Date : 17/01/2020 12:01:11 PM
From : "TIGHE Danielle"
To : sch4p4(6) Personal information
Cc : "Clinton Miles" , "Adam Doherty" , "Patrice Brown"
Subject : RE: Request for submission extension - Lot 1 RP604651 (Ref: I04194-2019) (our ref: 19124)
Attachment : Signed Remedy Request Notice Extension_16_01_2020.pdf;Water Depth of Pit.tif;copyright.pdf;Disclaimer.pdf;JRT_20190313_0_000_19-03-13_125800ShipTrack.kml;JRT.csv;image003.png;image004.jpg;image005.jpg;

Hi(6) Personal info

Please see attached copy of the Remedy Request Notice with the approved extension date of the 31 March 2020. I have forwarded the original letter to JRT in the mail for their records.

Attached are the documents you requested that were obtained from the site inspection conducted 13 March 2019.

1. Bathymetric survey map (however the data collected via the Qboat fitted with a Teledyne RDI RiverPro ADCP can only be accessed through the Winriver11 platform which is not provided)
2. The extracted csv data set from Winriver11.
3. Kml file showing tracks taken from the Qboat.

Please note the attached disclaimer and copyright provisions whilst using the departments data.

The department is happy to arrange a meeting to discuss these matters. In order to progress these to a speedy conclusion can you please provide the department with a list of discussion points and or questions prior to the meeting.

Regards

Queensland Government

Danielle Tighe
Natural Resource Officer
Water Management and Use | Compliance
Department of Natural Resources, Mines and Energy

P: 0748373301 **M:** (6) Personal infor
E: danielle.tighe@dnrme.qld.gov.au
A: Level 1, 209 Bolsover Street, Rockhampton | PO Box 1762 Rockhampton Qld 4700
W: www.dnrme.qld.gov.au

From: sch4p4(6) Personal information cqgroup.com.au>
Sent: Monday, 13 January 2020 9:25 AM
To: TIGHE Danielle
Cc: Clinton Miles; Adam Doherty; Patrice Brown
Subject: Request for submission extension - Lot 1 RP604651 (Ref: I04194-2019) (our ref: 19124)

Good Morning Danielle,

Thanks for your time last week to chat about the above matter. As discussed, we have been engaged by JRT to assist them with preparing a response to the Department's Notice issued to J.P.J.R.T Pty Ltd on 4 November 2019 (Ref:I04194-2019). As requested, please see attached letter of permission for CQG Consulting to act on behalf of JRT in regard to this matter.

Given the Notice was issued on 4 November 2019, the extent of the technical issues that need to be addressed and the fact the Christmas break has delayed the commencement of the investigations, on behalf of JRT we hereby request an extension of the submission date to **Tuesday, 31 March 2020**.

FYI we intend to conduct a desktop assessment of the surrounding groundwater landscape in order to better understand the Site's relationship. Obtaining the bathymetric survey data from your investigation would ensure any assumptions/results are based on corresponding data and also greatly expedite this process. In addition to this we would like to arrange a face-to-face meeting in due course to discuss the Site's history and the Department's anticipated outcome.

Thanks once again for the initial discussions and look forward to working collaboratively to achieve a successful outcome.

All the best and talk soon,

sch4p4(6) Personal informatio
Environmental Operations Manager - Rockhampton

T: 4(6) Personal inform
E: @cqgroup.com.au
A: 180 Quay Street, Rockhampton QLD 4700

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Queensland Government

Department of
Natural Resources, Mines and Energy

Notice

Water Act 2000

Remedy Request Notice

Our Ref: I04194-2019

16 January 2020

J.P.J.R.T PTY LTD
36 Tasman Crescent
YEPPOON QLD 4703

This remedy request is issued to you by the Department of Natural Resources, Mines and Energy (the department) in respect to the activities conducted on site known at the waste disposal site on land described as Lot 1 on Plan RP604651 (subject lot) located 231 Lucas Street Gracemere Qld 4702.

