the Guidance for the Assessment of Environmental Factors, Statement No. 54a (Technical Appendix to Guidance Statement no. 54):

Sampling Methods and Survey Considerations for Subterranean Fauna in Western Australia, based on results and trapping experience gained from the Project.

5 REFERENCES

Begon, M., Townsend, T. R., and Harper, J. L. 1996. Ecology: From Individuals to Ecosystems. Blackwell Publishing.

Biota Environmental Sciences. 2006. Mesa A and Robe Valley Troglobitic Fauna: Subterranean Fauna Assessment. Report Prepared for Robe River Iron Associates. June 2006

ecologia Environment. 2009. Tropicana Gold Project Operational Area. Troglofauna Survey Report. Unpublished report for Tropicana Joint Venture.

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APPENDIX A LEGISLATIVE FRAMEWORK

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Subterranean fauna are protected at a State level under the Wildlife Protection Act 1950 (WP Act) and their environment is protected under the Environmental Protection Act 1986 (EP Act). The WC Act was developed to provide for the conservation and protection of wildlife in Western Australia. Under Section 14 of this Act, all fauna and flora within Western Australia is protected; however, the Minister may, via a notice published in the Government Gazette, declare a list of fauna taxa identified as likely to become extinct, or is rare, or otherwise in need of special protection. The current listing was gazetted on the 22 January 2008.

A Guidance Statement has been developed specifically to advise the public about the minimum requirements for environmental management with respect to subterranean fauna. EPA Guidance Statement 54: Consideration of Subterranean Fauna in Groundwater and Caves during Environmental Impact Assessment in Western Australia 2003 states that:

"Proposals that, if implemented, could potentially have a significant impact on stygofaunal or troglofaunal habitat by:

- lowering the water table sufficiently to dry out the zone in which some species live, or otherwise artificially changing water tables; or
- changing water quality (e.g. increasing salinity levels or altering haloclines, increasing nutrient levels or the availability of organic matter, or introducing other pollutants); or
- destroying or damaging caves (including changing their air temperatures and humidity)

will be subject to formal EIA (Environmental Impact Assessment) under the EP Act."

The EP Act is "an Act to provide for an Environmental Protection Authority, for the prevention, control and abatement of environmental pollution, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing." Section 4a of this Act outlines five principles that are required to be addressed to ensure that the objectives of the Act are addressed. Three of these principles are relevant to native fauna and flora:

- The Precautionary Principle

Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

- The Principles of Intergenerational Equity

The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

- The Principle of the Conservation of Biological Diversity and Ecological Integrity

Conservation of biological diversity and ecological integrity should be a fundamental consideration.

Projects undertaken as part of the Environmental Impact Assessment (EIA) process are required to address guidelines produced by the EPA, in this case Guidance Statement 54: Consideration of Subterranean Fauna in Groundwater and Caves during Environmental Impact Assessment in Western Australia (EPA 2003).

Some subterranean fauna in Western Australia is also protected at a Federal level under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The EPBC Act was developed to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance, to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources; and to promote the conservation of biodiversity. The EPBC Act includes provisions to protect native species (and in particular prevent the extinction, and promote the recovery, of

threatened species) and ensures the conservation of migratory species. In addition to the principles outlined in Section 4a of the EP Act, Section 3a of the EPBC Act includes a principle of ecologically sustainable development dictating that decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.

APPENDIX B A LIST OF DRILL HOLES USED FOR TRAPPING IN PHASES 6 AND 7

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Sites sampled during Phase 6 (July – September 2009; trap diameter 50 mm)

#	Drill hole ID	MGA94 Zone	Eastings	Northings	Trap Depth (m)
1	TTA285	51J	645503	6777310	6, 22
2	TTA307	51J	644000	6773500	7, 15
3	TTA319	51J	635856	6769209	6, 26
4	TTA320	51J	636479	6769217	8, 20
5	TPA4581	51J	644601.6	6754396	17, 24
6	TPA4582	51J	644794.1	6754393	10, 17
7	TPA4584	51J	645191.1	6754406	13, 20
8	TPA4077	51J	647525.3	6771225	10, 15
9	TPA4084	51J	648213.3	6771226	10, 13
10	TPA4121	51J	647603.6	6770813	12, 19
11	TPA4128	51J	648309.7	6770815	9, 15
12	TTA286	51J	645833	6776968	11, 29
13	TCA013	51J	629197	6749631	10, 20
14	TCA014	51J	629397	6749631	4, 12
15	TCA018	51J	630197	6749631	15, 20
16	TCA038	51J	629397	6750431	8, 14
17	TCA046	51J	630997	6750431	8, 10
18	TCA057	51J	629397	6751231	7, 10
19	TCA058	51J	629597	6751231	9, 12
20	TCA061	51J	630197	6751231	9, 15
21	TCA067	51J	631397	6751231	8, 25
22	TPA2631	51J	630600	6746000	6, 9
23	TPA2639	51J	629800	6746000	10, 14
24	TPA2661	51J	630699	6746790	8, 20
25	TPA2665	51J	630306	6746793	5, 13
26	TPA3258	51J	631260.1	6745052	10, 20
27	TPA3267	51J	634860	6744542	6, 32
28	TPA3270	51J	636062	6744478	6, 22
29	TPA2643	51J	629400	6746000	9, 14

Sites sampled during Phase 7 (November 2009 – January 2010; trap diameter 80 mm)

#	Drill hole ID	MGA94 Zone	Eastings	Northings	Trap Depth (m)
1	TPA1459	51J	645600	6759200	12, 18
2	KMRC001	51J	643395.7	6754218.29	10, 14, 18
3	KMRC005	51J	643972.8	6754018.69	10, 14, 18
4	MBRC001	51J	646716.3	6760030.5	10, 14, 18
5	MBRC005	51J	647283.2	6760031.61	10, 14, 18
6	MBRC006	51J	647422.6	6759891.37	10, 14, 18
7	MBRC009	51J	647848.5	6759465.67	10, 14, 18
8	RND001	51J	647617	6756343.78	10, 14, 18
9	RND004	51J	647555.5	6755980.9	10, 14, 18
10	RND006	51J	647666	6756134.9	10, 14, 18
11	RNRC010	51J	647723.6	6756688.98	10, 14, 18
12	RNRC014	51J	647812.7	6756458.16	10, 14, 18
13	RNRC016	51J	647428.8	6756218.32	10, 14, 18
14	RNRC018	51J	647465.5	6755932.22	10, 14, 18
15	RNRC023	51J	647292	6756361.96	10, 14, 18
16	RNRC029	51J	647205	6755937.04	10, 14, 18
17	RNRC031	51J	647436	6755708.05	10, 14, 18
18	TFRC2574	51J	650370.2	6763238.73	10, 14, 18
19	TFRC726	51J	651498.5	6766994.89	10, 14, 18
20	TFRC730	51J	651250.9	6766660.01	10, 14, 18
21	TPD057	51J	650534.8	6762860.4	10, 15, 20
22	TPD285	51J	650181	6762149.28	10, 14, 18
23	TPRC193	51J	650324.6	6763070.32	10, 14, 18
24	TPRC208D	51J	650041.1	6762289.45	10, 14, 18
25	TPRC420	51J	653362.6	6765192.93	10, 14, 18
26	TPRC436	51J	653647.6	6765759.34	10, 14, 18
27	TPRC438	51J	653782.7	6765614.65	10, 14, 18
28	TPRC443	51J	652658	6765049	10, 14, 18
29	TPRC530	51J	652517.2	6764910.32	10, 14, 18
30	TPRC531	51J	652726.1	6765528.33	10, 14, 18
31	TPRC913	51J	648892.3	6759624.63	10, 14, 18
32	ZBRC002	51J	647140.5	6757982.01	10, 14, 18
33	ZBRC007	51J	647388.8	6757946.54	10, 14, 18
34	ZBRC009	51J	647280	6758334	10, 14, 18
35	ZBRC013	51J	647849.4	6758405.07	10, 14, 18
36	ZBRC019	51J	648166.7	6758722.58	10, 14, 18
37	ZBRC020	51J	648133.9	6758969.73	10, 14, 18
38	ZBRC023	51J	648343.4	6758972.21	10, 14, 18
39	TPRC760	51J	649091	6764831	10, 14, 18
40	TPD142	51J	648740	6759644	10, 14, 18
41	TPA233	51J	643600	6762400	12, 18
42	TPA266	51J	644400	6760800	10
43	TPA267	51J	644200	6760800	13
44	SBA104	51J	652000	6756200	12, 18
45	SBA105	51J	652200	6756200	12, 18
46	SBA128	51J	652700	6756800	12, 18

#	Drill hole ID	MGA94 Zone	Eastings	Northings	Trap Depth (m)
47	SBA130	51J	652903.1	6756805	12, 18
48	SBA262	51J	654000	6759800	12, 18
49	TPA1441	51J	642000	6759200	12, 18
50	TTA344	51J	633182.1	6763059	12, 18
51	KMA108	51J	643294.4	6753596	12, 18
52	SLA493	51J	650505.9	6752612	12, 18
53	SLA498	51J	651479.6	6752606	12, 18
54	SLA500	51J	650197.3	6752390	12, 18
55	SLA505	51J	650700.8	6752397	12, 18
56	SLA515	51J	650105.5	6752001	12, 18
57	SLA517	51J	651016.3	6751993	12, 18
58	SLA521	51J	648695.9	6751795	12, 18
59	SBA714	51J	651797.9	6756596	12, 18
60	TPA4457	51J	649415.6	6756500	12, 18
61	TDA113	51J	62854.7	6761233	12, 18
62	TPRC447	51J	648512.8	6759570.18	5, 7, 11
63	MBRC010	51J	647424.1	6760456.06	10, 14, 18
64	ZBRC011	51J	647779.8	6758324.4	10, 14, 18
65	SLA474	51J	650100.7	6752997	12, 18

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APPENDIX C DETAILED GEOLOGICAL INFORMATION FROM 14 DRILL LINES (CROSS SECTIONS) ACROSS OPERATIONAL AREA

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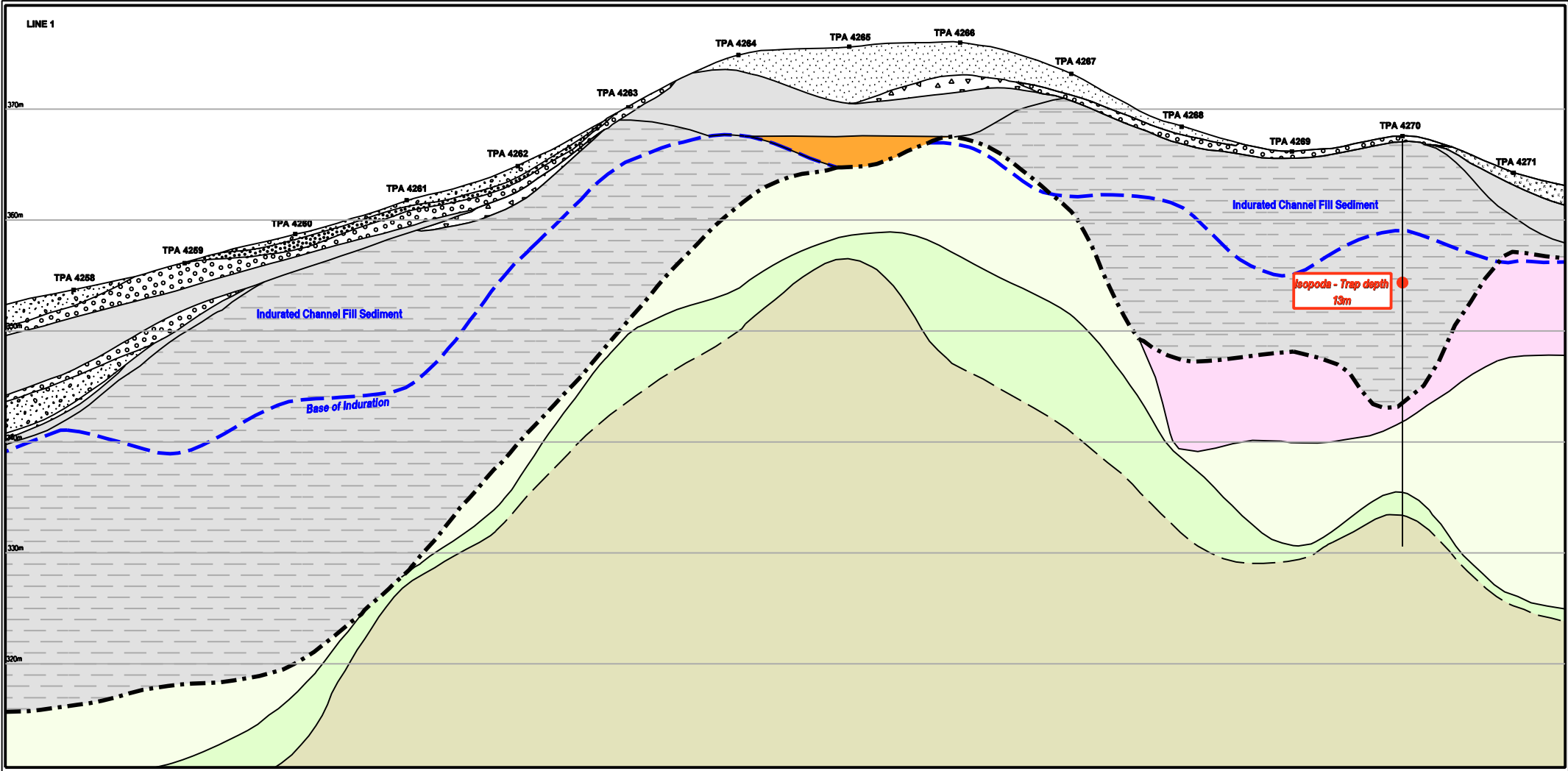
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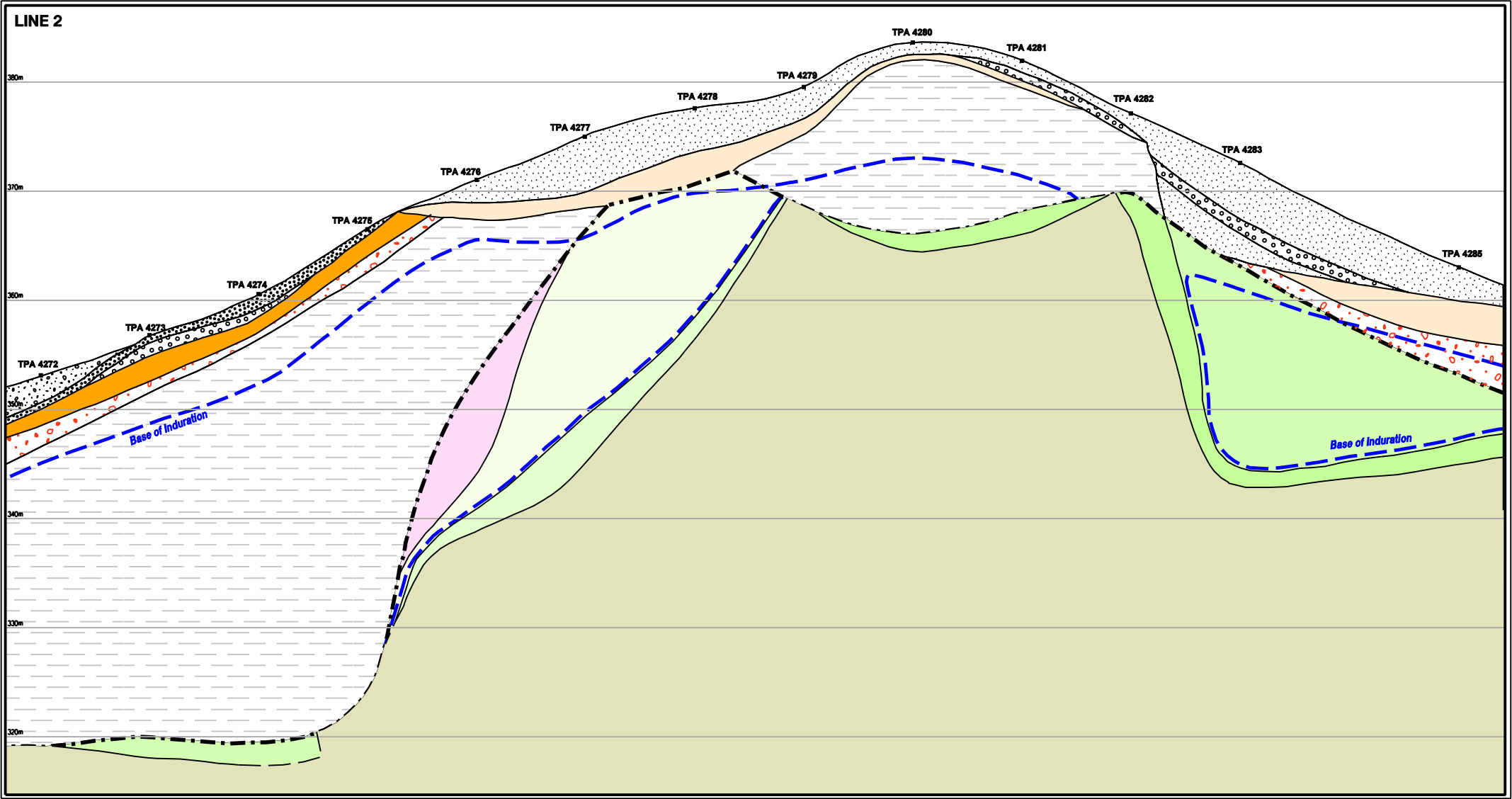
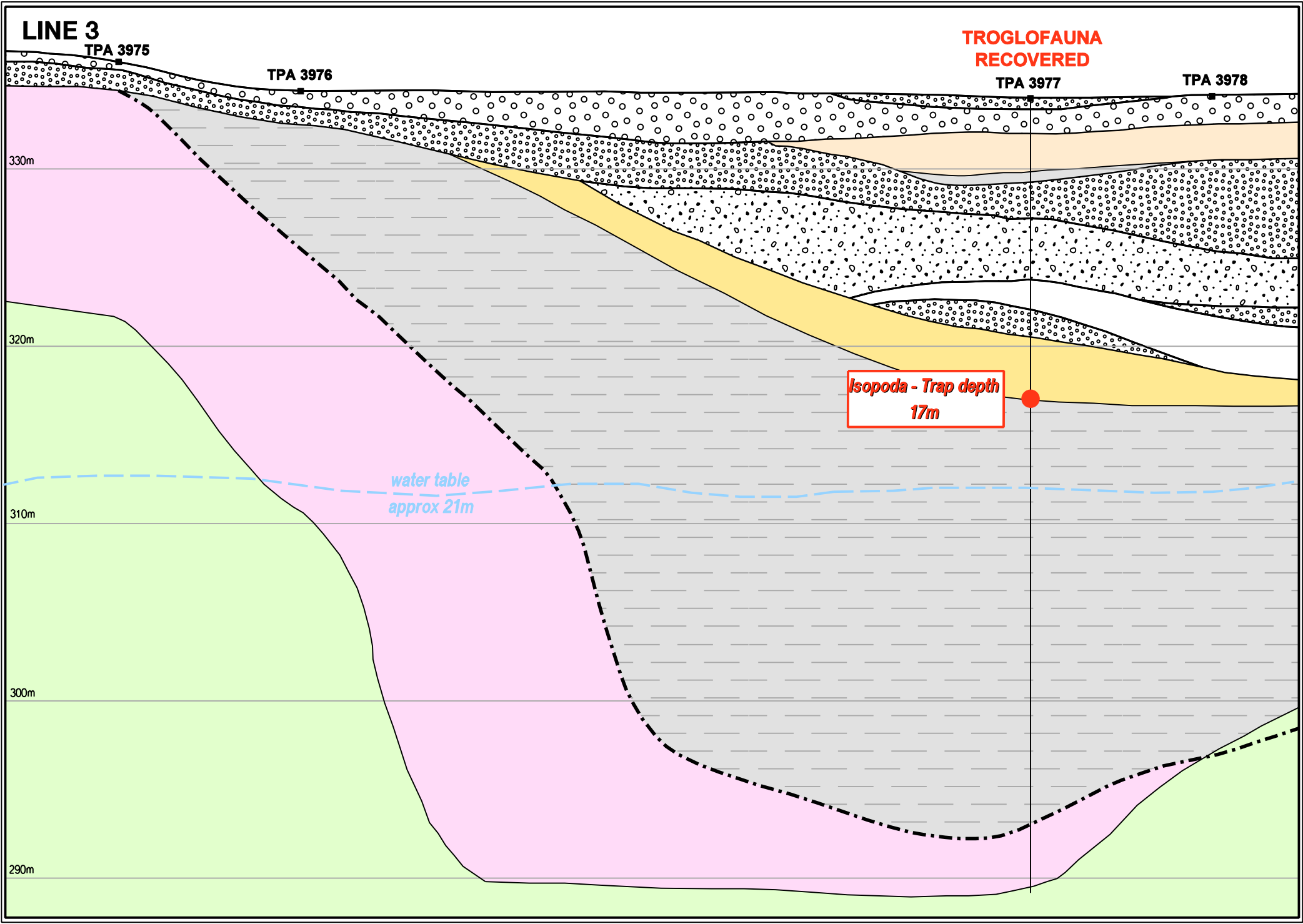
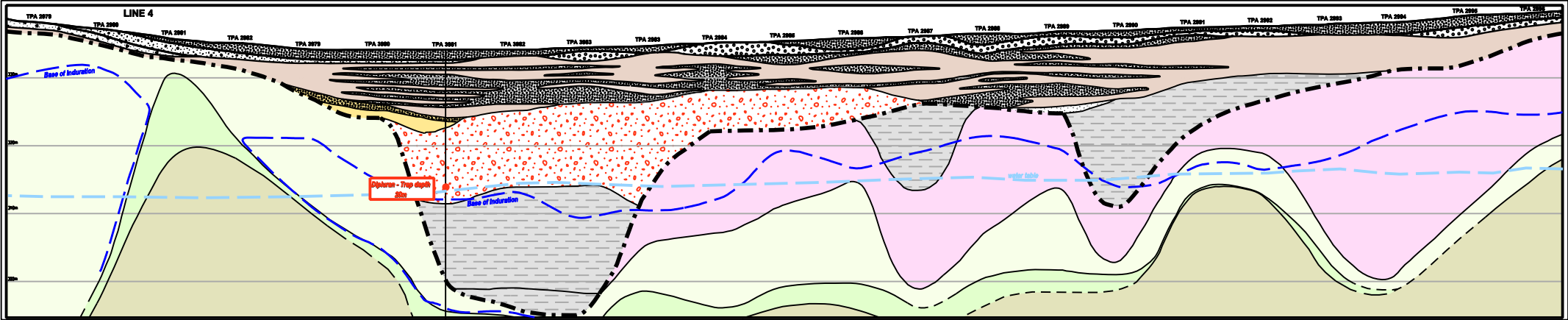
TPA 4264
TPA 4265
TPA 4266
TPA 4267
TPA 4263
TPA 4268
TPA 4269
TPA 4270
TPA 4271
TPA 4262
TPA 4261
TPA 4260
TPA 4259
TPA 4258
370m
360m
350m
330m
320m
Indurated Channel Fill Sediment
Base of Induration
Indurated Channel Fill Sediment
Isopoda - Trap depth
13m


