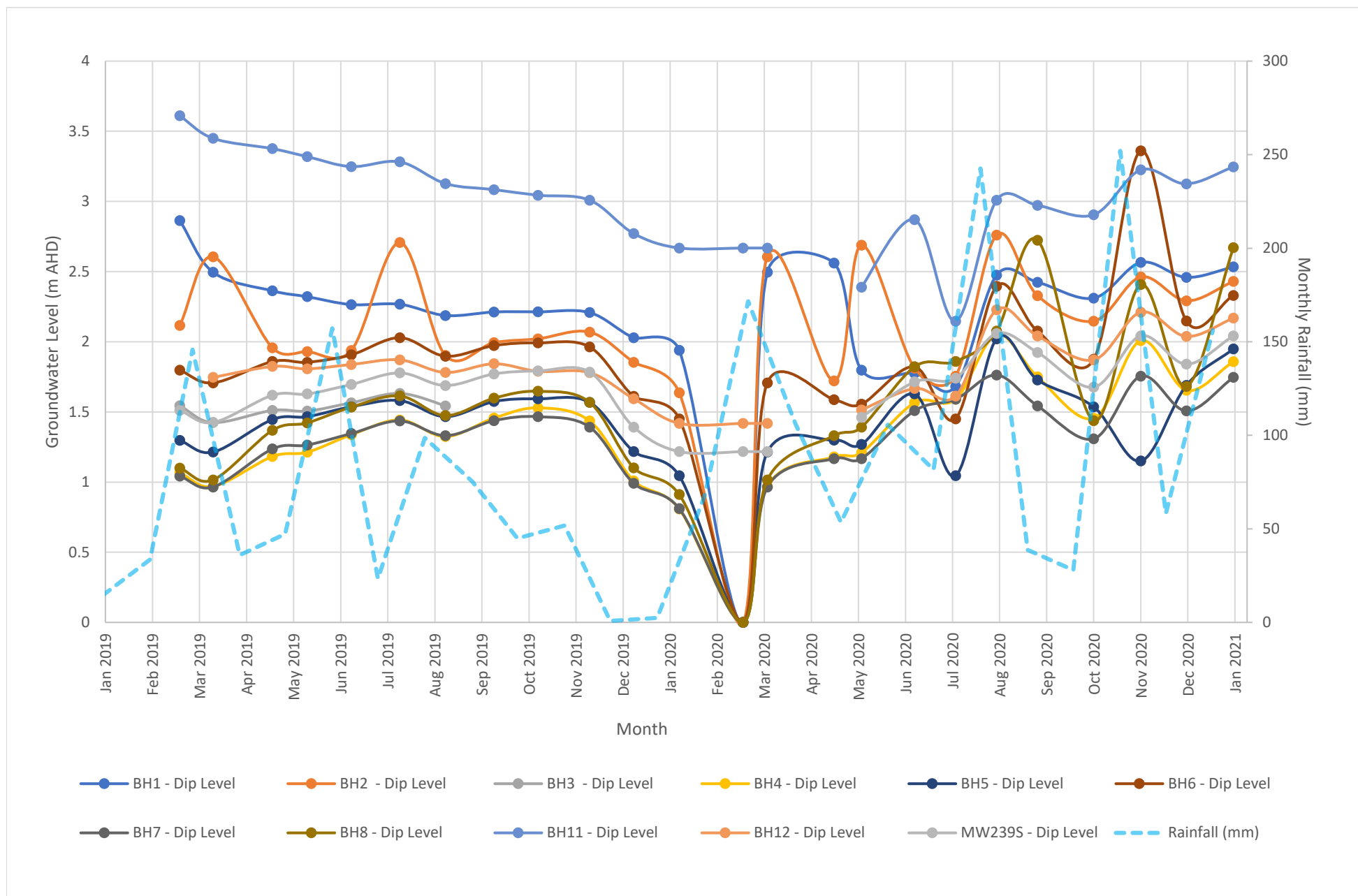