Officers of the department have conducted an investigation into a suspected breach of the *Water Act 2000* (the Act) involving the offence of interfering with underground water.

Under section 808 of the Act it is an offence to take or interfere with water to which this Act applies and subsequently section 101(1)(c) take or interfere with underground water for any purpose without an authorisation.

The subject lot is located within the Fitzroy Groundwater Management Area and under section 116(2) of the Water Plan (Fitzroy Basin) 2011, a person may only take or interfere with groundwater in a groundwater management area—

(a) under a water permit; or
(b) under a water licence; or
(c) under an interim water allocation; or
(d) under a water allocation; or
(e) under section 124; or
(f) for stock or domestic purposes; or
(g) for an activity prescribed under a regulation for section 101(1)(c) of the Act

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Release

The facts and circumstances forming the basis for issuing this notice are:

- The department has received several complaints regarding the alleged contamination of groundwater located near the site and was concerned that waste deposited into the area was having an effect on surrounding bores.
- Evidence received over a period of time indicated that the pit continued to be excavated and that the water remained in the pit even in drought conditions.
- Departmental records show that none of the above authorisations to take or interfere with groundwater are associated with the subject lot.
- On 13 March 2019 a site inspection was conducted by DNRME departmental officers. A bathymetric survey was undertaken to measure the depth of the water body within the excavation. The department's view following this site inspection is that this excavation has the ability to interfere with groundwater.

A remedy notice, dated 4 November 2019 was issued to you to undertake works at the site to prevent any interference with groundwater by **25 January 2020**. The department received a request from Jason Edwards, Environmental Operations Manager from CQG Consulting acting on your behalf dated 13 January 2020 to extend the timeframe to **31 March 2020**. The department has agreed to this request to extend the timeframe until **31 March 2020**.

You are advised of the requirement to take action to prevent any interference with groundwater and provide a report by a suitably qualified person to the department prior to the **31 March 2020**.

If you do not comply with this request within the timeframe specified above without a reasonable excuse, the department may consider taking further action.

Should you have any questions in relation to this notice, please contact Danielle Tighe, Natural Resource Officer, Water Services of the department on telephone number (07) 48373 301 or email danielle.tighe@dnrme.qld.gov.au.

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sch4p4(6) Personal information

Date: 16/01/2020

Danielle Tighe
Natural Resource Officer
Water Services
Authorised Officer - *Water Act 2000*

CC – Email CQG Consulting

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The Queensland Government is currently investigating alternate electronic ways to make information available. In cases where the Department of Natural Resources, Mines and Energy is unable to provide documents in an accessible electronic format, DNRME can offer a hardcopy version free of charge to those members of the public who are unable to read the file.

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Date : 17/04/2020 5:00:18 PM
From : "MEACLE Kristy"
To : "WILLIAMS Mark (ROCKHAMPTON)"
Cc : "RUSSELL Stephen" , "TIGHE Danielle"
Subject : RE: JRT report review
Attachment : image004.gif;image005.png;image006.png;image007.png;

Hi Mark,

As discussed I note the observations and summary from the report. I note that the report is not definitive in its determination of the water source. However did indicate that a significant amount of surface water run off was likely contributing to the presence of water in the pit area.

Based on the information, I would support no further action being taken at this time, it is not clear that an offense has occurred, however the client should be reminded of their obligations under the *Water Act 2000*.

Kristy.

From: WILLIAMS Mark (ROCKHAMPTON) <Mark.Williams@dnrme.qld.gov.au>
Sent: Monday, 6 April 2020 9:10 AM
To: MEACLE Kristy
Subject: FW: JRT report review

Hi,

Response from JRT attached, with some observations. Suggest a meeting to discuss further

Thanks

Regards Mark

Mark Williams
Senior Natural Resources Officer
Water Services | Central Region
Department of Natural Resources, Mines and Energy

P: (07) 48373347 **M:** s(6) Personal infor
E: mark.williams@dnrme.qld.gov.au
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W: www.dnrm.qld.gov.au

CENTRAL
People. Outcomes. Future.