LINE 2
TPA 4280
TPA 4281
TPA 4279
TPA 4278
TPA 4277
TPA 4276
TPA 4262
TPA 4283
TPA 4275
TPA 4285
TPA 4274
TPA 4273
TPA 4272
380m
370m
360m
350m
340m
330m
320m
Base of Induration
Base of Induration


LINE 3
TPA 3975
TPA 3976
TROGLOFAUNA
RECOVERED
TPA 3977
TPA 3978
330m
320m
310m
300m
290m
Isopoda - Trap depth
17m
water table
approx 21m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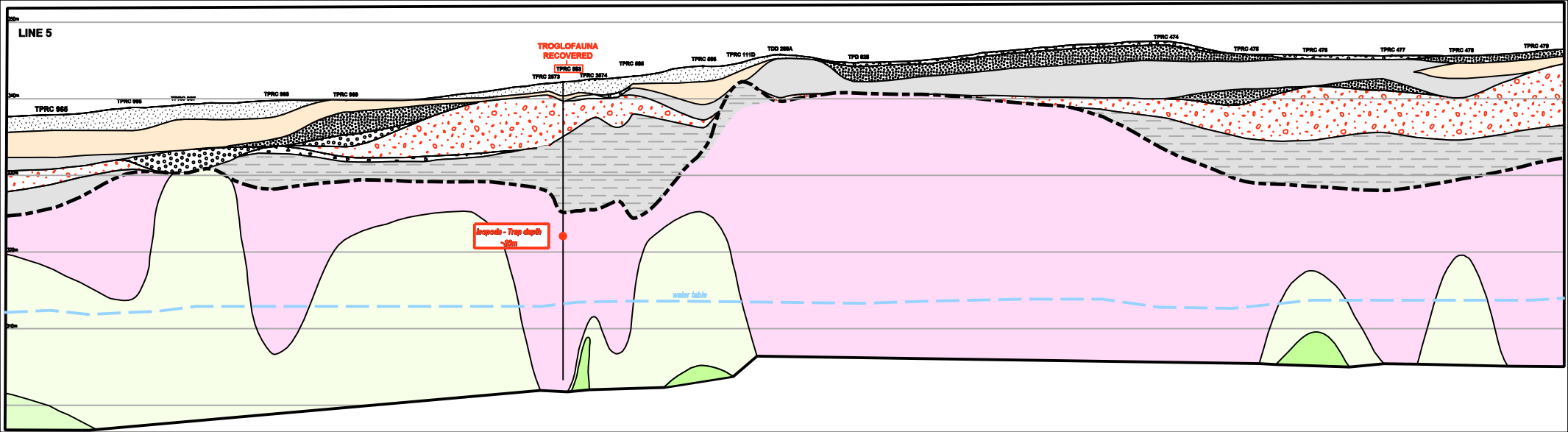
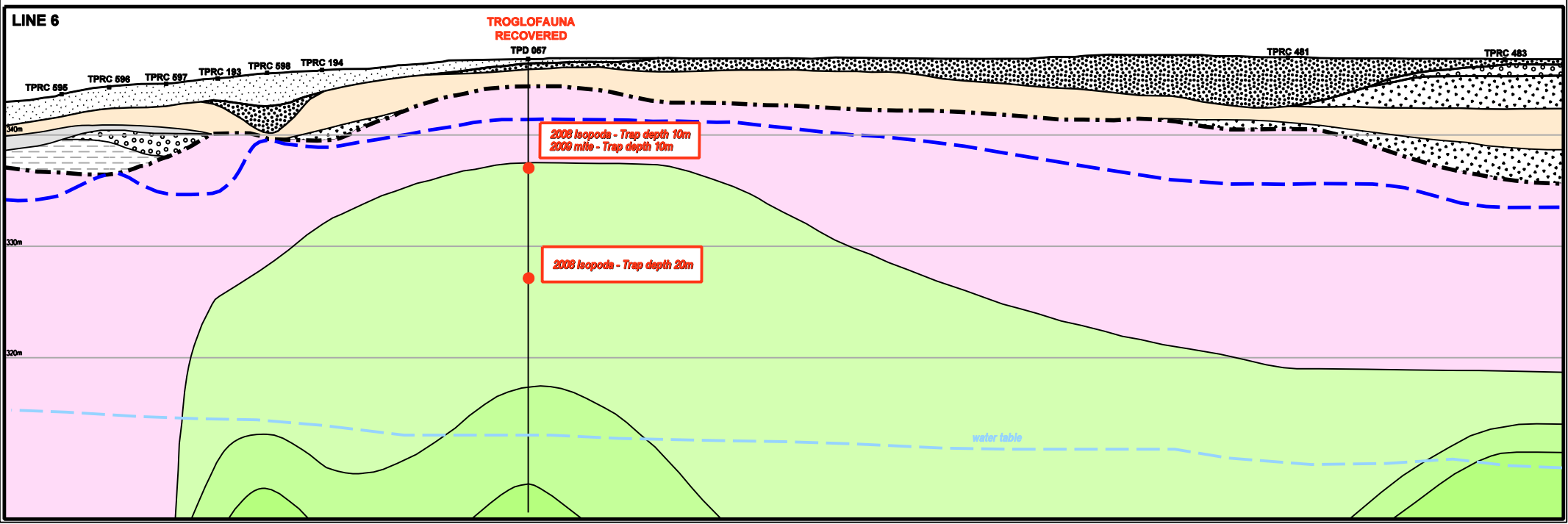
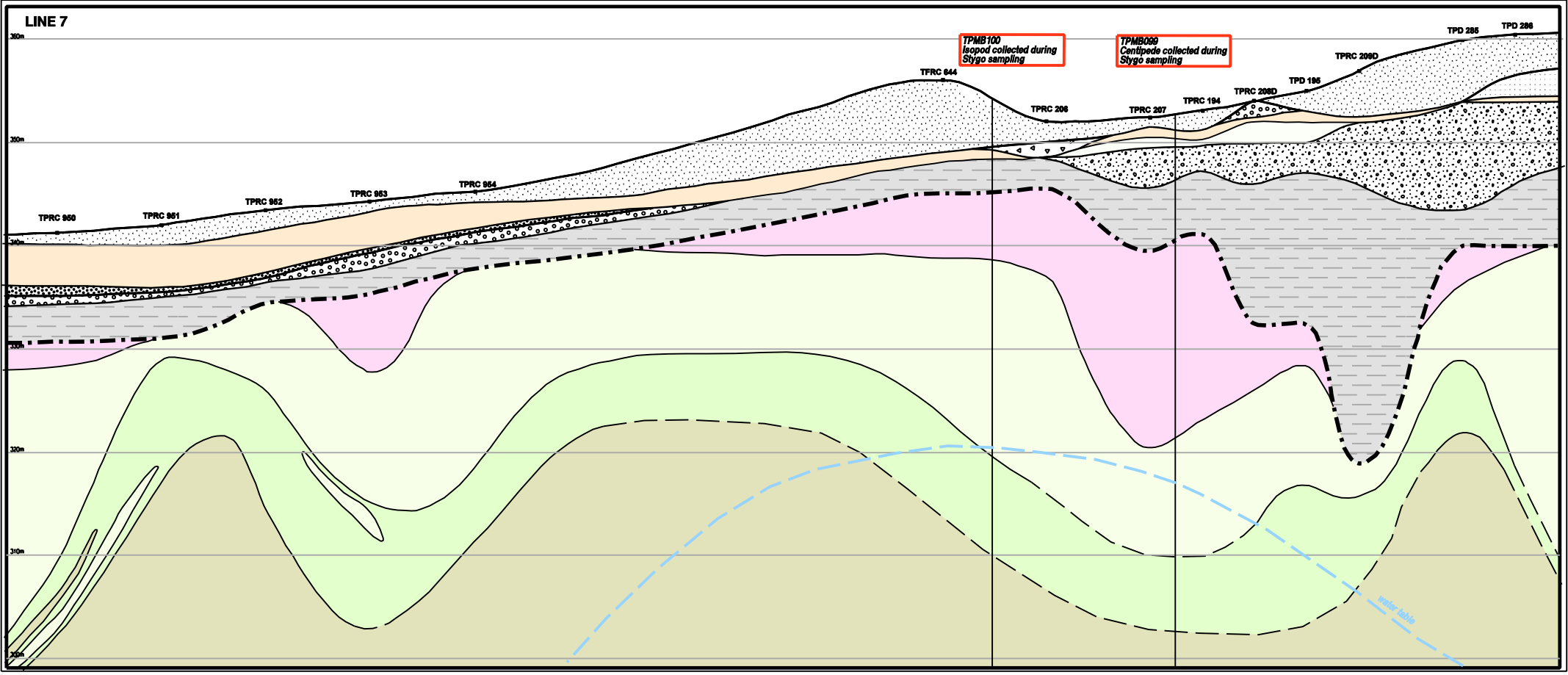
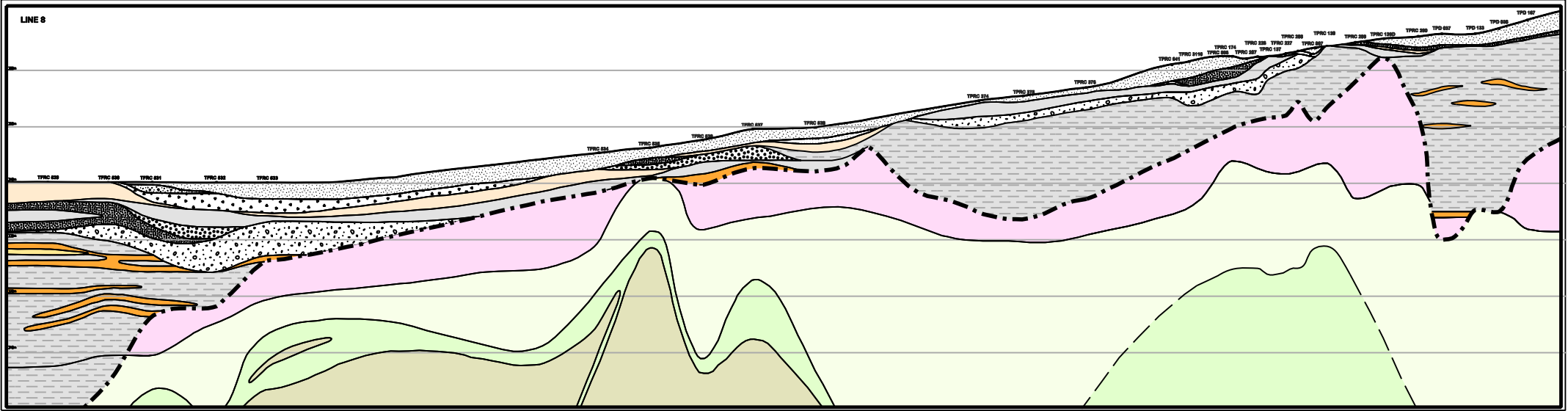
TPA 2979
TPA 2980
TPA 2981
TPA 2982
TPA 2979
TPA 2980
TPA 2981
TPA 2982
TPA 2983
TPA 2983
TPA 2984
TPA 2985
TPA 2986
TPA 2987
TPA 2988
TPA 2989
TPA 2990
TPA 2991
TPA 2992
TPA 2993
TPA 2994
TPA 2995
TPA 2996
Base of Induration
Diplume - Top depth 30m
Base of Induration
water table


LINE 5
TROGLOFAUNA RECOVERED
TPRC 983
TPRC 2673
TPRC 2674
TPRC 986
TPRC 985
TPRC 111D
TDD 288A
TPD 835
TPRC 474
TPRC 475
TPRC 476
TPRC 477
TPRC 478
TPRC 479
TPRC 985
TPRC 986
TPRC 987
TPRC 988
TPRC 989
Isopods - Trap depth ~22m
water table


LINE 6
TROGLOFAUNA RECOVERED
TPD 067
TPRC 595
TPRC 596
TPRC 597
TPRC 193
TPRC 598
TPRC 194
TPRC 481
TPRC 483
340m
330m
320m
2008 Isopoda - Trap depth 10m
2008 mite - Trap depth 10m
2008 Isopoda - Trap depth 20m
water table