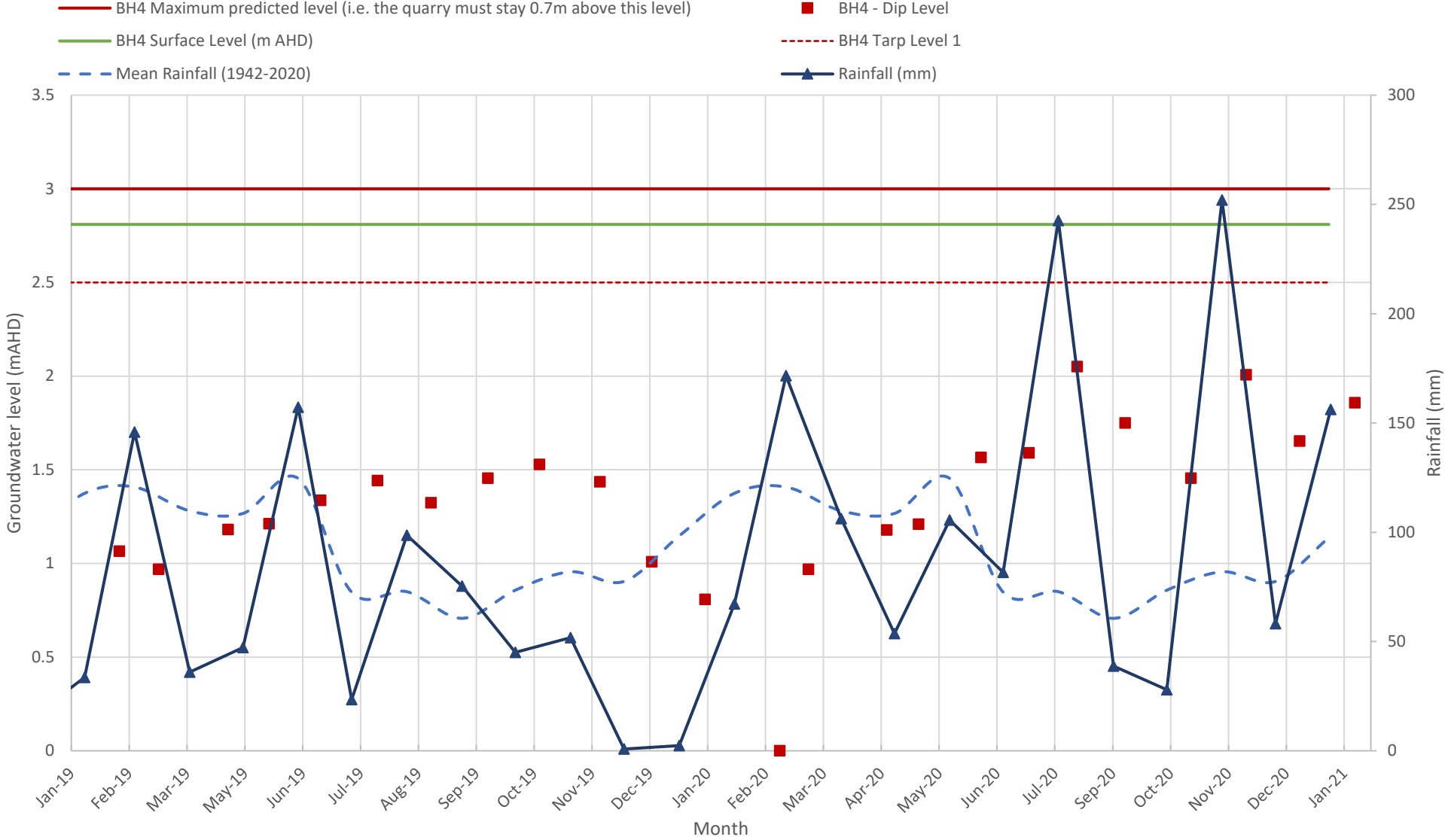