From: RUSSELL Stephen <Stephen.Russell@dnrme.qld.gov.au>
Sent: Monday, 6 April 2020 8:57 AM
To: WILLIAMS Mark (ROCKHAMPTON)
Subject: FW: JRT report review

A few points for consideration from the JRT report

Data used:

- One site visit to review runoff direction and facility management.
- No physical data collected for report determination, only historical records.
- DNRME bathometric analysis.
- DNRME historical imagery.
- DNRME bore data. Consists of one data point from initial bore construction.
- DNRME 2015 published LIDAR data for landscape AHD.
- DNRME Fitzroy Basin 25m digital elevation model used to generate a groundwater regression prediction. The derived AHD from this model conflicts with the 2015 LIDAR data.
- BOM average and annual rainfall data.
- No account for evaporation which is significant for storage levels.
- No reference to pit storage capacity.
- Incorrect data points noted within the report.

Rainfall and catchment analysis:

- Annual and average rainfall has been referenced. The report acknowledges low rainfall for the past two years though focuses on Annual Exceedance Probability.
- Annual Exceedance Probability models takes into account futuristic rainfall and not what has actually occurred. This creates a bias for larger runoff.

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- No reference to or analysis of the pit bed to confirm the ability to hold water. The previous site title was a quarry, this warrants the consideration of what material (such as clay) is present to create a lining capable of storing water.
- A catchment size of 3.8HA has been used to model runoff calculations, this is the entire grounds. A suggested catchment size of 2.45HA would be more realistic.

Report statements:

- The report states it cannot be determined if this standing water is groundwater. Then further states that surface water capture is most likely the source of the water. How can this be evaluated if groundwater is not ruled out?
- Statement of standing water is persistent within the pit. Pooled rainfall runoff is not persistent.
- Groundwater regression prediction is noted at +/- 1 metre accuracy though a decision accuracy of 1 metre has been determined.
- Acknowledgement that the pit bed is 10 metres AHD and the groundwater level is 11 metres AHD though determined not groundwater.



Regards
Stephen Russell
Acting Project Officer
Water Services | Central Region
Department of Natural Resources, Mines and Energy

P: (07)4837 3368
E: steven.russell@dnrme.qld.gov.au
A: L1, 209 Bolsover Street , Rockhampton QLD 4700 | PO Box 1762 Rockhampton QLD 4700
W: www.dnrm.qld.gov.au



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Date : 23/01/2020 5:00:59 PM
From : sch4p4(6) Personal informatio
To : "TIGHE Danielle"
Subject : RE: Request for submission extension - Lot 1 RP604651 (Ref: I04194-2019) (our ref: 19124)
Attachment : image001.jpg;image002.jpg;image003.png;

Hi Danielle,

Apologies for the late response. Just acknowledging receipt of your letter. The extension is appreciated and will allow us to get a good look at this issue.

Thank you also for providing the xyz's. To utilise this data we need the standing water level at the time of the survey, as the depth is relative to this. Would you be able to chase up the surveyor for this information?

Thanks again and talk soon.

sch4p4(6) Personal informatio
Environmental Operations Manager - Rockhampton

T: p4(6) Personal inform
E: cqgroup.com.au
A: 180 Quay Street, Rockhampton QLD 4700

CQG Consulting www.cqgroup.com.au

Rockhampton | Gladstone | Mackay | Townsville
ABN: 61 107 574 514

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From: TIGHE Danielle <Danielle.Tighe@dnrme.qld.gov.au>
Sent: Friday, 17 January 2020 12:01 PM
To: sch4p4(6) Personal information @cqgroup.com.au>
Cc: Clinton Miles <clint@absolutewaste.com.au>; Adam Doherty <adam@dileigh.com.au>; Patrice Brown <patrice.brown@cqgroup.com.au>
Subject: RE: Request for submission extension - Lot 1 RP604651 (Ref: I04194-2019) (our ref: 19124)

Hi 6) Personal inf

Please see attached copy of the Remedy Request Notice with the approved extension date of the 31 March 2020. I have forwarded the original letter to JRT in the mail for their records.