LINE 7
350m
340m
330m
320m
310m
300m
TPRC 950
TPRC 951
TPRC 952
TPRC 953
TPRC 954
TFRC 844
TPRC 206
TPRC 207
TPRC 194
TPRC 208D
TPD 195
TPRC 209D
TPD 285
TPD 286
TPMB100
Isopod collected during
Stygo sampling
TPMB099
Centipede collected during
Stygo sampling
water table


LINE 6
TPRC 632
TPRC 630
TPRC 631
TPRC 633
TPRC 634
TPRC 624
TPRC 625
TPRC 626
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TPRC 628
TPRC 574
TPRC 575
TPRC 576
TPRC 577
TPRC 578
TPRC 579
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TPRC 584
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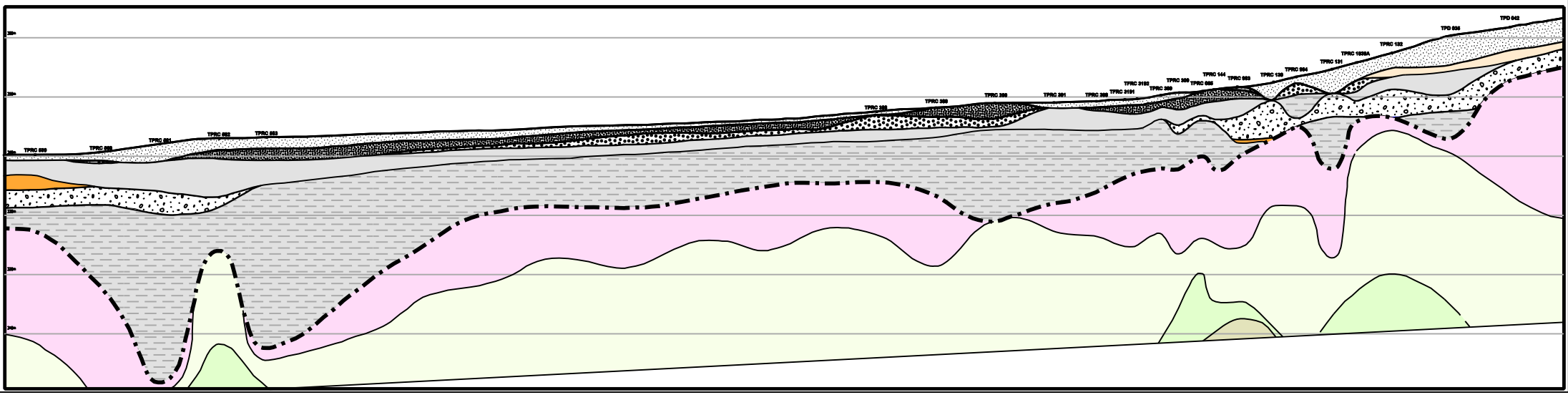
TPRC 598
TPD 107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TPRC 389
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TPRC 3191
TPRC 3192
TPRC 393
TPRC 085
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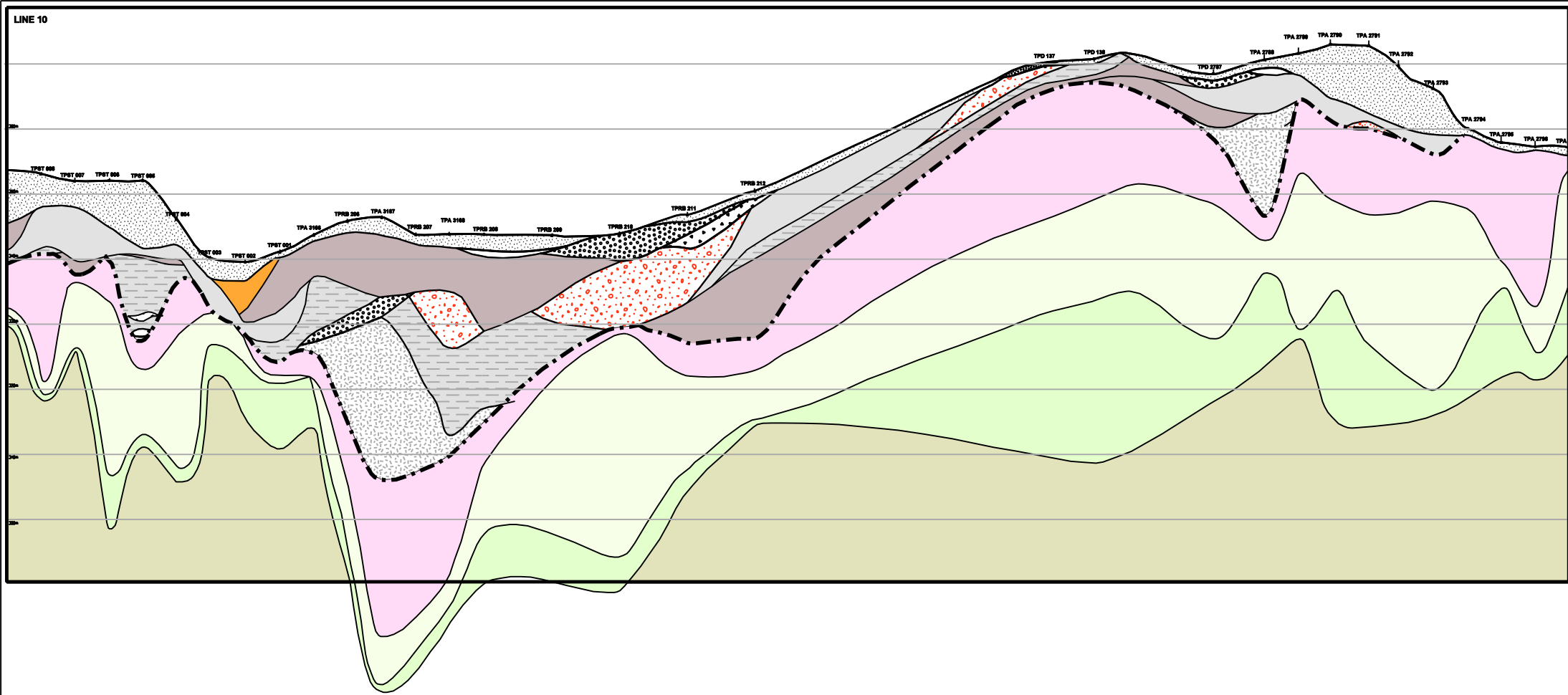
TPRC 131
TPRC 1038A
TPRC 122
TPD 038
TPD 042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TPST 008
TPST 007
TPST 006
TPST 005
TPST 004
TPST 003
TPST 002
TPST 001
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TPRB 206
TPA 3167
TPRB 207
TPA 3169
TPRB 208
TPRB 209
TPRB 210
TPRB 211
TPRB 212
TPD 127
TPD 126
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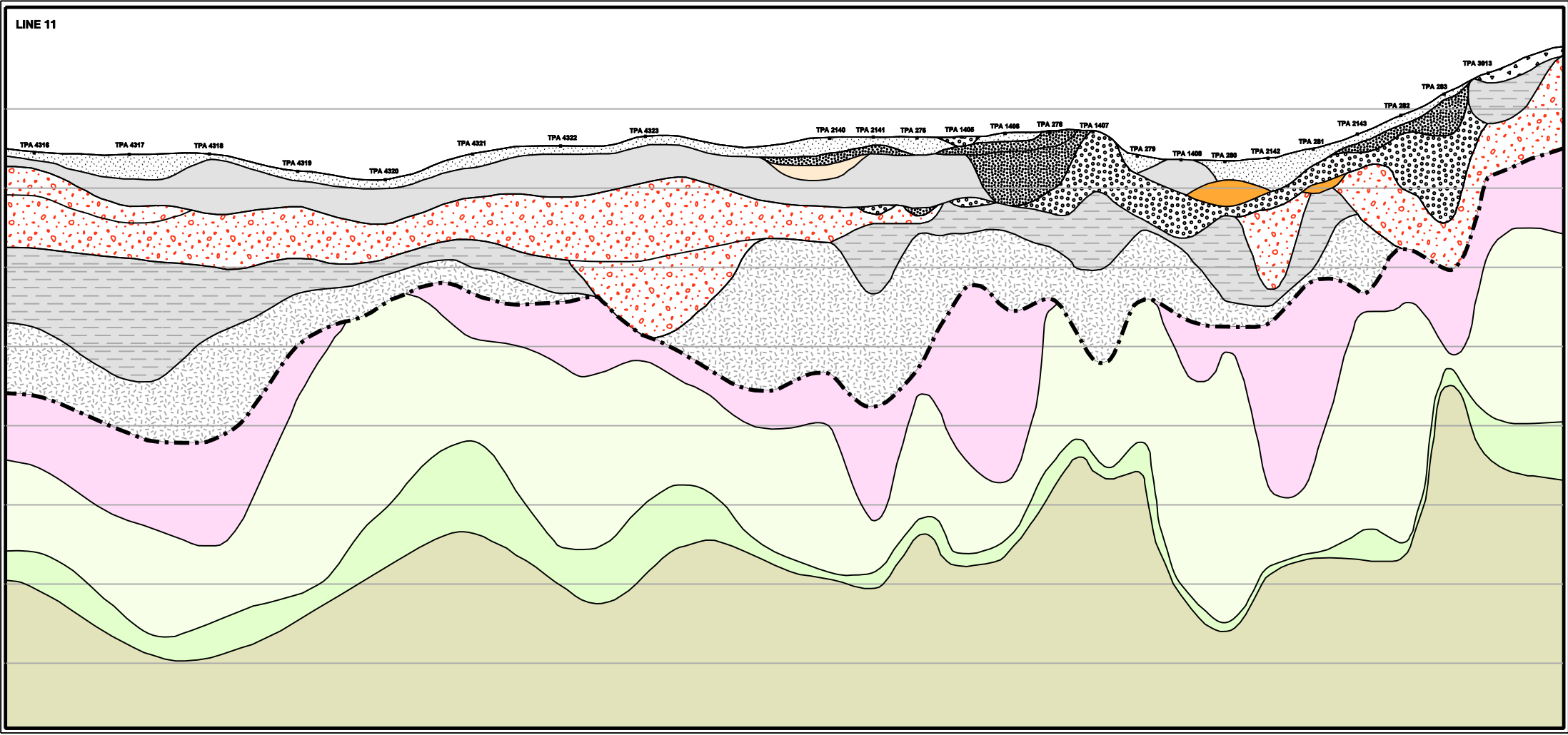
TPA 2795
TPA 2796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TPA 276
TPA 1405
TPA 1406
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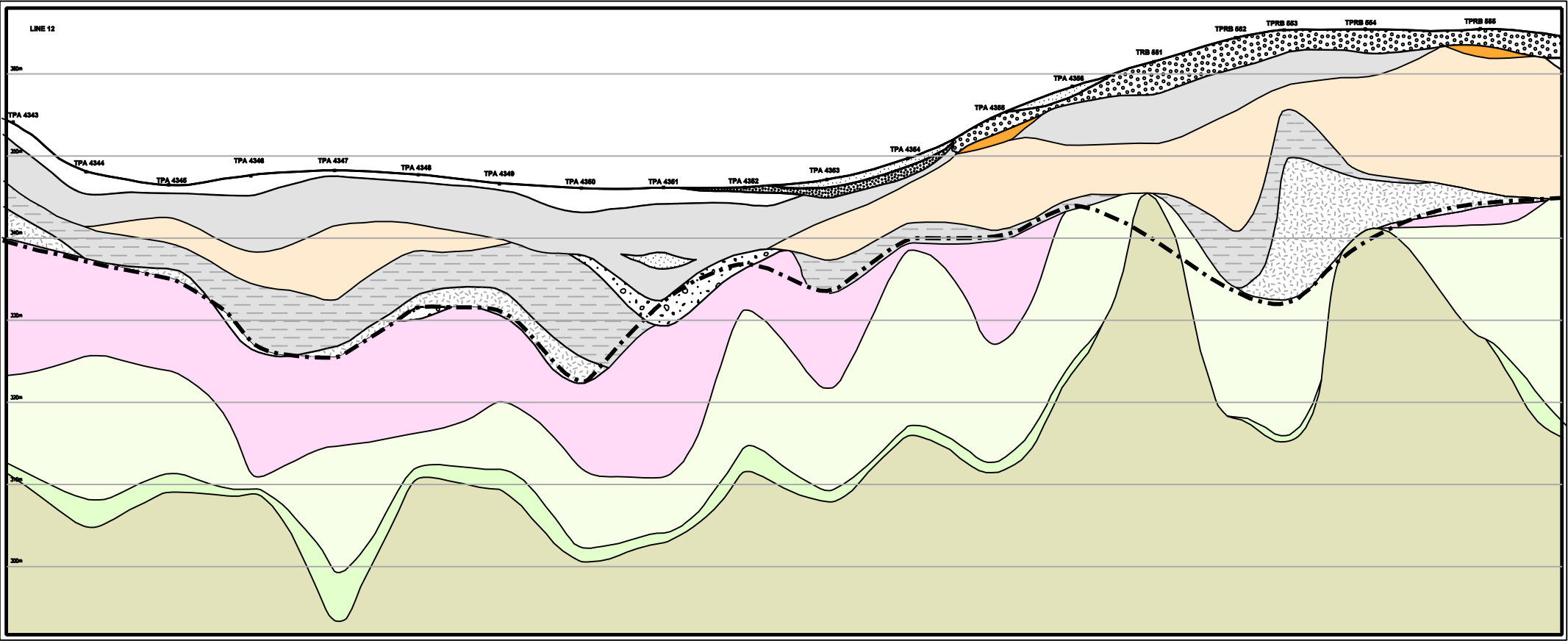
TPA 281
TPA 2143
TPA 282
TPA 283
TPA 3013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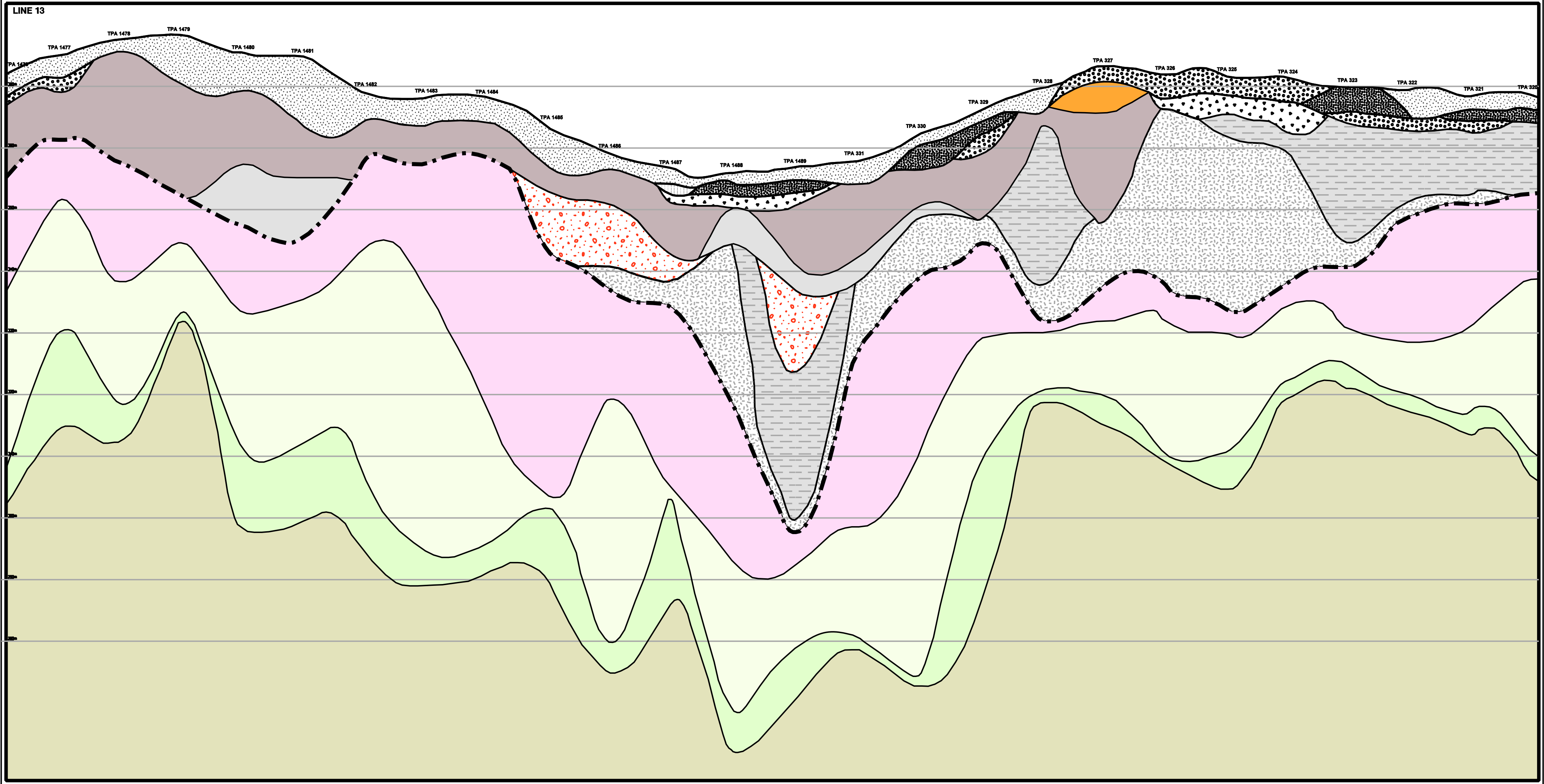
TPA 4344
TPA 4345
TPA 4346
TPA 4347
TPA 4348
TPA 4349
TPA 4360
TPA 4361
TPA 4362
TPA 4363
TPA 4364
TPA 4365
TPA 4366
TRB 561
TPRB 562
TPRB 563
TPRB 564
TPRB 565
380m
360m
340m
320m
300m
280m