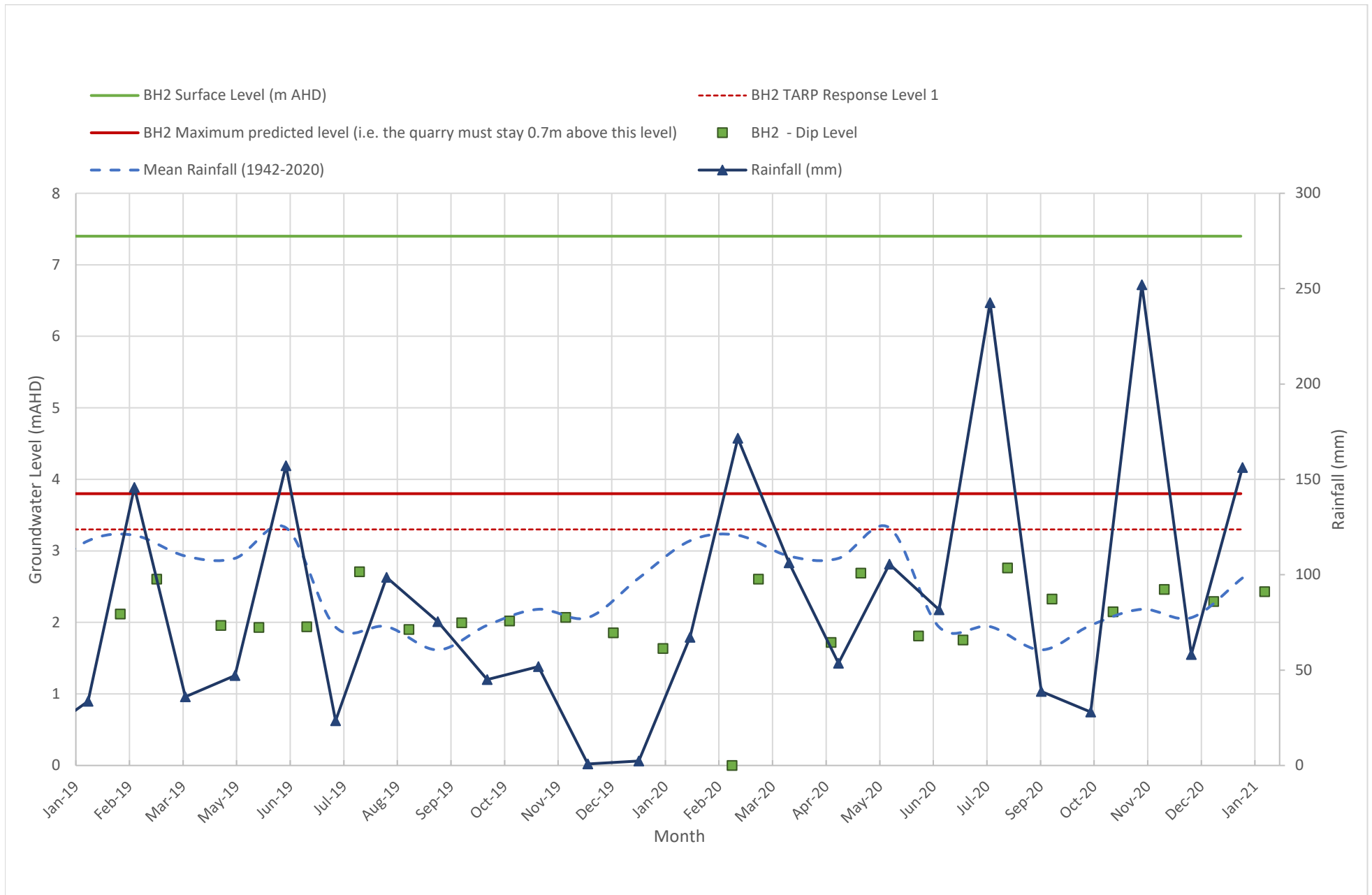