Attached are the documents you requested that were obtained from the site inspection conducted 13 March 2019.

1. Bathymetric survey map (however the data collected via the Qboat fitted with a Teledyne RDI RiverPro ADCP can only be accessed through the Winriver11 platform which is not provided)
2. The extracted csv data set from Winriver11.
3. Kml file showing tracks taken from the Qboat.

Please note the attached disclaimer and copyright provisions whilst using the departments data.

The department is happy to arrange a meeting to discuss these matters. In order to progress these to a speedy conclusion can you please provide the department with a list of discussion points and or questions prior to the meeting.

Regards

Queensland Government

Danielle Tighe
Natural Resource Officer
Water Management and Use | Compliance
Department of Natural Resources, Mines and Energy

P: 0748373301 **M:** (6) Personal infor
E: danielle.tighe@dnrme.qld.gov.au
A: Level 1, 209 Bolsover Street, Rockhampton | PO Box 1762 Rockhampton Qld 4700
W: www.dnrme.qld.gov.au

From: sch4p4(6) Personal information @cqgroup.com.au>
Sent: Monday, 13 January 2020 9:25 AM
To: TIGHE Danielle

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Cc: Clinton Miles; Adam Doherty; Patrice Brown
Subject: Request for submission extension - Lot 1 RP604651 (Ref: I04194-2019) (our ref: 19124)

Good Morning Danielle,

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Given the Notice was issued on 4 November 2019, the extent of the technical issues that need to be addressed and the fact the Christmas break has delayed the commencement of the investigations, on behalf of JRT we hereby request an extension of the submission date to **Tuesday, 31 March 2020**.

FYI we intend to conduct a desktop assessment of the surrounding groundwater landscape in order to better understand the Site's relationship. Obtaining the bathymetric survey data from your investigation would ensure any assumptions/results are based on corresponding data and also greatly expedite this process. In addition to this we would like to arrange a face-to-face meeting in due course to discuss the Site's history and the Department's anticipated outcome.

Thanks once again for the initial discussions and look forward to working collaboratively to achieve a successful outcome.

All the best and talk soon,

ch4p4(6) Personal informatio
Environmental Operations Manager - Rockhampton

T:
E: p4(6) Personal informa cqgroup.com.au
A: 180 Quay Street, Rockhampton QLD 4700

CQG Consulting www.cqgroup.com.au

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Queensland Government

Department of
Natural Resources, Mines and Energy

Notice

Water Act 2000

Remedy Request Notice

Our Ref: I04194-2019

16 January 2020

J.P.J.R.T PTY LTD
36 Tasman Crescent
YEPPOON QLD 4703

This remedy request is issued to you by the Department of Natural Resources, Mines and Energy (the department) in respect to the activities conducted on site known at the waste disposal site on land described as Lot 1 on Plan RP604651 (subject lot) located 231 Lucas Street Gracemere Qld 4702.

Officers of the department have conducted an investigation into a suspected breach of the *Water Act 2000* (the Act) involving the offence of interfering with underground water.

Under section 808 of the Act it is an offence to take or interfere with water to which this Act applies and subsequently section 101(1)(c) take or interfere with underground water for any purpose without an authorisation.

The subject lot is located within the Fitzroy Groundwater Management Area and under section 116(2) of the Water Plan (Fitzroy Basin) 2011, a person may only take or interfere with groundwater in a groundwater management area—

(a) under a water permit; or
(b) under a water licence; or
(c) under an interim water allocation; or
(d) under a water allocation; or
(e) under section 124; or
(f) for stock or domestic purposes; or
(g) for an activity prescribed under a regulation for section 101(1)(c) of the Act

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The facts and circumstances forming the basis for issuing this notice are:

- The department has received several complaints regarding the alleged contamination of groundwater located near the site and was concerned that waste deposited into the area was having an effect on surrounding bores.
- Evidence received over a period of time indicated that the pit continued to be excavated and that the water remained in the pit even in drought conditions.
- Departmental records show that none of the above authorisations to take or interfere with groundwater are associated with the subject lot.
- On 13 March 2019 a site inspection was conducted by DNRME departmental officers. A bathymetric survey was undertaken to measure the depth of the water body within the excavation. The department's view following this site inspection is that this excavation has the ability to interfere with groundwater.