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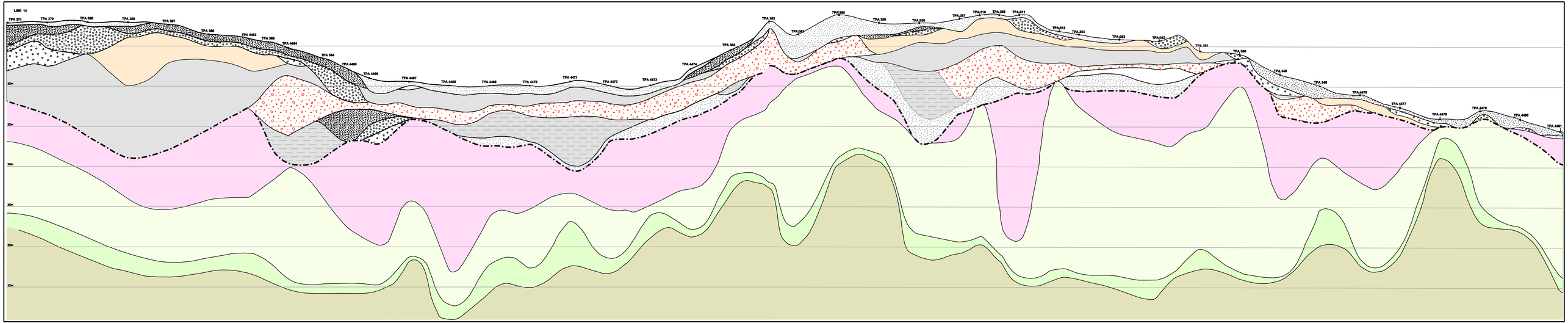
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TPA 359
TPA 358
TPA 357
TPA 510
TPA 356
TPA 511
TPA 512
TPA 354
TPA 353
TPA 352
TPA 351
TPA 350
TPA 349
TPA 348
TPA 4476
TPA 4477
TPA 4478
TPA 4479
TPA 4480
TPA 4481
300m
250m
200m
150m
100m
50m

LINE 1

				Drill Hole Number	TPA 4258	TPA 4259	TPA 4260	TPA 4261	TPA 4262	TPA 4263	TPA 4264	TPA 4265	TPA 4266	TPA 4267	TPA 4268	TPA 4269	TPA 4270	TPA 4271
				RL (m)	347.4	349.5	353.4	357.8	360.3	365.7	368.3	370.7	347.0	347.9	350.2	352.3	349.7	346.4
				Easting	648174	648315	648457	648598	648738	648881	649022	649164	652552	652694	652835	652977	653118	653260
				Northing	6761062	6760921	6760779	6760638	6760522	6760355	6760214	6760072	6763744	6763602	6763461	6763319	6763178	6763036
Potential Troglofauna Habitat	**Regolith Units**		**Colour and Competency**		**Materials**												**Troglo** (slaters, 13m, outside)	
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit	0-1.5 8-10.5		0-0.5	0-0.5	0-1									
					Sand							0-1	0-5	0-3	0-2	0-0.5			0-1
					Soil														
Likely					Fine Gravel			0.5-1.5	0.5-1	1-1.5									
					Coarse Gravel	1.5-2.5 7.5-8	0-2.5 4.5-6	1.5-2	1-2.5	1.5-2.5	0-0.5				2-2.5	05-1.5	0-05	0-0.5	
Prime					Lag	10.5-11				2.5-3.5				3-4.5					
		Cemented laminar and massive multi-generational mixed lenses of Colluvium	Pale Red Brown	Indurated	Calcrete														
			Various		Silcrete	2.5-7.5 11-11.5	2.5-4.5 6-6.5	2-3.5	2.5-3			1.0-7	5.0-8	4.5-8.5					1.0-4
			Yellow Brown		Ferricrete								8.0-11						
Marginal		Sheet Wash Alluvial Deposits	Purple-Red		Mottled Clay														
Likely			Yellow Brown	Unconsolidated	Fine Gravel														
					Coarse Gravel														
Prime					Lag														
				Ind.	Laterite Ferricrete														
		Palaeochannel-fill Sediment	Various	Unconsol.	Channel-fill	11.5-12.5 12.5-37.5	6.5-14 14-38	3.5-12 12-39	3-11 11-34	3.5-9 9-25.5	_ 0.5-19.5	_ 7-13.5	–	–	2.5-12	1.5-21	0.5-18	0.5-10 24?	1-8
Marginal					Rounded Pebbles														
Contact		Unconformity			Contact	37.5	38	39	34	25.5	19.5	13.5	11	8.5	12	21	18	10	8
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white											21-28.5	18-26	24-26	8.0-17
		Lower Saprolite	Increasingly Consolidated		Light greenish grey	37.5-38	38-45	39-42		25.5-29	19.5-20.5	13.5-21	415-78	8.5-19	12-21.5	28.5-29.5	26-35	26-32	17-38
		Saprock	Consolidated		Dark greenish grey		45-46	42-47	34-35	29-31+	20.5-21	21-24	17-19	19-29	21.5-24	29.5-30		32-34	38-40
Unsuitable		Fresh Rock	Consolidated		Greenish grey			47-48	35-36				19-20	29-30	24-25			34-35	
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained	0-13.5	0-17	0-30	0-10.5	0-9	0-10.5	0-20+	0-17	0-18	0-10	0-5	0-9.5	0-9	0-8.5
			Various	Indurated	Silicified	11.5-12.5	6.0-17	2.0-15	2.5-17	3.5-9	0.5-4.5	1.0-7	5.0-11	4.5-9	11.5	1.5-7	0.5-11	0.5-8.5	2-8.5
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled	11.5-13.5	6.5-17	3.5-30	3-10.5	3.5-9	0.5-10.5	1-20+	_		2.5-10	1.5-5	0.5-9.5	0.5-9	
		Water-saturation (Zone of Very Low Water Flux)	White		Leached (Bacterial Reduction)	13.5-32.5	17-29.5	30-21	10.5-36+	9.0-28	10.5-18.5	10.5-11	_		10.0-12	5.0-21	9.5-24	9.0-24	
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained	32.5-37.5	29.5-38.5			25-27	18.5-20	8.5-10	5.0-6	6.5-9.5		21-29			1.0-4
							24-26					11.17		19-29	12.0-17			9.5-13	8.0-14
																	17-22.5		17-27
																			33-40+
		Preset-Day Drainage	Watertable																
		Total Depth Logged (m)				38	46	48	36	31	21	24	19	30	25	30	35	35	40
		EOH (End of Hole) (m)				38	46	48	36	31	22	24	20	30	32	30	35	35	63

LINE 2

					Drill Hole Number	TPA4272	TPA4273	TPA4274	TPA4275	TPA4276	TPA4277	TPA4278	TPA4279	TPA4280	TPA4281	TPA4282	TPA4283	TPA4285
					RL (m)	352.0	355.0	360.0	367.0	373.0	378.0	380.0	381.0	386.0	385.0	380.0	380.0	373.0
					Easting	645,601	645,812	646,001	646,211	646,406	646,607	646,802	647,005	647,207	647,405	647,603	647,603	647,807
					Northing	6,767,683	6,767,689	6,767,689	6,767,686	6,767,696	6,767,692	6,767,689	6,767,690	6,767,687	6,767,695	6,767,692	6,767,692	6,767,685
Potential Troglofauna Habitat	**Regolith Units**		**Colour and Competency**		**Materials**													
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit	0-2.5												
					Sand					0-2	0-5	0-4	0-3	0-1	0-1	0-1	0-9	0-3
					Soil													
Likely					Fine Gravel	2.5-3	0-0.5	0-1.5	0-0.5									
					Coarse Gravel		0.5-1.5	1.5-2							1.0-2	1.0-2	5-6.5	
					Lag													3.0-5
Prime		Cemented laminar and massive multi-generational mixed lenses of Colluvium	Pale Red Brown	Indurated	Calcrete					2-3.5	5-6.5	5.0-7	3-4.5	1-1.5	2-2.5			5-6.5
			Various		Silcrete												4.0-9	
			Yellow Brown		Ferricrete													
Marginal		Sheet Wash Alluvial Deposits	Purple-Red		Mottled Clay													
Likely			Yellow Brown	Unconsolidated	Fine Gravel													
					Coarse Gravel													
Prime					Lag													
				Ind.	Laterite Ferricrete	3-4.5	1.5-4	2-3.5	0.5-2.5									
		Palaeochannel-fill Sediment	Various	Unconsol.	Channel-fill	4.5-6.5	4.0-5	3.5-4	2.5-4	4.0-6	6.5-8.5							
Marginal					Rounded Pebbles	6.5-8 8-34	5.0-8 8-34	4-8.5 8.5-40+	4.0-9 9-40+	3.5-17.5			4.5-11	1.5-17.5	2-14	2.0-7	9-9.5	6.5-10
Contact		Unconformity			Contact	34	36.5			17.5	8.5	7	11	17.5	14	7	9.5	10
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white		34-36.5			17.5-27								
		Lower Saprolite	Increasingly Consolidated		Light greenish grey		36.5-38.5			27-30	8.5-	7-19					9.5-28	10.0-16
		Saprock	Consolidated		Dark greenish grey	34-36	38.5-40+			30-32	25.5	19-21		17.5-19	14-16	7.0-10	28-29.5	16-18
Unsuitable		Fresh Rock	Consolidated		Greenish grey					32-33	30-32	21-24	11.0-12	19-20	16-17	10.0-13	29.5-30+	18-19
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained	0-6.5	0-5	0-8.5	0-4	0-7	0-16.5	0-13.5	0-11	0-19	0-5.5	0-12	0-14	0-10.5
			Various	Indurated	Silicified	3.0-8	1.5-8	2-8.5	0.5-7	2-5.5	5.0-9	4-7.5	3-8.5	1-10.5	1-10.5	1.0-13	9-11.5	3.0-8
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled	3-6.5	1.5-5	2-8.5	0.5-4	2.0-7	5.0-7	5.0-11	3.0-11	1.0-13	2-5.5	2.0-7		6.5-10
		Water-saturation (Zone of Very Low Water Flux)	White		Leached (Bacterial Reduction)	11.0-15	9.5-11.5	11-28.5	4-8.5	5.5-7					6-15.5	5.0-6		7-7.5
							18.5-19.5	13-14	16-17	8.5-14								
								24-28.5	34.5-36	21-24								
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained	8.5-11	5-9.5	8.5-16	8.5-36	7-8.5								6.5-7
						15.5-34	11.5-15.5	23-24	17-30	14-21				13-17	10.5-11?		9.0-27	7.5-9
							20-40+	28.5-39	36-39	24-29								14.5-18
		Preset-Day Drainage	Watertable															
		Total Depth Logged (m)				36	40	40	40	33	31	24	12	20	17	13	30	19
		EOH (End of Hole) (m)				36	46	47	62	33	32	24	12	21	17	23	43	19

LINE 3					Drill Hole Number	TPA 3975	TPA 3977	TPA 3978
					RL (m)	336.0	334.0	334.2
					Easting	650074.0	650460	650497.0
					Northing	6765253.0	6764931.0	6764839.0
Potential Troglofauna Habitat	**Regolith Units**		**Colour and Competency**		**Materials**		**Troglo** (slaters, 17m, inside)	
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit		5.5-10	
					Sand			
					Soil			
Likely					Fine Gravel	0.5-1.5	0-0.5 4.5-6.5	
					Coarse Gravel	0-0.5	0.5-2	0-1.5
Prime					Lag			
		Cemented laminar and massive multi-generational mixed lenses of Colluvium	Pale Red Brown	Indurated	Calcrete		2.0-4	1.5-3.5
			Various		Silcrete		4-4.5	
			Yellow Brown		Ferricrete			
Marginal		Sheet Wash Alluvial Deposits	Purple-Red		Mottled Clay		16.5-21	17-19.5
Likely			Yellow Brown	Unconsolidated	Fine Gravel		11.5-13	11.5-12
					Coarse Gravel			3.5-8.5
Prime					Lag			8.5-11.5
				Ind.	Laterite Ferricrete		13-16.5	15-17
Marginal		Palaeochannel-fill Sediment	Various	Unconsol.	Channel-fill		21-40	19.5-33
					Rounded Pebbles		34-40	33-36
Contact		Unconformity			Contact	1.5	40+	36
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white	1.5-14		
		Lower Saprolite	Increasingly Consolidated		Light greenish grey	14-35+		36-40+
		Saprock	Consolidated		Dark greenish grey			
Unsuitable		Fresh Rock	Consolidated		Greenish grey			
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained	0-4.5	0-21	0-12
			Various	Indurated	Silicified	1.5-5	2.0-27	1.5-26
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled	1.5-5	13-21	15-19.5
		Water-saturation (Zone of Very Low Water Flux)	White		Leached (Bacterial Reduction)		21-39	13-15
								19.5-33.5
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained	5.0-16	13-16.5	15-17
							26-32.5	33.5-38
							34-40	
		Preset-Day Drainage	Watertable					
		Total Depth Logged (m)				35	40	40
		EOH (End of Hole) (m)				44	63	50

LINE 4

Potential Troglofauna Habitat	Regolith Units		Colour and Competency		Materials	Drill Hole Number	TPA 2979	TPA 2980	TPA 2981	TPA 2982	TPA 3979	TPA 3980	TPA 3981	TPA 3982	TPA 3983	TPA 2983	TPA 2984	TPA 2985	TPA 2986	TPA 2987	TPA 2988	TPA 2989	TPA 2990	TPA 2991
						RL (m)	338	337	335.5	335	334	334	334	334	334.2	334.5	335	335.2	335.6	336	336.5	336.8	337	337.4
						Northing	649,801	649,872	649,943	650,014	650,156	650,228	650,284	650,365	650,438	650,566	650,636	650,707	650,777	650,849	650,920	650,990	651,126	651,196
						Easting	6,765,229	6,765,159	6,765,088	6,765,016	6,764,976	6,764,914	6,764,845	6,764,758	6,764,698	6,764,673	6,764,604	6,764,532	6,764,462	6,764,390	6,764,320	6,764,249	6,764,238	6,764,166
													Troglo (diplurans, 20m, inside)											
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit																			
					Sand																	11-12		
					Soil																			
Likely					Fine Gravel				0-0.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1	0-1	0-1		2-3	0-2	1-2	0-1, 3-4	0-1, 2-4	0-1, 2-3	1-2
					Coarse Gravel		0-1	0.5-2	1.5-2.5	1.5-2	1.5-2	1.5-2		1-2		0-2	0-2		0-1	1-3	1-2	1-2	0-1	
Prime					Lag	0-1	1-2	2-2.5																
		Cemented laminar and massive multi-generational mixed	Pale Red Brown	Indurated	Calcrete	1-1.5	2-2.5	2.5-3	2.5-4	2-6	2-8	2-10	1-8	2-8	1-8	2-3	3-7	2-7	2-10	3-7	4-11	3-10	2-8
			Various		Silcrete																			
			Yellow Brown		Ferricrete																			
Marginal		Sheet Wash Alluvial Deposits	Purple-Red		Mottled Clay								12-23	9-20	8-20	8-21	7-13	7-13	7-12					
Likely			Yellow Brown	Unconsolidated	Fine Gravel						6-7	8-9	10-10.5											
					Coarse Gravel							9-10	10.5-13											
Prime					Lag																			
				Ind.	Laterite Ferricrete																			
		Palaeochannel-fill Sediment	Various	Unconsol.	Channel-fill								23-34	20-34	13-34					10-23			10-25.5	8-15
Marginal					Rounded Pebbles								28-34	29-35	30-36									
Contact		Unconformity			Contact	1.5	2.5	3	4	7	10	34	38	39	21	14	13	12	10	11	12	25.5	15	
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white											21-29	13-28	13-24	12-21	23-37	7-29	12-23	25.5-33	15-19
		Lower Saprolite	Increasingly Consolidated		Light greenish grey	1.5-20+	2-34	3-5	4-15	7-23	10-29	34-38	38-39	39-40	29-36	28-39	24-36	21-36	37-40	29-36	23-35	33-36	19-24
		Saprock	Consolidated		Dark greenish grey		34-37	5-17	15-18	23-24	29-30				36-40+	39+	36-39	36-39			35-36	36-38	24-24.5	
Unsuitable		Fresh Rock	Consolidated		Greenish grey		37-40+	17-20+	18-20+			38+	39+				39+	39+					24.5+	
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulatio	Red	Unc.	Hematitic Stained	0-9	0-4	0-12	0-16												9-11		
			Various	Indurated	Silicified	1.5-7	2.5-6	3-20+	4-20+	7-13	10-19	14-20.5					10-16	12-18	10-17	11-15	11-12		15-19
		Poor Drainage (Zone of	Purple-Red & White		Mottled	1.5-4.5	2.5-3.5	3-3.5	4-7.5	7-15	10-12	13-16.5										16-18.5	15-16.5
									11.5-13.5		15.5-19	18-23										20-23	17.5-18.5
		Water-saturation (Zone of Very Low Water Flux)	White		Leached (Bacterial Reduction)				12.5-13	10-12	12-15.5	16.5-18								13-15		18.5-20	16.5-17.5	
																				17-19				
																				24-25				
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained	-	-	-	-	-	10-12	13-16.5								15-17				
						-	-	-	16-18	15-22	19-29	22-40+								18-24				
						-	35-36	-	-	21-24			33-40							25-26				
		Post-Day Drain	Watertable																					
		Total Depth Logged (m)				20	40	20	20	24	30	40	40	40	37	40	40	38	40	30	36	40	25	
		EOH (End of Hole) (m)				21	44	22	20	*22*	30	42	64	52	37	41	41	39	47	33	38	45	28	