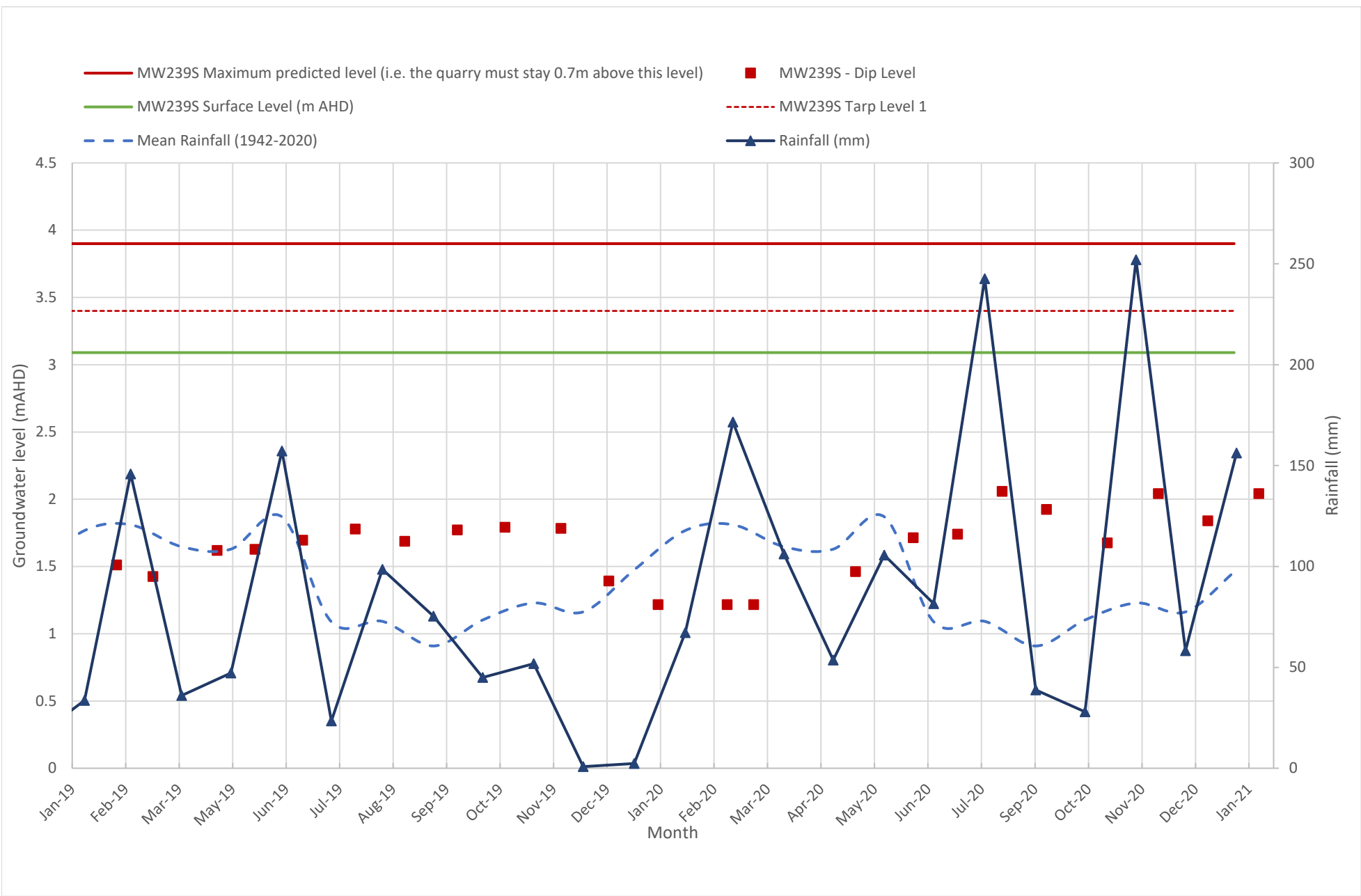