A remedy notice, dated 4 November 2019 was issued to you to undertake works at the site to prevent any interference with groundwater by **25 January 2020**. The department received a request from Jason Edwards, Environmental Operations Manager from CQG Consulting acting on your behalf dated 13 January 2020 to extend the timeframe to **31 March 2020**. The department has agreed to this request to extend the timeframe until **31 March 2020**.

You are advised of the requirement to take action to prevent any interference with groundwater and provide a report by a suitably qualified person to the department prior to the **31 March 2020**.

If you do not comply with this request within the timeframe specified above without a reasonable excuse, the department may consider taking further action.

Should you have any questions in relation to this notice, please contact Danielle Tighe, Natural Resource Officer, Water Services of the department on telephone number (07) 48373 301 or email danielle.tighe@dnrme.qld.gov.au.

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sch4p4(6) Personal information

Date: 16/01/2020

Danielle Tighe
Natural Resource Officer
Water Services
Authorised Officer - *Water Act 2000*

CC – Email CQG Consulting

Technical Memorandum 19124-01

Revision	Date	Prepared by	Reviewed By	Client Reviewer
TM01 Rev 1	25.03.2020	sch4p4(6) Personal information	Issued to Client	
To:		4p4(6) Personal informa Diliegh Consulting Engineers)		
From:				
CQG Project No.:		19184		
CQG Project Manager:		sch4p4(6) Personal information		
Name of Document:		Gracemere Landfill Desktop Groundwater Investigation		

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1 Background

CQG Consulting (CQG) was engaged by Diliegh Consulting to investigate potential groundwater interference at the JRT Group (JRT) operated landfill facility located at 21 Lucas Street, Gracemere (Lot 1 RP604651) (the Site).

On 13 March 2019, the Department of Natural Resources, Mines and Energy (DNRME) attended the Site to conduct an inspection and bathymetric survey of a large pit found to the north east of the facility. Following this DNRME issued a Notice, (I04194-2019, dated 4 November 2019) (**Attachment A**) stipulating the requirement for JRT to conduct groundwater investigations, (and submit a subsequent report, i.e. this Technical Memorandum). This was due to concerns regarding the construction of the pit and its potential interference with the groundwater, as well as potential contamination emanating from the Site from landfilling operations.

Due to the limited timeframe in which to develop an adequate response to the above alleged noncompliance, CQG approached DNRME on 13 January 2020 and formally requested an extension to the submission date for JRT investigation findings, in conjunction with requesting DNRME bathymetric survey results. DNRME obliged and granted an extension to the 31 March 2020 and supplied the bathymetric survey results on 17 January 2020.

2 Introduction

As of 2014 the Gracemere landfill facility, (the Site – refer to **Figure 2.1**) has been owned by J.P.J.R.T Pty Ltd and operated by Environmental Waste Services Queensland (EWSQ) under Environmental Authority (EA) Permit, EPPR02378914, (27 October 2014 – refer to **Attachment B**) which approves the disposal of construction and demolition waste into the facility of an annual volume no greater than 50,000 tonnes. Prior to 2014, the site reportedly operated as a hard rock quarry, which was first established prior to 1956[1].

[1] 1956 is the first available historical aerial image for the Site. The quarry was established prior to this first image being captured.

Head Office
ABN 61 107 574 514
180 Quay St, Rockhampton QLD 4700
PO Box 8384, Allenstown QLD 4700
T +61 7 4922 9252 E admin@cqgroup.com.au
Rockhampton, Gladstone, Mackay, Brisbane, Townsville



Public Information Request Released under the Right to Information Act

Legend

Cadastral Boundaries

N

Scale 1:2,250 (A3)

0 25 50 100

Metres

Map Projection: Map Grid of Australia 1994 Zone 56

Figure 2.1

Gracemere Landfill

Site Location

Project no.: 19124

CQG Consulting
180 Quay Street, Rockhampton Q 4700
PO Box 8384, Allenstown 4700
Ph: +61 7 4922 9252 Fax: +61 7 4922 6195

10 March 2020

Layer Credits : Esri, HERE, Garmin, (c) OpenStreetMap contributors, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; QSpatial - Imagery, Cadatral Boundaries, Road Names.