LINE 4					TPA 2992	TPA 2993	TPA 2994	TPA 2995	TPA 2996
					337.6	337.9	338.2	339	339.5
					651,267	651,337	651,408	651,479	651,550
					6,764,096	6,764,024	6,763,954	6,763,883	6,763,813
Potential Troglofauna Habitat	**Regolith Units**		**Colour and Competency**						
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated					
Likely					0-0.5	0-2	0-2	0-1.5	0-1
					0.5-2			1.5-3	1-2
Prime									
		Cemented laminar and massive multi-generational mixed	Pale Red Brown	Indurated	2-7	2-8	2-7	3-7	2-4
			Various						
			Yellow Brown						
Marginal		Sheet Wash Alluvial Deposits	Purple-Red						
Likely			Yellow Brown	Unconsolidated					
Prime									
				Ind.					
Marginal		Palaeochannel-fill Sediment	Various	Unconsol.	7-11	8-9			
Contact		Unconformity			11		7	7	4
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolit	Unconsolidated		11-18.5	9-32	7-37	7-28	4-20
		Lower Saprolit	Increasingly Consolidated		18.5-24	32-35	37-40	28-33	20-24.5
		Saprock	Consolidated		24-24.5	35-37			24.5-25
Unsuitable		Fresh Rock	Consolidated		24.5+	37+			25+
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulatio	Red	Unc.					
			Various	Indurated	10-21		7-15	7-14	4-15
		Poor Drainage (Zone of	Purple-Red & White		10-12.5		7-9	7-9	4-7
					13-20		12-16	11-14	7.5-15
		Water-saturation (Zone of Very Low Water Flux)	White		12.5-13		9-12	9-11	7-7.5
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated					
		set-Day Drair	W						
		Total Depth Log			25		40	30	25
		EOH (End of H			25	21	50	30	34

LINE 5

Potential Troglofauna Habitat					Drill Hole Number	TPRC 965	TPRC 966	TPRC 967	TPRC 968	TPRC 969	TFRC 2573	TPRC 583	TFRC 2574	TPRC 584	TFRC 2575	TPRC 585	TPRC 586	TPRC 111D	TPD 260A	TPD 028	TPRC 474	TPRC 475	TPRC 476	TPRC 477	TPRC 478	TPRC 479
					RL (m)	338.0	339.0	339.5	340.0	340.0	342.2	342.4	342.6	342.8	343.0	343.2	344.5	345.0	346.0	345.0	347.8	346.1	346.0	346.0	346.0	346.6
					Easting	649,936	650,008	650,071	650,151	650,212	650,342	650,358	650,370	650,386	650,412	650,427	650,495	650,530	650,565	650,706	650,998	651,065	651,139	651,207	651,281	651,350
					Northing	6,763,815	6,763,738	6,763,694	6,763,607	6,763,528	6,763,266	6,763,252	6,763,238	6,763,220	6,763,196	6,763,181	6,763,114	6,763,078	6,763,042	6,763,048	6,762,757	6,762,678	6,762,612	6,762,541	6,762,472	6,762,400
											Troglofauna		Recovered													
												*														
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit																					
					Sand	0-2	0-3	0-2	0-2	-	0-1	0-2	0-1.5	0-2	0-2	0-1	0-2	0-1	0-0.5	-	-	-	-	-	-	-
					Soil																					
Likely					Fine Gravel	-	-	-	5 - 6	1.5-4.5	tr	tr	tr	tr	2-2.5	tr	-	-		0.5-2.5	0.5-2.5	0-1	-	-	0-1	0-1
					Coarse Gravel	-	6.5-7	6-9		4.5-6	-									0-0.5	0-0.5	-	0-0.5	0-0.5		
Prime					Lag	-	-																			
		Cemented laminar and massive multi-generational mixed lenses of Colluvium	Pale Red Brown	Indurated	Calcrete	2-5.5	3-6	2-6	2-5	0-1.5	1-1.5	2-2.5	1.5-2	-	-	1-1.5	2-5	1-2.5	-				-	-	1-3	1-2.5
			Various		Silcrete	5.5-7	6-6.5	-		-	-	-	2-2.5	2-2.5	-	1.5-2.5	5-7	2.5-3	0.5-5.5	2.5-	2.5-7.5	1-4.5	0.5-4	0.5-3	3-5.5	-
			Yellow Brown		Ferricrete																					
Marginal		Sheet Wash Alluvial Deposits	Purple-Red		Mottled Clay	7-9	7-8	-	-	6-7.5	1.5-8	2.5-7	2.5-6	2.5-5	2.5-6.5	2.5-5	7-8	-	5.5-6		7.5-10	6.5-11	4-11	3-10	5.5-11	2.5-10
Likely			Yellow Brown	Unconsolidated	Fine Gravel																	4.5-6.5	-	3-4.5	4.5-tr	-
					Coarse Gravel																					
Prime					Lag				6-7	7.5-8	-	-	-	8.5-10.5	6.5-8 10-12	9-10 12-13.5						-	13-14	10-12	tr	-
				Ind.	Laterite Ferricrete																					
Marginal		Palaeochannel-fill Sediment	Various	Unconsol.	Channel-fill	9-20	8-25	-	7-11.5	8-10.5	7-40+	7-40+	6-32	5-30	6.5-30	5-18.5	8-11	-			10-14.5	11-16.5	11-16.5	10-17.5	11-15.5	10-14.5
					Rounded Pebbles	9-12 Silcret	8-8.5 Sand	-						-	-	-	-						16.5-17	tr	15.5-16	tr
Contact		Unconformity			Contact	20	25	9	11.5	10.5	40+	40+	32	30	30	18.5	11	3	6	4	14.5	16.5	17	17.5	16	14.5
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale white	-		-	11.5-33	10.5-18	-	-	32-35	30-31	30-36	18.5-31	11-19	3-31	6-40+		14.5-31	16.5-40+	7.0-29	17.5-40	16-26	14.5-40
		Lower Saprolite	Increasingly Consolidated		Light greenish grey	20-38	25-40	33-40	33-40	18-40	-	-	35-37	31-40	36-40	31-40	19-39	31-40			31-40	-	29-36	-	26-40	-
		Saprock	Consolidated		Dark greenish grey	38-40	-	-	-	-	-	-	37-40	-	-	-	39-40	-			-	-	36-39.5	-	-	-
Unsuitable		Fresh Rock	Consolidated		Greenish grey	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-	39.5-40	-	-	-
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained	0-9	0-13	0-14.5	0-6	0-6	1.5-8	2-9	1.5-8	2-11	2.5-10	1-9	2-12	1-6.5			0-7.5	0-7.5	0-6	0-3	0-5.5	0-5
			Various	Indurated	Silicified	2-12	3-10	2-15	2-11.5	0-13	1-8	2-9	1.5-8	2-9.5	2.5-10	1-6	2-12	1-6	0.5-6		2.5-14.5	1-17.5	0.5-18.5	0.5-17.5	1.0-16	1-15.5
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled	7-9	7-8	-	-	6-7.5	1.5-7	2.5-7	1.5-6	2.5-5	2.5-6.5	2.0-5	7-8	2.5-6			7.5-14.5	6-17	4-17	3-17.5	5.5-16	6.5-17
						-	-						-	-	-	-	-	-								
		Water-saturation (Zone of Very Low Water Flux)	White		Leached (Bacterial Reduction)	-	9-17.5	-	7-11.5												-	-	-	-	16-17.5	10-12
							23-24			7.5-13.5	7-40	7-40	6-30	5-31	6.5-29	5-16.5	10-11	-							
							37-40							-	30-36	20-31	-								
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained	-	18-20	14.5-27	11.5-15	7.5-11	-	-					2-10	5-6			21-26	16.5-37	17.5-32.5	15-40	17.5-40	14.5-40
						-	24-25	29-30.5	-	13.5-16						16.5-22	11-17				27.5-40					
						20-27	27-34	-		27-29		-	-	37-38	29-30	31-38	19-25									
						36-37.5	35.5-38			34-40	38-39				-		30-34									
		Preset-Day Drainage	Watertable																							
		Total Depth Logged (m)				40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
		EOH (End of Hole) (m)				120	150	150	120	146	70	85	80	100	90	114	150	180.4	198.5	289.1	130	190	180	166	180	180

LINE 6

					Drill Hole Number	TPRC 595	TPRC 596	TPRC 597	TPRC 193	TPRC 598	TPRC 194	TPD 057	TPRC 481	TPRC 483
					RL (m)	344.2	345.0	345.2	345.8	346.2	346.5	347.6	347.8	347.6
					Easting	650,217	650,249	650,286	650,324	650,358	650,394	650,762	650,922	651,070
					Northing	6,763,179	6,763,141	6,763,105	6,763,070	6,763,038	6,763,001	6,763,412	6,762,545	6,762,404
Potential Troglofauna Habitat		**Regolith Units**		**Colour and Competency**	**Materials**							**Troglo** (slaters, 10m + 20m, inside)		
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit									
					Sand	0-2	0-2	0-2	0-2	0-3	0-2	0-0.5		
					Soil									
Likely					Fine Gravel				2-2.5	3-5.5		0.5-1	0-4.5	0-0.5
					Coarse Gravel		4.0-5	4.5-6.5						05-1.5
Prime					Lag						5.5-6.5			1.5-4.5
		Cemented laminar and massive multi-generational mixed lenses of Colluvium	Pale Red Brown	Indurated	Calcrete	2.0-3	2-3.5	2.0-4	2.5-5	5.5-6	2-5.5	1-2.5		
			Various		Silcrete	3.0-4	3.5-4	4-4.5						
			Yellow Brown		Ferricrete									
Marginal			Purple-Red		Mottled Clay								4.5-6	4.5-8
Likely		Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated	Fine Gravel									
					Coarse Gravel									
Prime					Lag								6-6.5	8.0-11
				Ind.	Laterite Ferricrete									
		Palaeochannel-fill Sediment	Various	Unconsol.	Channel-fill	4.0-7	5.0-8							
Marginal					Rounded Pebbles									
Contact		Unconformity			Contact	7	8	6.5	5	6	6.5	2.5	6.5	11
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white	7-40+	8-40+	6.5-40+	5.0-20	6-17.5	6.5-14	2.5-9.5	6.5-28.5	11-28.5
		Lower Saprolite	Increasingly Consolidated		Light greenish grey				20-35	17.5-33	14-36 39-40	9.5-30	28.5-40	28.5-33.5
		Saprock	Consolidated		Dark greenish grey				35-40	33-38	36-39	30-39		33.5-36
Unsuitable		Fresh Rock	Consolidated		Greenish grey					38-40		39-40		36-40+
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained	0-4	0-5	0-6.5	0-17.5	0-6	0-6.5	0-4.5	0-10	0-5
			Various	Indurated	Silicified	2.0-9	2.0-8	2.0-10	2.5-10.5	5.5-6	2-Jul	1-5.5	4.5-11.5	4.5-13.5
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled						6.5-14	2.5-5.5	4.5-15	4.5-20
		Water-saturation (Zone of Very Low Water Flux)	White		Leached (Bacterial Reduction)	4-40+	5-40+	6.5-40+		6.7		2.5-5.5	15-24.5	11-28.5
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained	30-33		6.5-20	7-16.5	17.5-30.5	6.5-36	9.5-14.5	10-15.5	8.0-34
						38-40	39-40	24-25.5			39-40	2.5-5.5		
								27-32				22-25.5	24.5-32	
													36.5-40	
		Preset-Day Drainage	Watertable											
		Total Depth Logged (m)				40	40	40	40	40	40	40	40	40
		EOH (End of Hole) (m)				50	65	80	162	162	157	297.5	180	180

LINE 7

				Drill Hole Number	TPRC950	TPRC951	TPRC952	TPRC953	TPRC954	TFRC644	TPMB 100	TPRC206	TPRC207	TPMB 099	TPD194	TPRC208D	TPD195	TPRC209D	TPD285	TPD286
				RL (m)	341.4	342.5	343.2	344.4	345.0	356.1	354.7	351.8	352.6	353.4	353.6	354.3	355.6	357.2	360.2	340.0
				Easting (m)	649,091.5	649,164.7	649,232.3	649,300.6	649,377.0	649,689.7	649,726.0	649,759.6	649,829.7	649,868.0	649,868.7	649,902.1	649,938.4	649,959.9	650,042.0	650,075.1
				Northing (m)	6,762,956.7	6,762,876.6	6,762,795.1	6,762,741.1	6,762,672.8	6,762,349.4	6,762,313.3	6,762,275.6	6,762,204.6	6,762,172.3	6,762,169.3	6,762,131.8	6,762,101.2	6,762,072.5	6,761,991.6	6,761,955.6
Potential Troglofauna Habitat	**Regolith Units**		**Colour and Competency**	**Materials**							**Troglo** (slaters, stygo net, inside)			**Troglo** (centipedes, stygo net, inside)						
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown / Unconsolidated	Sand Grit																
				Sand	0-1	0-2	0-2	0-1	0-1	0-7		0-2	0-1		0-2		0-2	0-4.5	0-6	0-4
Likely				Soil																
				Fine Gravel																
				Coarse Gravel												0-1.5				
Prime				Lag								2-3.5								
		Cemented laminar and massive multi-generational mixed lenses of Colluvium	Pale Red Brown / Indurated	Calcrete	1.0-5	2.0-6	2.0-6	1-4.5	1-3.5	(4-)						1.5-4	2.0-5	4.5-5		
			Various / Indurated	Silcrete												4.0-8	5.0-7	7.5-8	6-10	
			Yellow Brown / Indurated	Ferricrete												21.5-24				
Marginal			Purple-Red / Indurated	Mottled Clay												8.0-12		5-7.5		
Likely		Sheet Wash Alluvial Deposits	Yellow Brown / Unconsolidated	Fine Gravel	5.0-6	6-6.5	6-6.5	4.5-5	3.5-4										15.5-16.5	11-14.5
				Coarse Gravel	6.0-7	6.5-7	6.5-7	5-6.5	4.0-5											
Prime				Lag																
			Yellow Brown / Ind.	Laterite Ferricrete													7.0-8	8.0-11	10-15.5	4.0-11
		Palaeochannel-fill Sediment	Various / Unconsol.	Channel-fill	7-10.5	7.0-11	7.0-9	6.5-9	5-7.5	11.0-15		3.5-6.5				12-21.5	11-22.5	14-38	20-20.5	14.5-20.5
Marginal				Rounded Pebbles													8.0-11	11.0-14	16.5-20	
Contact		Unconformity		Contact	10.5	11	9	9	7.5	11.5		6.5	13		12	21.5	22.5	38	20.5	20.5
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated	Pale reddish white	10.5-13			9-16.5		11.5-15+		6.5-15	13-32		12.0-30	21.5-28	22.5-26.5		20.5-24.5	20.5-23
		Lower Saprolite	Increasingly Consolidated	Light greenish grey	13-32 37-38.5	11.0-13	9-17.5	16.5-29	7.5-26			15-40+	32-40		30-40	21.5-24 28-40	26.5-38	38-40+	24.5-31 32-38	23-40+
		Saprock	Consolidated	Dark greenish grey	32-35 36-37 38.5-39	13-25	17.5-29	29-29.5 32-40+	26-34								38-40		31-33	
Unsuitable		Fresh Rock	Consolidated	Greenish grey	35-36 39-40	25-40	29-40+	29.5-32	34-40										38-40	
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red / Unc.	Hematitic Stained	0-10	0-11	0-12	0-12	0-14	0-11.5		6-6.5					0-6		0-16	0-17
			Various / Indurated	Silicified	1.0-8	2.0-40+	2.0-9	1.0-8	1-7.5	7-15+		4-7.5	1.0-7		2.0-6	1.5-8	2.0-8	4.5-11	Jun-16	6.0-15
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White / Indurated	Mottled	7.0-8	7.0-11		7.0-8		11-11.5		3.5-6.5					7.0-8		10-16.5	6.0-17
		Water-saturation (Zone of Very Low Water Flux)	White / Indurated	Leached (Bacterial Reduction)						11.5-15							8-26.5		20-22.5	17-22
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow / Unconsolidated	Goethite Stained	12.5-16.5	7.0-9	7.0-11		7.5-20			6.5-26					5.5-7	15-32.5	6.0-8	
					18-24.5	11.0-13	15-16	15.5-17									20-26.5		17.5-20.5	20.5-32
								38-39									30-38	38-40	24-27	35-38.5
								27-29	25-29											
		Preset-Day Drainage	Watertable																	
		Total Depth Logged (m)			40	40	40	40	40	15		40	40		40		40	40	40	40
		EOH (End of Hole) (m)																		