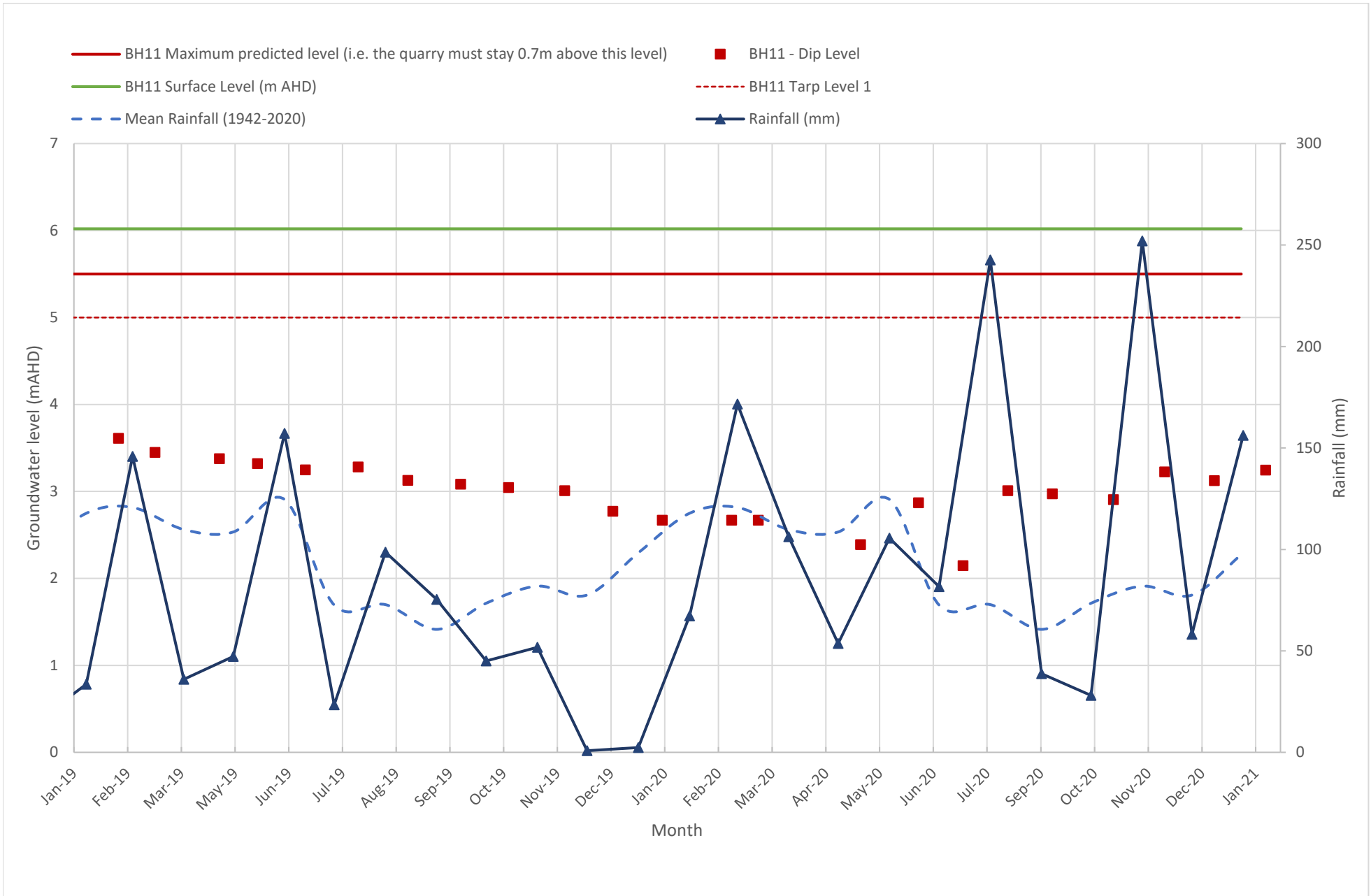
APPENDIX 6. GROUNDWATER LEVELS











APPENDIX 7. AMPHIBIAN SURVEY

19 November 2020

File Ref: NCA20L118861

Document Ref: NCA20L118861

Quarry Manager
Newcastle Sand
398 Cabbage Tree Road
Williamstown, NSW 2318

Attention: Paul Bourne

Delivered by email: paul@newcastlesand.com.au

Subject: Newcastle Sand Amphibian Monitoring

Background

Targeted fauna monitoring for the Mahony's Toadlet (*Uperoleia mahonyi*) and Wallum Froglet (*Crinia tinnula*) was conducted by Kleinfelder ecologists as part of the requirements outlined in Section 6.4C of Table 7 in the Biodiversity and Rehabilitation Management Plan Cabbage Tree Road Sand Quarry (Kleinfelder, 2020). As required, two discreet monitoring events were conducted between Spring and Autumn. In the interests of conducting surveys during more suitable conditions conducive to detecting amphibians, surveys were only conducted after reasonable rainfall was received. As such, monitoring was conducted by two ecologists over nights on the 26th March and 11th November 2020 for a total of 4.5 person hours each survey. Surveys were undertaken at night, after significant rainfall was received (**Table 1 and 2**).

Table 1. Weather conditions during surveys conducted in March 2020

Date	Max Temperature (°C)	Humidity (%)	Barometric pressure (hPa)	Wind (spd/direction)	Rain past 24 hours (mm)	Rain past 5 days (mm)
23/03/2020	24.3	69	1024.2	13km/ESE	0.6	0.6
24/03/2020	24.6	77	1023.9	22/NE	0.6	1.2
25/03/2020	26.5	78	1019.5	24/WNW	0	1.2
26/03/2020	22.4	95	1023.4	30/SSW	21.2	22.4
27/03/2020	24.0	90	1025.8	20/SE	19.6	42.0

Source: Bureau of Meteorology – Williamstown RAAF (061078).

Table 2. Weather conditions during surveys conducted in November 2020

Date	Max Temperature (°C)	Humidity (%)	Barometric pressure (hPa)	Wind (spd/direction)	Rain past 24 hours (mm)	Rain past 5 days (mm)
06/11/2020	21.1	99	1016.4	30/S	30.2	30.2
07/11/2020	22.2	52	1021.6	37/SSE	-	30.2
08/11/2020	20.8	77	1026.9	24/SE	0.4	30.6
09/11/2020	21.6	57	1025.0	22/	-	30.6
10/11/2020	22.2	47	1020.6	26	-	30.6
11/11/2020	27.9	70	1013.0	15	-	30.6

Source: Bureau of Meteorology – Williamtown RAAF (061078).