Release

3 Scope of Works

In order to address the issues raised within the Notice, CQG undertook the following:

- A site inspection on 5 February 2020 to ground truth the Site and gain an understanding of how the facility is managed, in conjunction with observing any hyperlocal conditions;
- A review of historical aerial imagery to determine, where possible, notable physical features of the Site and surrounds over time, with particular interest in surface water;
- A review of the current topographical data pertaining to the Site and its surrounds to determine local hydrological gradients;
- A review of publicly available registered groundwater bore data to inform a statistical analysis of local groundwater characteristics; and
- Examination of DNRME's bathymetric survey results in the desktop investigation and the development of this Technical Memorandum.

4 Discussion

4.1 Topography & site context

The Site is approximately 3.8 hectares and is bordered to its immediate east by the Rockhampton Regional Council (RRC) operated Gracemere public landfill facility. Beyond the immediate boundaries of both landfill facilities, to the east and south there is established cleared farmland, to the north a privately owned and operated quarry facility, and to the west recently established residential subdivisions.

The southern boundary of the Site mimics the natural surface elevation, although due to historic quarrying activities the remainder of the Site is heavily modified with steep slopes of up to 10% towards the northern boundary. Whilst there are several large granite features identified throughout the Site the dominant geological feature is vertical pit walls, (in heights of up to approximately 15-20 metres) which remain as a legacy from quarrying activities on the Site's north, east and west boundaries (refer to **Photograph 4.1**).



Photograph 4.1: Historical quarry highwalls and pit floor in north east of site.

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At the time of the site inspection, progressive landfilling activities had led to the deepest point within the Site being the north-eastern corner. After further discussions with EWSQ site representative it is understood that the large pit holds water throughout most of the year.

Site elevation, as of 2015, range from approximately 27 m AHD to 14 m AHD, (note: LIDAR data from 2015 does not indicate pit depth in the north-east corner due to interference from surface water - refer to **Figure 4.1**).

Surface slopes between 10-20% exist across the facility, with topographic grades ranging from 2% to 5% evident within the surrounding landscape. Lower grades (0-2%) were identified further to the south east of the site, which coincide with the flood plains of nearby Washpool Creek.

4.2 Historical aerial imagery interpretation

Historical aerial imagery (Department of Natural Resources, Mines and Energy, 2019a) relevant to the Site are shown in **Attachment C**. The publicly available imagery ranges from 1956 to 2017 and commentary on the photographs is discussed below.

At the time of the first available image in 1956 a quarry was already in operation within the area and the majority of the Site was cleared and disturbed. The land surrounding the quarry was also extensively cleared, presumably for livestock grazing operations. It is noted that the land immediately to the east of the Site was also heavily disturbed at that time, presumably for landfill operations.

In the 22 years to 1978, aerial imagery shows that the Site had undergone only minor changes. In 1978 ponding of water is visible in several locations throughout the Site, indicating that deepening of the pit floor had occurred. The land to the east was heavily inundated with water coinciding with a large flooding event that occurred around that time. Extensive disturbance had occurred to the land immediately to the north of the Site, again presumed to be part of unrelated landfill operations.

Up until 1990, the Site appeared largely unchanged. The 1990 aerial shows that approximately 500 metres to the north of the Site there appeared to have been extensive quarrying works.