LINE 8

Potential Troglofauna Habitat		Regolith Units	Colour and Competency		Materials	Drill Hole Number	TFRC 529	TFRC 530	TFRC 531	TFRC 532	TFRC 533	TFRC 534	TFRC 535	TFRC 536	TFRC 537	TFRC 538	TPRC 374	TPRC 375	TPRC 376	TPRC 641	TFRC 3110	TFRC 806	TPRC 174	TPRC 287	TFRC 226	TPRC 137
						RL (m)	340.0	340.0	340.0	340.0	340.0	345.5	346.5	347.8	349.8	350.2	355.0	355.8	357.4	361.5	362.0	363.0	363.0	362.5	362.8	363.0
						Easting (m)	648,028	648,094	648,143	648,223	648,314	648,708	648,773	648,851	648,907	648,988	649,193	649,260	649,334	649,443	649,459	649,508	649,517	649,532	649,546	649,563
						Northing (m)	6,763,162	6,763,083	6,763,018	6,762,934	6,762,904	6,762,463	6,762,403	6,762,348	6,762,270	6,762,205	6,762,008	6,761,944	6,761,867	6,761,757	6,761,745	6,761,693	6,761,691	6,761,673	6,761,657	6,761,640
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit				0.5-2																	
					Sand				0-0.5	0-2	0-3	0-3	0-2	0-2	0-2.5	0-2	0-0.5	0-1	0-1	0-3	0-3	0-2	0-2		0-0.5	
					Soil											2-3 4.5-6										
Likely					Fine Gravel	3.5-5 7-8.5	3.5-7.5	8.0-10					2.0-3				0.5-1				3-4.5	2-3.5	2.0-4		0.5-1	
					Coarse Gravel			6.5-8	8.0-10				3.0-4	2.5-4	3-5.5					3-3.5						
Prime					Gravel Lag			2-3.5	2.0-5	3-5.5																
		Laminar and massive multi-generational mixed lenses of Cemented Colluvium and Gravel	Pale Red Brown	Indurated	Calcrete	0-3.5	0-3	3.5-4		5.5-6	3.0-5	4.0-5	2-2.5	2.5-3	3-4.5											
			Various		Silcrete	5.0-7	3-3.5	4.0-6	5.0-8	6-7.0	5.0-7	5-5.5	4.0-6	5.5-6	6.0-8	1.0-3	1.0-3	1-1.5	3.5-5	4.5-5.5	3.5-5			1.0-4	0-2
			Yellow Brown		Ferricrete	11-12 14-15	13-15.5	13-14 15-16		13-14			6.0-8	6.0-7					15-16.5						
Marginal			Purple-Red		Mottled Clay	8.5-9	7.5-10.5	10.0-13	10.0-16	7.0-13						3.0-5	3-4.5	2.5-4	5.0-6	5.5-8	5.0-7	4-6.5		1-6.5	2.0-4
Likely		Mixed Gravel Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated	Fine Gravel		18.5-19 20-21	21-22																	
					Coarse Gravel	23-24	22-23	23-24																	
Prime					Gravel Lag	25-26																			
				Ind.	Laterite Ferricrete	12.0-13																			
		Palaeochannel-fill Sand, Clay, Silt and Gravel Sediment	Various	Unconsol.	Channel-fill	1.0-11 13-14	10.5-13 15.5-34	14-15 16-24	16-22							5.0-13	4.5-12	4.0-13	6.0-11	8.0-12	7.0-9	6.5-8		6.5-8.5	4-6.5
Marginal					Basal Clay, Sand and	5-19 20-33										13-20	12.0-22	13-20	11.0-17	12-18.5	9.0-15	8.0-13		8.5-9	6.5-11
Contact		Unconformity			Contact	40+	36	24	22	14	7	5.5	8	7	8	20	22	20	17	18.5	15	13		9	11
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white			24-31	22-25	14-19	7.0-16		8.0-16	7.0-16	8-14.5	20-25	22-26	20-26.5	17-27	18.5-27	15-21.5	13-19		9.0-22	5.0-21
		Lower Saprolite	Increasingly Consolidated		Light greenish grey		36-40+	31-37	25-40+	19-27	16-25	5.5-15	16-39	16-27 33-37	14.5-40+	25-40+	26-40+	26.5-40+	27-40+	27-40+	21.5-39	19-38.5		22-38	21-39.5
		Saprock	Consolidated		Dark greenish grey			37-40+		27-32 33-37	25-31 36-38.5	15-18	39-40	27-37.5 39-40							39-40	38.5-39		38-40	39.5-40
Unsuitable		Fresh Rock	Consolidated		Greenish grey					32-33 37-40+	31-36 38.5-40	18-40+		37.5-39								39-40			
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained		0-8	0-12	0-10	0-9	0-7	0-9	0-10	0-9	0-8	0-17	0-20	0-20	0-15	0-13	0-16	0-13		0-9	0-11
			Various	Indurated	Silicified	0-22	0-29	2.0-24	2.0-16	5.5-17	3-9.5	4.0-9	2.0-8	2.5-13	3.0-8	1.0-13	1.0-12	1.0-13	3.5-11	4.5-12	3.5-16.5	4.0-13		0.5-9.5	0.5-6.5
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled	8.5-27	7.5-31	6.5-24	8.0-16	3.0-19	5-7.5					3.0-20	3.0-20	1.0-20	5-16.5	4.0-19	3.5-15	4.0-13		4.0-7	0.5-7
		Water-saturation (Zone of Very Low Water Flux)	White		Leached (Bacterial Reduction)			27-31	16-22	14-16	7.5-16	9.5-12	10.0-11	13-14		17-18	20-26	20-22	17-26	18.5-22	16-21.5	13-19		1.5-18.5	12.5-17
									23-25					15-16											
														18-19											
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained			13-14		13-14		3.0-4	8.0-9 11-13		11.0-12	1.0-2	1.0-3		6.0-7		6.0-8	4.0-6		9.0-12	4.0-5
						10.0-13		15-16	22-23		6-7.5		15-19.5	7.0-13	15-22	5.0-6.5	6.0-9	6.0-9	15-17	5.0-11				31-32	11-12.5
						14-15	10.5-15.5	24-25	26-28	27-30	21-24		26-27	14-15	29-32	10.0-13	11-13.0	17.5-19	26-17	13-15	14-15				17-18
						18.5-20	39-40	26-27	32-39	34-37	37.5-38		35.5-37	17-18	37-38	25-28	26-27	31-32	33-35	29-31	37-38				19-21
		Preset-Day Drainage	Watertable																						
		Total Depth Logged (m)				40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
		EOH (End of Hole) (m)				83	118	117	150	149	150	150	150	150	150	150	150	150	60	60	80	147	110	110	141

LINE 8

Potential Troglofauna Habitat	Regolith Units		Colour and Competency		Materials	Drill Hole Number	TFRC 227	TPRC 288	TFRC 807	TPRC 138	TPRC 289	TPRC 139D	TPRC 290	TPD 037	TPD 133	TPD 038	TFD 167
						RL (m)	363.5	363.8	364.5	364.8	365.5	366.2	366.5	367.0	367.0	368.0	369.5
						Easting (m)	649,582	649,597	649,618	649,635	649,669	649,705	649,741	649,779	649,812	649,848	649,880
						Northing (m)	6,761,622	6,761,605	6,761,584	6,761,567	6,761,533	6,761,498	6,761,461	6,761,430	6,761,391	6,761,358	6,761,321
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit												
					Sand				0-1			0-1	0-2	0-2	0-2	0-2.5	0-3
					Soil												
Likely					Fine Gravel	0-0.5					0-0.5	1-1.5	2-2.5	2-2.5		2.5-3	3-3.5
					Coarse Gravel												
Prime					Gravel Lag		0-0.5	1-1.5									
		Laminar and massive multi-generational mixed lenses of Cemented Colluvium and Gravel	Pale Red Brown	Indurated	Calcrete							1.5-2	2.5-3				
			Various		Silcrete	0.5-1					0.5-1	2-3.5	3-3.5				
			Yellow Brown		Ferricrete								10-10.5	9.5-10	12.0-13	9.0-10	12-12.5
Marginal			Purple-Red		Mottled Clay	1.0-3	0.5-3										
Likely		Mixed Gravel Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated	Fine Gravel												
					Coarse Gravel												
Prime					Gravel Lag												
				Ind.	Laterite Ferricrete									16-17.5 32-33			
		Palaeochannel-fill Sand, Clay, Silt and Gravel Sediment	Various	Unconsol.	Channel-fill	3.0-7	3-5.5	1.5-3	0-2.5	1.0-7		3.5-14	2.5-8	2.0-8	3.0-8	3.5-12	
Marginal					Basal Clay, Sand and	7.0-11	5.5-9	3.0-13	2.5-11			14-14.5	8.0-37	8-31.5	8.0-33	12.0-25	
Contact		Unconformity			Contact	11	9	13	11	7	3.5	14.5	37	31.5	33	25	
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white	11.0-23	9.0-17	13-21	11.0-21	7.0-28	3.5-27	14.5-26.5				25-37.5	
		Lower Saprolite	Increasingly Consolidated		Light greenish grey	23-39	17-39	21-36	21-36	28-40+	27-40+	26.5-40+	37-40+	31.5-40+	33-40+	37.5-40+	
		Saprock	Consolidated		Dark greenish grey	39-40	39-40	36-40	36-40+								
Unsuitable		Fresh Rock	Consolidated		Greenish grey												
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained	0-9	0-7	0-6.5	0-14.5	0-4	0-10	0-8	0-7.5	0-2	0-9	0-5	
			Various	Indurated	Silicified	0.5-5.5	0.5-5	1.5-3	0.5-2.5	0.5-136	2-10.5	2.5-18	2.5-10	2-13.5	3-10.5	3.5-15	
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled	0.5-11	0.5-7	1.5-9	0.5-10	1.0-13	3.5-11	3.5-14	2.5-38	2.0-13	3.0-14	3.5-15	
		Water-saturation (Zone of Very Low Water Flux)	White		Leached (Bacterial Reduction)	11.0-23						4-4.5	8.0-9	5.5-6.5	5.0-6	5.0-6	
														10.5-12	10.5-17	15-22	
														13-18		31-33.5	
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained	30-31	9.0-11	6.5-21	17-21	11.0-24	7.0-14		2.5-3.5	18-20		11.0-14	
							32-33	35-36	27-31	28-32	18.5-31		15-37	8.0-10		23.5-25	
											34-36	8.0-22	38-40	4.0-5		30-33.5	
												30-33		21-22	29.5-40	37.5-40	
		Preset-Day Drainage	Watertable														
		Total Depth Logged (m)				40	40	40	40	40	40	40	40	40	40	40	
		EOH (End of Hole) (m)				130	150	135	165	160	165	180	245.1	231.7	249.3	279.8	

LINE 9

Potential Troglofauna Habitat	Regolith Units		Colour and Competency		Materials	Drill Hole Number	TFRC 559	TFRC 560	TFRC 561	TFRC 562	TFRC 563	TPRC 388	TPRC 389	TPRC 390	TPRC 391	TFRC 308	TFRC3191	TFRC3192	TPRC 309	TPRC 992	TPRC 065	TPRC 144	TPRC 993	TPRC 130
						RL (m)	340.00	340.50	341.80	342.80	343.00	347.50	348.20	349.00	349.00	349.50	349.80	349.90	350.50	351.00	351.20	351.50	352.00	352.80
						Easting	647,535	647,613	647,690	647,746	647,814	648,593	648,663	648,734	648,802	648,853	648,893	648,910	648,925	648,949	648,980	648,998	649,020	649,067
						Northing	6,762,420	6,762,343	6,762,279	6,762,193	6,762,151	6,761,478	6,761,408	6,761,337	6,761,266	6,761,214	6,761,182	6,761,165	6,761,130	6,761,105	6,761,089	6,761,075	6,761,044	6,761,007
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit																			
					Sand	0-1	0-1.5	0-3	0-2	0-2	0-0.5			0-1	0-1		0-1	0-1	0-1				0-3
					Soil																			
Likely					Fine Gravel				2-3.5	2-4		1.5-3.5	2.5-4		1-1.5		1-2.5	1-2	1-3	0-2	0-2	0.5-2	
					Coarse Gravel		1.5-2				0.5-3	0-1.5	0-2.5									0-0.5	
Prime					Lag																			
		Cemented laminar and massive multi-generational mixed lenses of Colluvium	Pale Red Brown	Indurated	Calcrete					4-5														
			Various		Silcrete	1-3.5	2-6	3-8	3.5-10	5-8	3-5	3.5-5	4-4.5	1-4.5	1.5-5		2.5-5	2-4	3-5.5	2-4	2-5	2-5	
			Yellow Brown		Ferricrete	3.6-6								7-8				7-8				9-9.5	
Marginal			Purple-Red		Mottled Clay	6-9	6-9	8-12	10-12										5.5-7	4-5	5-5.5	5-9	3-9.5
Likely		Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated	Fine Gravel																		
					Coarse Gravel																		
Prime					Lag																		
				Ind.	Laterite Ferricrete																		
		Palaeochannel-fill Sediment	Various	Unconsol.	Channel-fill	9-13	9-23	8-37	12-19	8-12	5-6	5-12	4.5-7	4.5-14	5-15.5		5-12.5	4-12.5	7-13	5-11	5.5-13.5	9-12	
Marginal					Rounded Pebbles			37-40		12-36	6-12	12-15	7-20	14-17									
Contact	Unconformity				Contact	13	23	40	49	36	12	15	20	17	15.5		12.5	12.5	13	11	13.5	12	9.5
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white	13-32	23-40			36-38	12-21	15-27		17-22	15.5-23		12.5-25	12.5-23.5	13-27.5	11-25	13.5-26	12-27.5	9.5-21
		Lower Saprolite	Increasingly Consolidated		Light greenish grey	32-40			19-35	38-40	21-40	27-40	20-40	22-40	23-40		25-40	23.5-40	27.5-37	25-31	26-36	27.5-36.5	21-40
		Saprock	Consolidated		Dark greenish grey														37-39	31-40	36-40	36.5-39.5	
Unsuitable		Fresh Rock	Consolidated		Greenish grey																	39.5-40	
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained	0-9	0-9	0-8	0-10	0-8	0-5	0-5	0-7	0-13	0-7		0-10.5	0-12	0-10	0-10	0-12	0-13	0-10
			Various	Indurated	Silicified	1-13	2-20	3-25.5	3-12	4-12	3-6.5	2.5-12	4-7	1-15.5	1.5-16		2.5-12.5	4-17	3-12.5	2-11	2-14	2-13.5	3-10
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled	6-9	6-16	8-17	5-8		4-6	5-12	4-7	1-14	5-11		2.5-11.5	4-13	3-10	4-10	5-11.5	5-13	3-10
		Water-saturation (Zone of Very Low Water Flux)	White		Leached (Bacterial Reduction)	9-32	14-16	16-12		8-38	6-11.5	12-17	7-20	17-22	16-19.5		12.5-24	13-27.5	13-27.5	10-19	13.5-25.5	13-27.5	10-15.5
							24-40	25-37	18-19														
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained		18.5-24	28-39		38-390		17-18	20-39	13-14	15-16.5		25-36	7-8	11-12	19-33.5	25.5-35.5	31-32.5	16-21
												23-24		22-36	19.5-40		36-39	11-13	24-25			34-36	33-36
									27-32		11.5-25	27-39							36-37				
									33-34		27-34												
		Preset-Day Drainage	Watertable																				
		Total Depth Logged (m)																					
		EOH (End of Hole) (m)				150	72	78	96	150	166	150	151	141	100	59	50	100	105	63	147	120	147

LINE 9

Potential Troglofauna Habitat		Regolith Units	Colour and Competency		Materials	TPRC 994	TPRC 131	TPRC 1039a	TPRC 132	TPD 035	TPD 042
					Drill Hole Number	TPRC 994	TPRC 131	TPRC 1039a	TPRC 132	TPD 035	TPD 042
					RL (m)	353.80	355.00	356.20	357.80	361.00	362.50
					Easting	649,097	649,136	649,167	649,209	649,281	649,348
					Northing	6,760,976	6,760,934	6,760,902	6,760,863	6,760,790	6,760,722
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit						
					Sand	0-1	0-4	0-3	0-2.5	0-5	0-4
					Soil						6-9
Likely					Fine Gravel						
					Coarse Gravel	1-3		3.5			
Prime					Lag						
		Cemented laminar and massive multi-generational mixed lenses of Colluvium	Pale Red Brown	Indurated	Calcrete				2.5-4	5-6	4-6
			Various		Silcrete			5-6.5	4-6	6-10	
			Yellow Brown		Ferricrete						
Marginal			Purple-Red		Mottled Clay	7-8.5	4-8	6.5-10	6-11	10-13	6-9
Likely		Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated	Fine Gravel						
					Coarse Gravel						
Prime					Lag						
				Ind.	Laterite Ferricrete						
		Palaeochannel-fill Sediment	Various	Unconsol.	Channel-fill	3-7	8-17			13-17.5	
Marginal					Rounded Pebbles						
Contact		Unconformity			Contact	8.5	17	10	11	17.5	9
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white	8.5-22	17-32	10-15	11-13	17.5-20	9-28.5
		Lower Saprolite	Increasingly Consolidated		Light greenish grey	22-40	32-40	15-39	13-37.5	20-40	28.5-40
		Saprock	Consolidated		Dark greenish grey			39-40	37.5-40		
Unsuitable		Fresh Rock	Consolidated		Greenish grey						
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained	0-3	0-4	0-23	0-6	0-17.5	0-9
			Various	Indurated	Silicified	3-16	4-17	5-15	2.5-11	5-13.5	4-9
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled	7-8	4-15	6.5-10	6-11	10-13	9-15
		Water-saturation (Zone of Very Low Water Flux)	White		Leached (Bacterial Reduction)	9-14	22-32			18-20	23-28
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained	9-10	8-9		11-17	6-10	
						11.5-13	12.5-14		24-33		
						14-19	16-17				15-16
						21-31	31-38	25-34			28-40
		Preset-Day Drainage	Watertable								
		Total Depth Logged (m)									
		EOH (End of Hole) (m)				150	147	165	180	267.5	294.5