Results

Survey effort was focused around ephemeral and semi-permanent water bodies using both spotlighting and quiet listening techniques (**Figure 1**). Each site was surveyed for 20 minutes on two separate occasions please see results for Mahony's Toadlet and Wallum Froglet in **Table 3**. Mahony's Toadlet was detected at three of the seven survey locations during the November 2020 survey (Locations 1, 6 and 7). The Wallum froglet was also detected at three locations two in March (Locations 3 and 5) and November (Location 6).

Mahony's Toadlet was found at six of the seven survey locations previously established during initial 2018 targeted amphibian surveys which were conducted under optimal weather conditions. While a significant amount of rainfall had occurred prior to the March 2020 surveys, the previously very dry conditions resulted in suboptimal conditions with inadequate rainfall to fill these semi-permanent water bodies and cooler temperatures resulting in no detections (**Table 1**). During the November 2020 surveys weather conditions were improved. Mahony's Toadlet was detected in areas of pooling water (Locations 1, 6 and 7). Locations 2, 3 and 4 did not contain pooling water required for optimal conditions and therefore Mahony's Toadlet was not recorded at these locations.

The Wallum Froglet was detected during the March surveys at locations 3 and 5 after significant rainfall on the day of the survey. During the November surveys only location 6 was observed to have the Wallum Froglet which contained pooling water. Significant rainfall was observed five days before the November survey and not on the day which may have reduced the likelihood of the Wallum froglet calling in more locations.

Opportunistic sightings of non-target amphibian species were also recorded. Photos of amphibians taken over the duration of the monitoring period are included in **Appendix 1** and a full species list of all species can be found in **Table 4**.

Table 3: Mahony's Toadlet and Wallum Froglet presence during targeted nocturnal monitoring

Survey Location	Original Survey 2018	March 2020	Comments March 2020	November 2020	Comments November 2020
1	+	-	Conditions Not Optimal. Rainfall had occurred but was insufficient to pool within the survey locations. (except for Location 5 which has permanent water)	+	Pooling water present
2	-	-		-	No pooling water
3	+	#		-	No pooling water
4	+	-		-	No pooling water
5	+	#		-	Permanent water within channel.
6	+	-		+/#	Pooling water
7	+	-		+	Pooling water

(Mahony's Toadlet +)(Wallum Froglet #)

Table 4 Full Species Lists for both March and November 2020.

March 2020		November 2020	
Species	Common Name	Species	Common Name
<i>Limnodynastes peronii</i>	Striped Marsh Frog	<i>Litoria peronii</i>	Peron's Tree Frog
<i>Limnodynastes dumerilii</i>	Eastern Banjo Frog	<i>Litoria tyleri</i>	Tyler's Tree Frog
<i>Crinia signifera</i>	Common Eastern Froglet	<i>Uperoleia mahonyi</i>	Mahony's Toadlet
<i>Crinia tinnula</i>	Wallum Froglet	<i>Limnodynastes peronii</i>	Striped Marsh Frog
		<i>Litoria fallax</i>	Eastern Dwarf Tree Frog
		<i>Crinia signifera</i>	Common Eastern Froglet
		<i>Crinia tinnula</i>	Wallum Froglet
		<i>Litoria dentata</i>	Bleating Tree Frog

For any further questions, please do not hesitate to contact me.