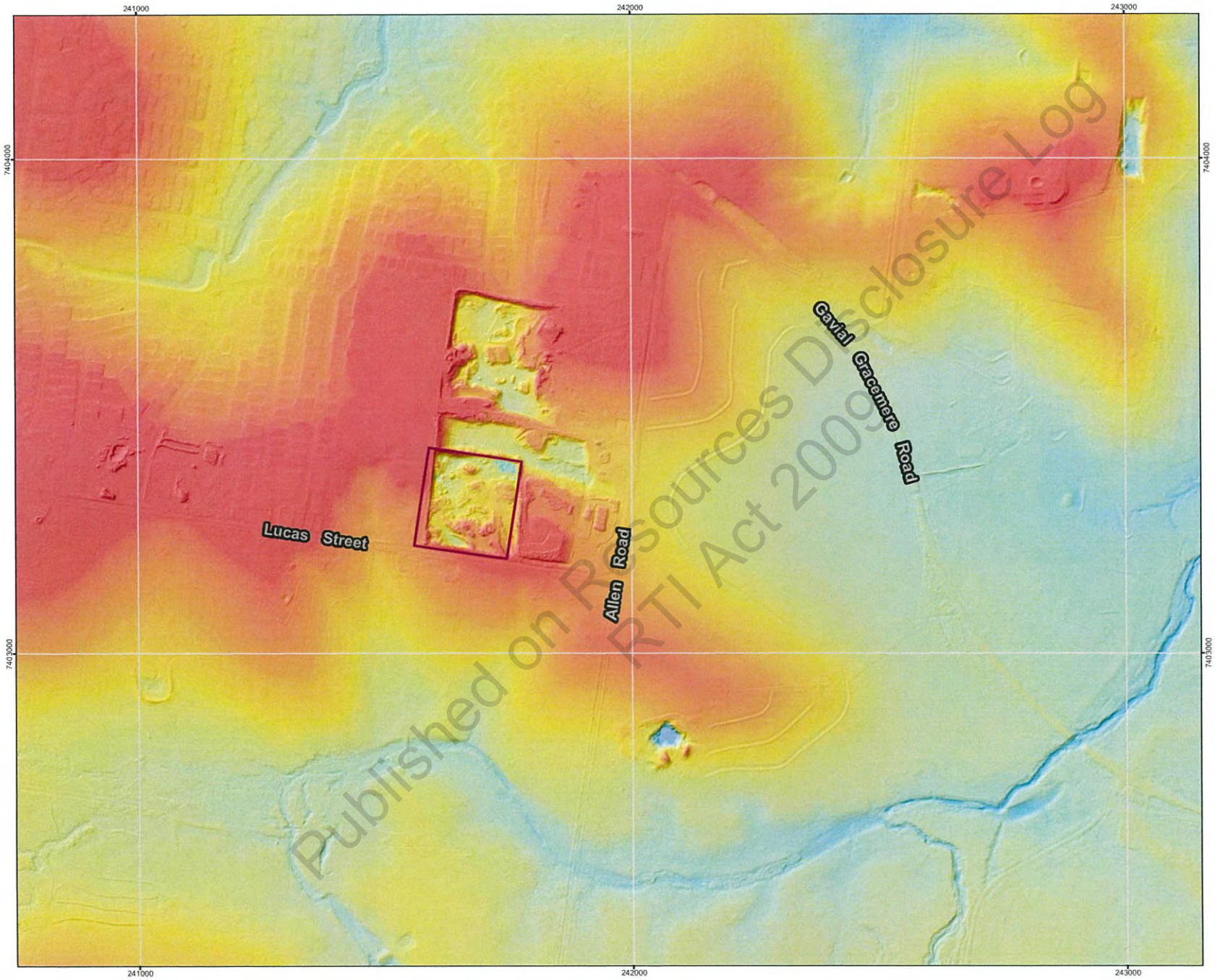
In January 1991 a major flood was recorded in the region, which was shown in the aerial imagery as large areas of the Site and land immediately to the east and north was inundated. By March 1991, this same water remained captured within the western portion of the Site.

In the early 2000's, the Site and areas to the north appeared to have undergone significant quarrying extraction, which is shown in the aerial imagery as 'shadowing' visible on the north and west boundaries, which indicates that the pit floor had been further deepened. During this time, the pit floor appeared relatively flat.