Line 10

				Drill Hole Number	TPST 009	TPST 008	TPST 007	TPST 006	TPST 005	TPST 004	TPST 003	TPST 002	TPST 001	TPA 3166	TPA 3167	TPA 3168	TPRB 208	TPRB 210	TPRB 211	TPRB 212	TPD 137	TPD 138	TPA 2787	TPA 2788	TPA 2789	TPA 2790
				RL (m)	353.8	353.0	352.0	352.0	352.0	346.2	340.5	340.0	341.5	344.0	346.5	344.0	344.0	344.0	347.0	351.0	369.0	370.0	368.5	370.2	371.6	372.5
				Spacing	0	100	200	300	400	500	600	700	800	900	1100		1400	1800	2000	2200	3000	3100	3550	3700	3800	3900
				Easting (m)	646,626	646,697	646,767	646,838	646,909	646,979	647,050	647,121	647,192	647,321	647,462		647,676	647,956	648,099	648,241	648,803	648,870	649,158	649,228	649,299	649,370
				Northing (m)	6,762,205	6,762,134	6,762,064	6,761,993	6,761,922	6,761,851	6,761,781	6,761,710	66,761,639	6,761,623	6,761,482		6,761,268	6,760,985	6,760,845	6,760,702	6,760,139	6,760,066	6,759,643	6,759,572	6,759,501	6,759,430
Potential Troglofauna Habitat		**Regolith Units**	**Colour and Competency**		**Materials**																					
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit																					
					Sand	0-8	0-5	0-4	0-7	0-10	0-4	0-3	0-3	0-1	0-1	0-3	0-2	0-2.5			0-1			0-1	0-1.0	0-3	0-8
					Soil																						
Likely					Fine Gravel													2.5-3				0-0.5	-				
					Coarse Gravel														0-4	1.0-3				1.0-2			
Prime					Gravel Lag															3.0-5.0	1-2.0		0-0.5				
		Laminar and massive multi-generational mixed lenses of Cemented Colluvium and Gravel	Pale Red Brown	Indurated	Calcrete	8.0-12		12-14		10-11.5	6.0-7		7.0-9.0	1.0-9.0	1.0-6	3-12.0	2.0-8	3.0-14						5.0-8			
			Various		Silcrete	12-14	5.0-11	4.0-12	7.0-11	10.0-11	4.0-6	3-8.0		9.0-14.0							2-8.0			2.0-5	2-8.0	3.0-7	8-11.5
			Yellow Brown		Ferricrete								4.0-7.0											1-2.0			
Marginal			Purple-Red		Mottled Clay												8-17		4-14	5-13.0		0.5-2.5	-				
Likely		Mixed Gravel Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated	Fine Gravel																						
					Coarse Gravel										14.0-15	12-15.0											
Prime					Gravel Lag																						
				Ind.	Laterite Ferricrete					22-24																	
		Channel-fill Sand, Clay, Silt and Gravel Sediment	Various	Unconsol.	Channel-fill		11.0-12			11.5-22	7.0-10			14.0-16.0			17-30	14-26		8-10.0	2.5-3.5	0.5-2.5				
Maginal					Basal Clay, Sand and Gravel					20-21					6-14.0	15-39.0	30-31 31-33	26-28		13-19.0	10-22.0	3.5-5	2.5-3		8-23.0		
Contact		Unconformity			Bedrock Contact	12	12	12	11	24	10	5.5	10	17	15	39	33	27	14	19	22	5	3	8	23	7	11.5
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white	19	31		11.0-18	28	10.0-18			17.0-19.0	15-21.0	39-62.0	33-51	27-34	14-15	24	22-31.0	524	321	19	23-27.0	7.0-18	11.5-23
		Lower Saprolite	Increasingly Consolidated		Light greenish grey	20.5-21.5	31-33	15-25	18-44		18-37	8-13.0		19.0-20		62-69	51-56	34-44	15-48	24-38	31-34.0	24-38	21-36	19-39.5	27-32.0	18-41	23-37
		Saprock	Consolidated		Dark greenish grey	21.5-	33-34	25-25.5	44-52	38-40	37-39	13-18	9.0-23.0	20.0-30.0	21-28.0		56-58	44-52	48-53			38-40+	36-40+	39.5-42	32-34.0	41-42	37-54
Unsuitable		Fresh Rock	Consolidated		Greenish grey			25-26	52-53	40-41	39-43	18 +		30+	28.-32.0		58+	52+	53-59			-	-				
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained					11												0-7	0-14.5				
			Various	Indurated	Silicified	12.0-14		12.0-14	11.0-12	11												0.5-4.5	0.5-2.5				
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled					1.5-22	16					15-27			4.0-7		4.0-8	0.5-7	0.5-10	8.0-10	2.5-6	7-	10.5-11.5
																11.0-15	8.0-17										
		Water-saturation (Zone of Very Low Water Flux)	White		Leached												17-30	14-26	7-10+	5-13+	8.0-13	-	-				
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained																	34-35	17-21				
																							27-31				
		Preset-Day Drainage	Watertable																								
		Total Depth Logged (m)				23	34	26	53	41	43		23	31	32	69	59	44	59	38	34	40	40	42	40	42	54
		EOH (End of Hole) (m)																				141	165				

Line 10

Potential Troglofauna Habitat		Regolith Units	Colour and Competency		Materials	Drill Hole Number	TPA 2791	TPA 2793	TPA 2794	TPA 2795	TPA 2796	TPA 2797
						RL (m)	372.5	366.8	360.8	358.0	357.0	
						Spacing	4000	4200	4300	4400	4500	4600
						Easting (m)	649,441	649,582	649,653	649,724	649,794	649,865
						Northing (m)	6,759,360	6,759,218	6,759,148	6,759,077	6,759,006	6,758,935
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit							
					Sand	0-11	0-7	0-1	0-1	0-0.5	0-1.0	
					Soil							
Likely					Fine Gravel							
					Coarse Gravel							
Prime					Gravel Lag							
		Laminar and massive multi-generational mixed lenses of Cemented Colluvium and Gravel	Pale Red Brown	Indurated	Calcrete							1-3.0
			Various		Silcrete	10.0-11	7.0-10					
			Yellow Brown		Ferricrete							
Marginal			Purple-Red		Mottled Clay							
Likely		Mixed Gravel Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated	Fine Gravel							
					Coarse Gravel							
Prime					Gravel Lag							
				Ind.	Laterite Ferricrete							
Maginal		Channel-fill Sand, Clay, Silt and Gravel Sediment	Various	Unconsol.	Channel-fill							
					Basal Clay, Sand and Gravel							
Contact		Unconformity			Bedrock Contact	12	11.5	3	5	6	3	
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white	11-25	10-17	1-12	1-18	0.5-24		
		Lower Saprolite	Increasingly Consolidated		Light greenish grey	25-44	17-45	12.0-32	18-22	24-31		
		Saprock	Consolidated		Dark greenish grey	44-48	45-46	32-37	22-23	31-33	3-20.0	
Unsuitable		Fresh Rock	Consolidated		Greenish grey						20.0-23.0	
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained							
			Various	Indurated	Silicified							
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled	11.0-12	10-11.5	1.0-3	1.0-5	0.5-6	2.0-5	
		Water-saturation (Zone of Very Low Water Flux)	White		Leached							
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained							
		Preset-Day Drainage	Watertable									
		Total Depth Logged (m)				48	46	37	23	33	22	
		EOH (End of Hole) (m)										

LINE 11

Potential Troglofauna Habitat		Regolith Units		Colour and Competency		Materials	Drill Hole Number	TPA 4316	TPA 4317	TPA 4318	TPA 4319	TPA 4320	TPA 4321	TPA 4322	TPA 4323	TPA 2140	TPA 2141	TPA 276	TPA 1405	TPA 2797	TPA 1406	TPA 278	TPA 1407	TPA 279	TPA 1408	TPA 280	TPA 2142
							RL (m)	344.0	344.8	346.0	342.0	342.0	344.5	346.5	346.8	346.0	346.0	346.0	346.0	345.6	346.5	346.8	347.5	345.6	344.6	344.4	344.8
							Easting (m)	644,782	645,001	645,194	645,389	645,591	645,793	6,459,954	646,184	646,600	646,700	646,800	646,900	649,865	647,100	647,200	647,300	647,400	647,500	647,600	647,700
							Northing (m)	6,759,992	6,760,005	6,760,016	6,759,992	6,760,001	6,760,003	6,760,005	6,759,991	6,760,000	6,760,000	6,760,000	6,760,000	6,758,936	6,760,000	6,760,000	6,760,000	6,760,000	6,760,000	6,760,000	6,760,000
Unsuitable		Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated		Sand Grit																					
Likely						Sand	0-1	0-3	0-0.5	0-1	0-1	0-1.5	0-1	0-1	0-2	0-1	0-2	0-1		0-1	1.5-7		0-2		0-2	0-4
						Soil																					
Prime						Fine Gravel									2.0-3	1-2 8-9	8.0-9	7.0-8	1.0-2 7.0-8	0-2	0-1.5						
						Coarse Gravel													0-1			0-7	0-7	4.0-9	5.0-6	4.0-6	
						Gravel Lag													2-3								
		Laminar and massive multi-generational mixed lenses of Cemented Colluvium and Gravel	Pale Red Brown	Indurated		Calcrete												1-7									
			Various			Silcrete	1.0-2	3.0-6	0.5-7	1.0-4	1.0-5	1.5-5	1.0-6	1.0-5	3-5 5-8	2-8	2-8						2.0-8	0-4		
			Yellow Brown			Ferricrete																			2.0-5		
Marginal			Purple-Red			Mottled Clay				4-10.0	5-9.0	5-10	6.0-8	9-16	8.0-12	9.0-10	9.0-10									9.0-15	
Likely		Mixed Gravel Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated		Fine Gravel													3-7	2-8	7-8						
						Coarse Gravel																					
Prime						Gravel Lag																					
				Ind.		Laterite Ferricrete																					
		Channel-fill Sand, Clay, Silt and Gravel Sediment	Various	Unconsol.		Channel-fill																					
Marginal						Basal Clay, Sand and Gravel	16-20 20-28	12-26 26-32	16-21 21-33	4-14 14-20	9-11 11-14	10-13 15-16 16-19	13-17 17-18	16-23	12.0-27	10-18 18-31	10-11 11-27	8.0-9 9-24	8-11 11-18	8.0-11 11-20	9-13 13-19	7-16 16-26 26-27	8-9 9-17 17-20	9.0-10 10-18 18-22	6-16 16-19 19-22	15-17 17-19
Contact		Unconformity				Bedrock Contact	28	32	33	20	14	19	18	23	27	31	27	24	18	20	19	27	20	22	22	19	
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated			Pale reddish white	28-36	32-42	33-45	20-26		19-21.5	18-25	23-26	27-33	44	27-30	24-35	18-36	20-40	19-21			22-23		19-38	
		Lower Saprolite	Increasingly Consolidated			Light greenish grey	36-46	42-50	15-54	26-45	14-29	21.5-33	25-46	26-41	33-56	44-50	30-44	35-57	36-46	40-47	21-39	27-34	20-33	23-49	22-53	38-47	
		Saprock	Consolidated			Dark greenish grey	46-48.5	49.5-50	54-55			33-34	46-47	41-50		50-52	44-46	57-58		47-49	39-40		33-24		53-54	47-48	
Unsuitable		Fresh Rock	Consolidated			Greenish grey	48.5-50							50-51		52-53				49 +							
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.		Hematitic Stained																					
			Various	Indurated		Silicified	11.0-16				14-18																
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White			Mottled	5.0-11	8.0-12	7.0-13	4.0-10	6.0-9	5.0-10	8.0-13	9.0-14	8.0-12	9.0-10	9.0-10	9.0-10	7.0-11		8.0-10					6.0-9	
							2.0-5	6.0-8			9.0-11	13-14	22-25	14-16		10.0-11											
		Water-saturation (Zone of Very Low Water Flux)	White			Leached	5.0-36	12.0-42	14-45	14-23				16-23							9.0-13							
													18-22														
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated		Goethite Stained																					
										26-28	14-15.5																
		Preset-Day Drainage	Watertable																								
		Total Depth Logged (m)					50	50	55	45	29	34	47	51	56	53	46	58	46	50	40	34	34	49	54	48	
		EOH (End of Hole) (m)																									

LINE 11

Potential Troglofauna Habitat		Regolith Units		Colour and Competency		Materials	TPA 281	TPA 2143	TPA 282	TPA 3012	TPA 283	TPA 3013	TPA 284	TPA 3015	TPA 285	TPA 3017
						Drill Hole Number	TPA 281	TPA 2143	TPA 282	TPA 3012	TPA 283	TPA 3013	TPA 284	TPA 3015	TPA 285	TPA 3017
						RL (m)	345.8	347.6	349.6	352.2	354.5	357.2	359.5	362.0	363.0	370.8
						Easting (m)	647,800	647,900	64,800	648,099	648,200	648,299	648,400	648,500	648,600	648,899
						Northing (m)	6,760,000	6,760,000	6,760,000	6,759,998	6,760,000	6,759,998	6,760,000	6,759,998	6,760,000	6,759,998
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit											
Likely					Sand	0-2	0-1	0-1	0-0.5							
					Soil											
					Fine Gravel		1-2 2-3	1.0-2	0.5-5							
					Coarse Gravel	2.0-4	3.0-4	2.0-8								
Prime					Gravel Lag					0-1						0-1
		Laminar and massive multi-generational mixed lenses of Cemented Colluvium and Gravel	Pale Red Brown	Indurated	Calcrete						2-	3.0-7				
			Various		Silcrete											
			Yellow Brown		Ferricrete	4.0-5										
Marginal			Purple-Red		Mottled Clay		4-9	8-15	5-20	6-12			2.0-5		1-3	
Likely		Mixed Gravel Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated	Fine Gravel						0-2	0-1.5				
					Coarse Gravel							1.5-3	0-2			
Prime					Gravel Lag											
				Ind.	Laterite Ferricrete											
		Channel-fill Sand, Clay, Silt and Gravel Sediment	Various	Unconsol.	Channel-fill					1.0-6	2.0-4	7	5.0-9			
Marginal					Basal Clay, Sand and Gravel	5-14 14-15	9.0-18			12-14			9.0-12			
Contact		Unconformity			Bedrock Contact		18	15	20	14	17	20.5	21.5	15	3	
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white		18-21	15-22	20-29	14-21				11.0-28	3-19	
		Lower Saprolite	Increasingly Consolidated		Light greenish grey		21-46	22-49	29-32	21-39	17-35.5	20.5-32	21.5-45	28-39	19-35	
		Saprock	Consolidated		Dark greenish grey		46-47	49-49.5	32-34	39-42	35.5-36	32-33	45-45.5	39-40	35-37	
Unsuitable		Fresh Rock	Consolidated		Greenish grey		47 +	49.5 +	34 +	42 +			45.5-46		37 +	
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained		4.0-5									
			Various	Indurated	Silicified									0-1		
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled		4.0-9	8.0-15	15-20	6.0-12	4.0-6					
														1.0-11		
		Water-saturation (Zone of Very Low Water Flux)	White		Leached			15								
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained											
		Preset-Day Drainage	Watertable													
		Total Depth Logged (m)					48	50	35	42	36	33	46	40		
		EOH (End of Hole) (m)														

LINE 12

Potential Troglofauna Habitat	Regolith Units		Colour and Competency		Materials																	
					Drill Hole Number	TPA 4343	TPA 4344	TPA 4345	TPA 4346	TPA 4347	TPA 4348	TPA 4349	TPA 4350	TPA 4351	TPA 4352	TPA 4353	TPA 4354	TPA 4355	TPA 4356	TPRB 551	TPRB 552	TPRB 553	TPRB 554	TPRB 555	ZBRC017
					RL (m)	354.5	348.0	346.0	347.5	348.0	347.6	346.5	346.0	346.0	346.0	347.0	349.6	354.6	358.5	361.5	364.5	365.6	365.8	365.5	364.6
					Spacing	0	200	400	600	800	990	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3120	3320	3600	3800
					Easting (m)	644,308	644,519	644,717	644,897	645,113	645,303	645,512	645,701	645,879	646,091	646,308	646,486	646,702	646,887	647,037	647,237	647,438	647,637	647,837	648,096
					Northing (m)	6,758,799	6,758,798	6,758,786	6,758,806	6,758,808	6,758,791	6,758,803	6,758,808	6,758,793	6,758,909	6,758,892	6,758,864	6,758,852	6,758,809	6,758,793	6,758,793	6,758,793	6,758,793	6,758,793	6,758,797
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Clay	0-2	0-3	0-1	0-2.5	0-0.5	0-1	0-1	0-3	0-2	0.5-2										
					Sand									8.0-10		0-1	0-1						0-1.5		
					Soil																				
Likely					Fine Gravel										0-0.5	1.0-2	1.0-2								
					Coarse Gravel													0-2	1.0-2	0-4	0-4	0-3	0.5-3	0-2	0-2.5
					Gravel Lag						1.0-18	1.0-3													
Prime		Laminar and massive multi-generational mixed lenses of Cemented Colluvium and Gravel	Pale Red Brown	Indurated	Calcrete		3.0-9	4.0-7	9.0-13	7.0-22	6-	7-7.5	3.0-22			5.0-10	3.0-8	3.5-14	7.0-14	10.0-16	9.0-24	7.0-10	6.0-18	3.5-20	4.0-20
			Various		Silcrete	2.0-8	3.0-7	1.0-4	2.5-9	5.0-7	1.0-6	1.0-7	3.0-8	2.0-8 10-14 sand	2.0-8	2.0-4 4-5	2.0-3		2.0-7	4.0-10	4.0-9	3.0-7	3.0-6		2.5-4
			Yellow Brown		Ferricrete													2-3.5						2-3.5	
Marginal			Purple-Red		Mottled Clay						16-18		8.0-9	14.0-17	8-9.5 9.5-10										
Likely		Mixed Gravel Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated	Fine Gravel																				
					Coarse Gravel																				
Prime					Gravel Lag																				
				Ind.	Laterite Ferricrete																				
Marginal		Channel-fill Sand, Clay, Silt and Gravel Sediment	Various	Unconsol.	Channel-fill	8.0-11	7.0-11	7-10.5	13-21	7.0-16	6.0-16	7.5-13	9.0-21			10.0-14	8-10.5	14-15	14-15		24-31	10.0-16	18-18.5		
					Basal Clay, Sand and Gravel	11.0-15		10.5-11		16-22.5 22.5-23	15-16	13-15 15-16	21-24									16-33.5	18.5-25	20-21	
Contact		Unconformity			Bedrock Contact	15	11	11	21	23	16	16	24	14	9.5	14	10.5	15	15		31	33.5		22	20
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white	15-32	11.0-23	11.0-23	21-21.5	23-34	16-32	16-27	24-35	14-36	9.5-15	14-26	10.5-11	15-28						22-24	
		Lower Saprolite	Increasingly Consolidated		Light greenish grey	32-43	23-40.5	23-35.5	21.5-37	34-50	32-36	27-35.5	35-45	36-43	15-32	26-38.5	11.0-33	28-43	15-34		31-47	33.5-50.5		24-38	20-48
		Saprock	Consolidated		Dark greenish grey	43-43.5	40.5-43	35-37	37-38.5	50-56	36-37	35.5-38	45-46.5	43-44	32-35	39.5-40	33-34	43-44	34-35			50.5-51			48-49
Unsuitable		Fresh Rock	Consolidated		Greenish grey	44	44	38	39				47												
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained																			21-22	
			Various	Indurated	Silicified																				
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled	7.0-15	7.0-9	7.0-11	9.0-22	7.0-17			3.0-10	10.0-11	9.5-10.5	5.0-6	2-4.5	?	2.0-14	4.0-16	4.0-24	3.0-28	3.5-14	3.0-21	3.5-20
																			9.0-11			14-17	14-25	19-20	Dec-14
		Water-saturation (Zone of Very Low Water Flux)	White		Leached								10.0-31												
																								21-31	
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained		20-33	10.5-11	21-33	15-16			7.0-10	8.0-10			9.5-10.5	12.0-15						21-22	9.0-12
						31-33	23-31	26-27		42.5-45			21-23.5		25.31	26-29	10.5-17	28-33.5							27-42
								18-24					25.5-27.5												
																			32-35						
		Preset-Day Drainage	Watertable																						
		Total Depth Logged (m)				44	44	38	39	56	37	38	47	44	35	40	34	44	35	16	47	51	25	38	49
		EOH (End of Hole) (m)																							