Sincerely,

Kleinfelder Australia Pty Ltd



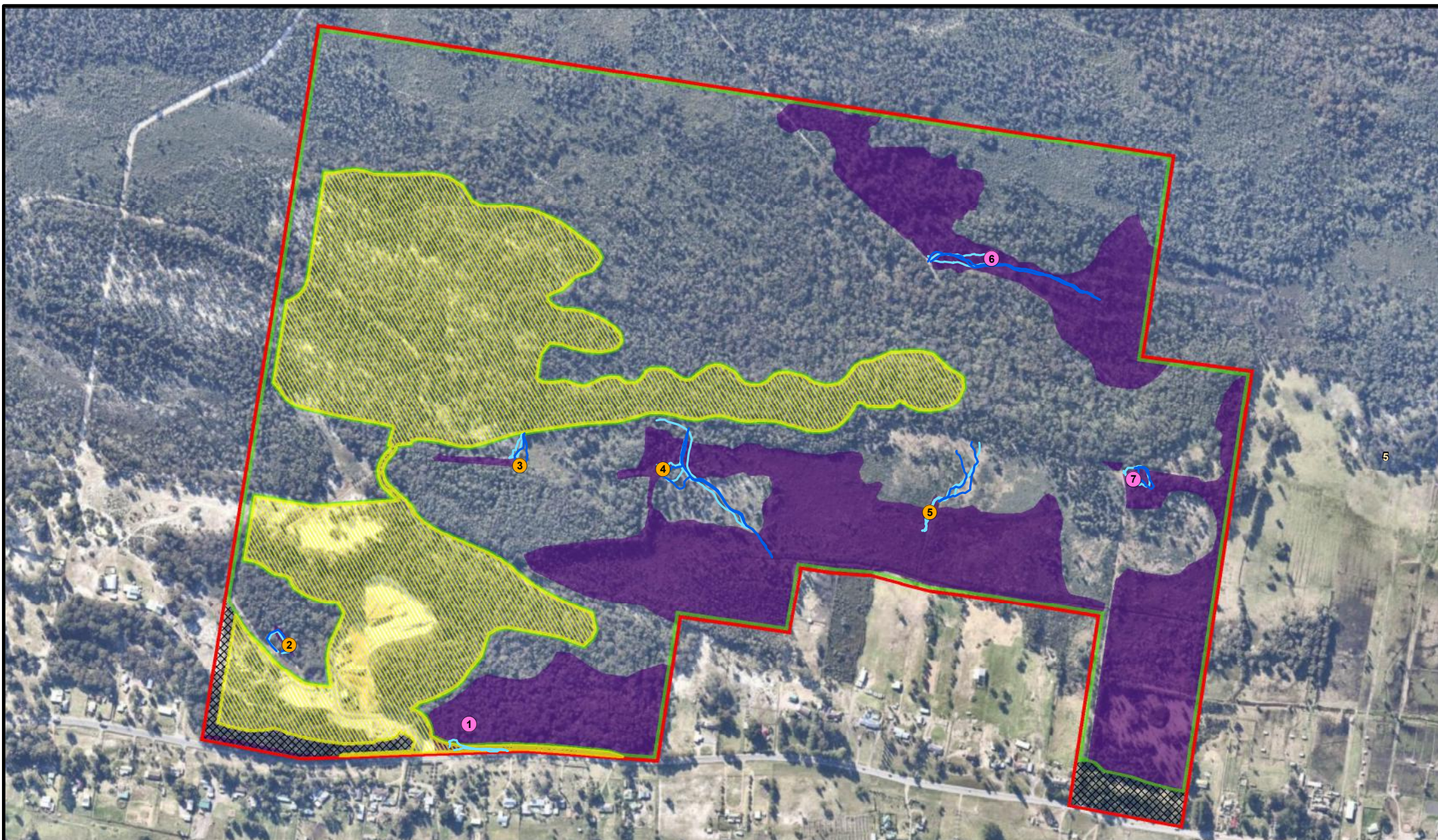
Mark Dean EnvSc & Mgmt

Ecologist

Email: Mdean@kleinfelder.com

Mobile: 0455 381 346

Work: 02 4949 5200



Legend

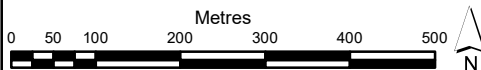
- Subject Land
- ▨ Development Site
- Onsite Offset
- ▨ Offset Exclusion
- Mahony's Toadlet (*Uperoleia mahonyi*) Core Habitat

Survey Location

- Mahony's Toadlet (*Uperoleia mahonyi*) detected (calling)
- Mahony's Toadlet (*Uperoleia mahonyi*) not detected

Survey Tracks

- 26 March 2020
- 11 November 2020



PROJECT REFERENCE: 20204195

DATE DRAWN: 2020/11/17 22:34 Version 1

DRAWN BY: G.Joyce

DATA SOURCE:
NSW DFSI - 2017
Nearmap - 2020

Frog Monitoring 2020

2020 Frog Monitoring
Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

FIGURE:

1

APPENDIX 1: PHOTOS



Plate 1 *Litoria fallax* (Eastern Dwarf Tree Frog)



Plate 2 *Litoria peronii* (Peron's Tree Frog)



Plate 3 *Crinia signifera* (Common Eastern Froglet)



Plate 4 *Uperoleia mahonyi* (Mahony's Toadlet)

APPENDIX 8. RAP INSPECTION RECORDS



9 Vardon Road Fern Bay 2295 NSW
0421078695
0402827482

ABN: 97 807 719 484

23rd October 2020

Newcastle Sand

Att: Darren Williams

RE: Cultural Heritage Report –Onsite Inspection

On Tuesday 13th of October Murrooma, Nurrungee and Worimi LALC representatives- Bec Young, Lennie Anderson and Brendan Lillie completed an Aboriginal site investigation and community salvage of any cultural material exposed during screened spoils as requested by Newcastle Sand as per CHMP.