LINE 13

Potential Troglofauna Habitat	Regolith Units		Colour and Competency		Materials																				
					Drill Hole Number	TPA 1476	TPA 1477	TPA 1478	TPA 1479	TPA 1480	TPA 1481	TPA 1485	TPA 1486	TPA 1487	TPA 1488	TPA 1489	TPA 331	TPA 330	TPA 329	TPA 328	TPA 327	TPA 326	TPA 325	TPA 324	TPA 323	TPA 321	TPA 320
					RL (m)	360.4	364.2	367.8	368.0	365.0	365.8	354.0	350.0	348.0	348.8	349.8	350.2	355.0	359.0	363.2	367.0	366.5	366.5	366.4	365.0		
					Easting (m)	643,000	643,200	643,400	643,600	643,800	644,000	6,444,800	645,000	645,200	645,400	645,600	645,800	646,000	646,200	646,400	646,600	646,800	647,000	647,200	647,400		
					Northing (m)	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600	6,757,600		
	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit																				
					Sand	0-2	0-2	0-1	0-4	0-3	0-6	0-3	0-1	0-1	0-1	0-1	0-2	0-1	0-1	0-2					0-1	0-1
					Soil									1.0-2												
Likely					Fine Gravel													1.0-3	1.0-2					0-2	1.0-2	1.0-2
					Coarse Gravel	2-2.5	2.0-3								1.0-2	1.0-2			2-2.5		0-1.5	0-2	0-1.5 1.5-3	0-2 2-4.5	2.0-3	2.0-3	
					Gravel Lag									2-2.5	2.0-3	2.0-3											
Prime		Laminar and massive multi-generational mixed lenses of Cemented Colluvium and Gravel	Pale Red Brown	Indurated	Calcrete	2.5-9	3.0-7	1.0-10	4.0-13	3-9	6-10	3.0-5	1.0-4			3.0-8	2.0-8	3.0-27	2.5-9	2.0-3	4.0-13						
			Various		Silcrete					9-14	10-15			2.5-7	3.0-6	8-10	8.0-10	3.0-6									
			Yellow Brown		Ferricrete																1.5-4						
Marginal			Purple-Red		Mottled Clay							5.0-10	4.0-9	7.0-9	6.0-19	10.0-17											
Likely		Mixed Gravel Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated	Fine Gravel																						
					Coarse Gravel																						
Prime					Gravel Lag																						
				Ind.	Laterite Ferricrete																						
		Channel-fill Sand, Clay, Silt and Gravel Sediment	Various	Unconsol.	Channel-fill															2.0-3	1.5-4.5	2-2.5	3.0-5	4.5-6	3.0-13	3.0-8	2.0-8
Marginal					Basal Clay, Sand and Gravel								9.0-11	9.0-11	19-21	17-29 29-30	10.0-16	6.0-12	2.5-9 9-11	3-16 16-19	13-19.5 19.5-20.5	2.5-16 16-17	5.0-17 17-19	6-16 16-17	13-15	8.0-9	8-8.5 8-8.5
Contact	Unconformity				Bedrock Contact	9	7	1?	13	14	15		11	21	21	30	16	12	11	19	20.5	17	19	17	15	9	8
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white	9.0-19	7.0-12	-20	13-17	14-21	15-20		11.0-20	21-26	21-32	30-33	16-30	12.0-27	11.0-19	19-20	20.5	17-20	19-21	17-19	15-20	9.0-19	8.0-15
		Lower Saprolite	Increasingly Consolidated		Light greenish grey	19-30	12.0-23	20-30	17-23	21-36	20-32	-30	20-40	26-27	32-44	33-40	30-39	27-54	19-29.5	20-25	20.5-27	20-31	21-31	19-25	20-23	19-26.5	15-29
		Saprock	Consolidated		Dark greenish grey	30-32	23-31	30-31	23-23.5	36-39	32-36	30-31	40-42	27-36 38-41	44-50	40-41	39-40	54-57	29.5-30	25-26	27-29.5	31-31.5	31-34	25-26.5	23-24.5	26.5-28.5	29-31.5
Unsuitable		Fresh Rock	Consolidated		Greenish grey		31-32		23.5-24	39-41		31-32		36-38	50-51		40-41	57-58		26-27	29.5-30	31.5-32	34-37	26.5-27	24.5-25	28.5-30	31.5-33
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained																						
			Various	Indurated	Silicified	2.0-9	3.0-7						4.0-9	3.0-7	3.0-19	3.0-29	2.0-16	3.0-27	2.5-9	2.0-15	1.5-19.5	2.0-16	3.0-17	4.5-16	3-13.5		2.0-8
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled										6.0-12	8.0-17	2.0-17	3.0-12	2.5-10	2.0-19	6.0-19	2.0-17	5.0-13	5.5-18	3.0-12	3.0-7	2.0-5
		Water-saturation (Zone of Very Low Water Flux)	White		Leached									7.0-19	12.0-30							17-20	13-21			7.0-19	5.0-15
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained	9.0-15										8.0-10	14-17	18-36	15-20	12.0-19	15-17	16.5-20		13.5-19			
													11.0-13	19-22		10.0-17											
																31-34		27-29.5	9.0-10								
		Preset-Day Drainage	Watertable																								
		Total Depth Logged (m)				32	32	31	24	41	36	32	42	41	51	41	41	58	30	27	30	32	37	27	25	30	33
		EOH (End of Hole) (m)																									

LINE 14

Potential Troglofauna Habitat	Regolith Units		Colour and Competency		Materials	TPA 371	TPA 370	TPA 368	TPA 367	TPA 4463	TPA 4464	TPA 4465	TPA 4466	TPA 4467	TPA 4468	TPA 4469	TPA 4470	TPA 4471	TPA 4472	TPA 4473	TPA 4474	TPA 363	TPA 362
					Drill Hole Number	TPA 371	TPA 370	TPA 368	TPA 367	TPA 4463	TPA 4464	TPA 4465	TPA 4466	TPA 4467	TPA 4468	TPA 4469	TPA 4470	TPA 4471	TPA 4472	TPA 4473	TPA 4474	TPA 363	TPA 362
					RL (m)	375.8	376.0	376.0	369.6	364.4	359.2	354.4	352.4	351.0	350.0	350.0	350.0	351.0	350.0	350.4	354.2	359.2	365.2
					Spacing	0	200	600	800	1200	1400	1700	1800	2000	2200	2400	2600	2800	2600	2800	3000	3200	3400
					Easting (m)	642,600	642,800	643,200	643,400	643,691	643,906	644,083	644,200	644,306	644,405	644,617	644,784	645,002	645,203	645,411	645,607	645,800	646,000
					Northing (m)	6,756,000	6,756,000	6,756,000	6,756,000	6,756,013	6,756,004	6,756,002	6,756,022	6,756,037	6,756,044	6,756,065	6,756,073	6,756,080	6,756,071	6,756,008	6,756,002	6,756,000	6,756,000
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit																		
					Sand	0-0.5	0-1	0-1					0-3	0-1	0-2	0-2	0-2	0-1.5	0-2	0-2	0-1		0-1.5
					Soil									1.0-2									
Likely					Fine Gravel	0.5-6	1-2 2-3	1-3 3-4	0-2 2-3	0-2 2-3	0-2 2-2.5	0-3									1.0-2	0-2	1.5-2
					Coarse Gravel	6.0-7	3-6.5					3.0-8										2.0-3	
Prime					Gravel Lag	7.0-12	6.5-11				2.5-4			9-9.5									
		Laminar and massive multi-generational mixed lenses of Cemented Colluvium and Gravel	Pale Red Brown	Indurated	Calcrete			4.0-16	3.0-10	3.0-8													
			Various		Silcrete	12-	11.0-23	16-	10-	8.0-19.5	4.0-7		3.0-6	2.0-6	2.0-6	2.0-5	2.0-5	1.5-5	2-4.5	2.0-3	2.0-3		
			Yellow Brown		Ferricrete																		
Marginal			Purple-Red		Mottled Clay							8.0-10	6.0-8	6.0-9		5.0-7	5-7.5	5.0-9	4.5-8.5	3-8.5	3.0-9	3.0-9	2.0-11
Likely		Mixed Gravel Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated	Fine Gravel							10.0-18	8.0-12										
					Coarse Gravel								16-18 12-15										
Prime					Gravel Lag								15-16										
				Ind.	Laterite Ferricrete																		
		Channel-fill Sand, Clay, Silt and Gravel Sediment	Various	Unconsol.	Channel-fill																		
Marginal					Basal Clay, Sand and						21.5-38.5		8.0-18			7-13 13-15	7.5-14 14.5-	9.0-21 21-21.5	8.5-13 13-13.5	8.5-12	9.0-12	9-11.5 11.5-12	
Contact		Unconformity			Bedrock Contact		23.5			19.5	28.5	18	18	9.5	6	15	14.5	21.5	13.5	12	12	12	11
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white					19.5-40	28.5-30	18-40	18-41	9.5-30	6.0-26	15-33	14.5-31	21.5-28	13.5-31	12.0-30	12.0-30	12.0-20	11.0-21
		Lower Saprolite	Increasingly Consolidated		Light greenish grey					40-54	30-56	40-52	41-51	30-44	26-54	33-45.5	31-46.5	28-34.5	31-42	30-32.5	23-40	20-32	21-39
		Saprock	Consolidated		Dark greenish grey					54-57	56-58			44-45		45.5-46	46.5-47	34.5-35	42-42.5	32.5-33	40-42	32-32.5	39-40
Unsuitabl		Fresh Rock	Consolidated		Greenish grey					57-58				45-46					42.5-43		42-43	32.5-33	40-42
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained																		
			Various	Indurated	Silicified		3.0-23			3-19.5	2.5-21.5	3.0-19	3.0-19	1.0-21	2.0-23	2.0-15	2-14.5	1.0-9	3.0-13	3.0-12	3.0-7	3.0-9	2.0-11
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled		3.0-10			3.0-22	4.0-14	3.0-10	6.0-18	6.0-21	2.0-15	10.0-15	7.5-12	9.0-21	4.5-8		3.0-8	3.0-9	2.0-18
											17-19					10.0-16							
		Water-saturation (Zone of Very Low Water Flux)	White		Leached		10.0-23			8.0-12	14-17	10.0-40	18-41				14.5-31	11.0-28	8.0-31	17-30	12.0-20	12.0-20	
										29-40	19-28.5												
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained					5.0-12													
										47-55	28.5-30	25-32					31-33	28-31	21.5-37	11.0-13	20-23	20-30	19-21
																		31-33		14-18	30-32		
		Preset-Day Drainage	Watertable																				
		Total Depth Logged (m)								58	58	52	51	46	54	46	47	35	43	33	43	33	42
		EOH (End of Hole) (m)																					

LINE 14

				Drill Hole Number	TPA 361	TPA 360	TPA 359	TPA 358	TPA 357	TPA 510	TPA 356	TPA 511	TPA 512	TPA 354	TPA 353	TPA 352	TPA 351	TPA 350	TPA 349	TPA 348	TPA 4476	TPA 4477
				RL (m)	373.0	378.0	376.0	376.2	377.0	378.0	378.0	378.0	374.5	373.2	372.0	371.6	369.5	368.0	363.6	360.6	358.2	354.8
				Spacing	3600	3800	4000	4200	4400	4500	4600	4700	4900	5000	5200	5400	5600	5800	6000	6200	6400	6600
				Easting (m)	646,200	646,407	646,597	646,800	647,000	647,128	647,200	647,300	647,500	647,600	647,800	648,000	648,200	648,400	648,600	648,800	648,997	649,207
				Northing (m)	6,756,000	6,755,951	6,755,965	6,756,000	6,756,000	6,756,009	6,756,000	6,756,033	6,756,024	6,756,000	6,756,000	6,756,000	6,756,000	6,756,000	6,756,000	6,756,000	6,755,994	6,756,017
Potential Troglofauna Habitat	**Regolith Units**		**Colour and Competency**		**Materials**																	
Unsuitable	TRANSPORTED REGOLITH (Sedimentary Cover Sequences)	Unconsolidated (Loose and Friable) Ferruginous Red Brown Illuvium, Aeolian, Colluvium Cover Sequences	Ferruginous Red Brown	Unconsolidated	Sand Grit																	
					Sand	0-6	0-6	0-3	0-1		0-1		0-0.5	0-1						0-3	0-3	0-1	0-1
					Soil																		
Likely					Fine Gravel			3.0-4															
					Coarse Gravel				1-2 2-3	0-2.5 2.5-3			0.5-3.5	0-2	0-1		0-2		0-1				
Prime					Gravel Lag		6-6.5												1.0-2	3.0-5			1.0-2
		Laminar and massive multi-generational mixed lenses of Cemented Colluvium and Gravel	Pale Red Brown	Indurated	Calcrete			4.0-8	4.0-5	4.5-5	3.0-5		3.5-5	2-3.5	1.0-3		2.0-3	0-2			3.0-4	1.0-3	2.0-3
			Various		Silcrete	6.0-7		8.0-10	5.0-12	5.0-11	5.0-9		5-11.5	3.5-8	3.0-8		3.0-6	2		5.0-6			
			Yellow Brown		Ferricrete																		
Marginal			Purple-Red		Mottled Clay	7.0-10	6.5-11			11.0-20	9.0-18		11.5-18		8.0-9		6-7 7-11	3-5.5		6-70.5	4.0-9	3.0-4	
Likely		Mixed Gravel Sheet Wash Alluvial Deposits	Yellow Brown	Unconsolidated	Fine Gravel										9.0-10								
					Coarse Gravel																		
Prime					Gravel Lag																		
				Ind.	Laterite Ferricrete																		
		Channel-fill Sand, Clay, Silt and Gravel Sediment	Various	Unconsol.	Channel-fill																		
Marginal					Basal Clay, Sand and			10.0-17 17-20	5.0-23 23-30	20-22 22-24	18-23		18-19.5 19.5-20		10.0-14		11-12 12-14	5.5-6					
Contact		Unconformity			Bedrock Contact	10	11	20	30	24	23		20	8	14		14	6	2	10.5	9	4	3
Marginal	RESIDUAL REGOLITH (Weathered Bedrock)	Upper Saprolite	Unconsolidated		Pale reddish white	10.0-11	11.0-13	20-22		24-30			20-57		14-18		14-26	6.0-20	2.0-8	10.5-31	9.0-18	3.0-22	
		Lower Saprolite	Increasingly Consolidated		Light greenish grey	11.0-48	13-36	22-33	30-53	30-56	23-56		57-95	8.0-61	18-60		26-61	20-55	8.0-70	31-48	18-35	22-63	457-16
		Saprock	Consolidated		Dark greenish grey	48-53	36-38	33-35.5	53-57	56-59	56-58		95-98 99-101	61-72	60-65		61-64	55-57	70-72		35-40	63-65	29-30
Unsuitabl		Fresh Rock	Consolidated		Greenish grey		37.5-38	35.5-36	57-58	59-60	58-60		98-99	72-74	65-68		64-65				40-41		
	GROUNDWATER MODIFICATION (Overprints)	Surface Water Accumulation & Evaporation	Red	Unc.	Hematitic Stained																		
			Various	Indurated	Silicified	6.0-10	6.5-11	4.0-17	4.0-16	3.0-20	5.0-18		0.5-20	2.0-9	1-8 12-16		2.0-11	0-5.5	2.0-7	5.0-7	3.0-8	3.0-4	2.0-3
		Poor Drainage (Zone of Low Water Flux)	Purple-Red & White		Mottled	7.0-14	6.5-14	8-	8.0-14		5.0-9		2.0-8	2.0-9	2.0-9		2.0-11	2-5.5	2.0-7	5.0-7	4.0-8		
								14-20		12.0-17	12.0-18		14.5-18										
		Water-saturation (Zone of Very Low Water Flux)	White		Leached																		
											9.0-12		8-14.5				13-24						
		Good Drainage (Zone of Moderate to High Water Flux)	Yellow	Unconsolidated	Goethite Stained																		
								22.5-24	23-27	20-23	41-51		26-34		29-37		24-54		2.0-9	10.5-13	11.0-14	10.0-22	3.0-27
																				17-18		30-53	
		Preset-Day Drainage	Watertable																				
		Total Depth Logged (m)				53	38	36	58	60	60		101	74	68		65	57	72	48	41	65	30
		EOH (End of Hole) (m)																					