This process is being completed to follow current plans in place and to ensure protection of local Aboriginal Sites and collection of cultural material for further education and storage of Worimi Aboriginal Objects. This inspection was completed by site officers' walking in transects over the area where it has been negotiated for best exposure to be placed on existing dune.



Results:

No cultural material was found.

Recommendations:

All groups were satisfied with the opportunity to view the areas for cultural material. Salvage for this project was fully completed and storage will be at Worimi LALC. We have discussed ongoing and future proposed works with Newcastle Sand and management plans to ensure the protection of Worimi Aboriginal Cultural Heritage.

Yours Truly

Report completed by - Bec Young- Murrooma Sites Officer and Operations Manager- 0421078695

In agreement with:

Brendan Lillie - Worimi LALC Sites Officer and Lennie Anderson - Nurrungee Sites Officer



Len Anderson OAM
22 Popplewell Road
Fern Bay NSW 2295
Ph/Fax 02 49201578

TAX INVOICE

ABN: 37 096 307 701
Date: 01/Aug/2020

Invoice No:223

**To: Attention ; Darren/ Williamtown Sand Syndicate Pty Ltd:
Australian Sand Unit Trust**

Work Completed: Site Investigation 282 Cabbage Tree Road,
Williamstownun-Gee

Day	Date	Hours	Employees	Total \$
Thurs	30/Jul/20	4	C Collison	

Comments:

Thank you for your business

Please pay to account:

Lennie Anderson OAM
Director
Nur-Run-Gee PTY LTD



TAX INVOICE

9 Vardon Road
Fern Bay NSW 2295
Ph.- 0421078695 or 0402827482

ABN: 97 807 719 484

Tax Invoice: #445

Date: 30/08/2019

To: Williamtown Sand Syndicate Pty Limited ATF The Newcastle Sand Unit Trust

ABN 56 606 820 875

282b Cabbage Tree Road, Williamtown NSW 2318

Work Completed: Aboriginal Sites Survey/Community Collection Walkover-
Cabbage Tree Rd- Sand Quarry- Post clearing Inspection

Day	Date	Hours	Employees	Total \$
Friday	23/08/2019	Half Day	Rebecca Young	
Sub Total:				
GST:				
Balance GST Inc:				

Comments:

Thank you for your business,



MURROOMA



INCORPORATED

9 Vardon Road Fern Bay 2295 NSW

0421078695

0402827482

Murroomainc1@gmail.com

ABN: 97 807 719 484

TAX INVOICE

Tax Invoice: #492

Date: 13/08/2020

To: Williamtown Sand Syndicate Pty Limited ATF The Newcastle Sand Unit Trust

ABN 56 606 820 875

282b Cabbage Tree Road, Williamtown NSW 2318

Att: Darren Williams

Work Completed: Aboriginal Sites Survey/Community Collection Walkover- Cabbage Tree Rd- Sand Quarry- Post clearing Inspection

Day	Date	Hours	Employees	Total \$
Thursday	30/07/2020	Half Day	Luke Knight	
Sub Total:				
GST:				
Balance GST (Inc):				

Comments:

Thank you for your business

Please pay to account:



MURROOMA



INCORPORATED

9 Vardon Road Fern Bay 2295 NSW

0421078695

0402827482

Murroomainc1@gmail.com

ABN: 97 807 719 484

TAX INVOICE

Tax Invoice: #498

Date: 23/010/2020

To: Williamtown Sand Syndicate Pty Limited ATF The Newcastle Sand Unit Trust

ABN 56 606 820 875

282b Cabbage Tree Road, Williamtown NSW 2318

Att: Darren Williams

Work Completed: Aboriginal Sites Survey/Community Collection Walkover- Cabbage Tree Rd- Sand Quarry- Spoil Inspection onsite.

Day	Date	Hours	Employees	Total \$
Tuesday	13/10/2020	Half Day	Bec Young	
Sub Total:				
GST:				
Balance GST (Inc):				

Comments:

Thank you for your business