In June 2014, (a few months prior to the area's environmentally relevant activity changing from quarrying to waste disposal) ponding surface water was evident in the northern section of the Site, in the quarry to the north, and the land to the immediate east. Major flooding experienced in 2013, in conjunction with a minor local flooding event in March 2014 may explain the reasoning for this ponding surface water.

In January 2016, surface water ponding is evident in the northern section of the Site, as well as in the quarry to the north. This is evident again in 2017, presumably from the impacts of Tropical Cyclone Debbie.

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Legend

Gracemere Landfill

DEM (AHD)

25m
20m
15m
10m
5m
0m

N

Scale 1:7,500 (A3)

0 50 100 200 300

Metres

Map Projection: Map Grid of Australia 1994 Zone 56

Figure 4.1

Gracemere Landfill

Digital Elevation Model

Project no.: 19124

CQG Consulting

180 Quay Street, Rockhampton Q 4700
PO Box 5384, Allenstown 4700
Ph: +61 7 4922 9252 Fax: +61 7 4922 0195

10 March 2020

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4.3 Rainfall

Climatic data obtained from the Bureau of Meteorology, (BoM, 2020a) indicates that the monthly rainfall distribution (refer to **Figure 4.2**) is typical of a sub-tropical climatic zone, with the majority of yearly rainfall occurring during the summer months between December and March.

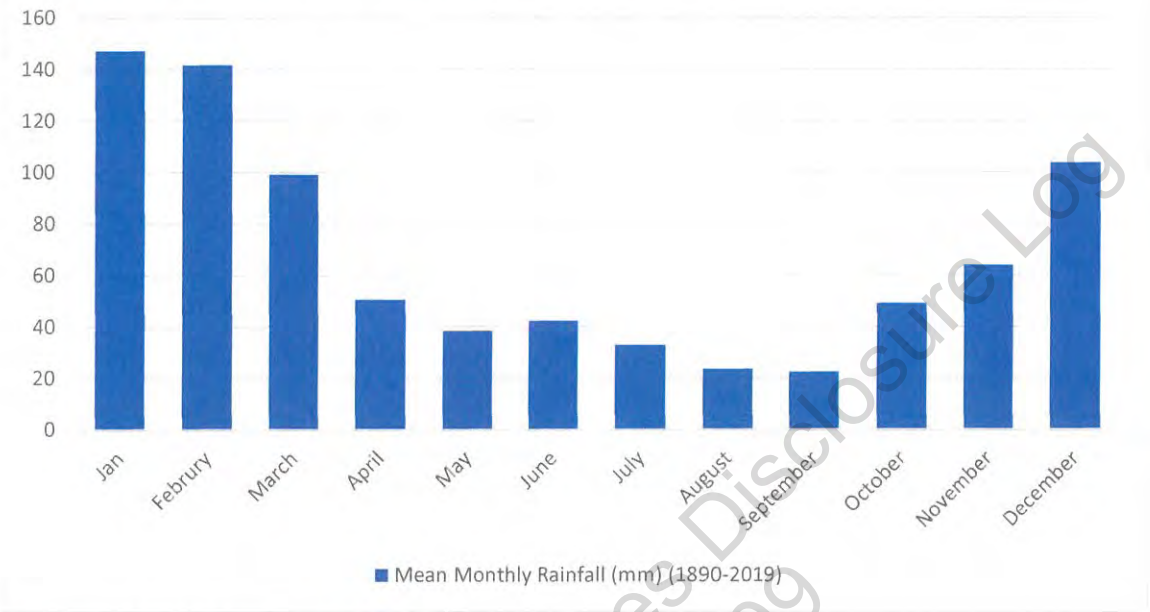


Figure 4.2: Monthly Mean Rainfall (1890-2019)

The mean annual rainfall for the Gracemere district is 823.2 mm, (BoM 2020) and for the preceding 10 years Gracemere had received on average or above rainfall, except for 2018 and 2019, which were noticeably below average (397.3 and 203.1 mm respectively), (refer to **Figure 4.3**, BoM, 2020).

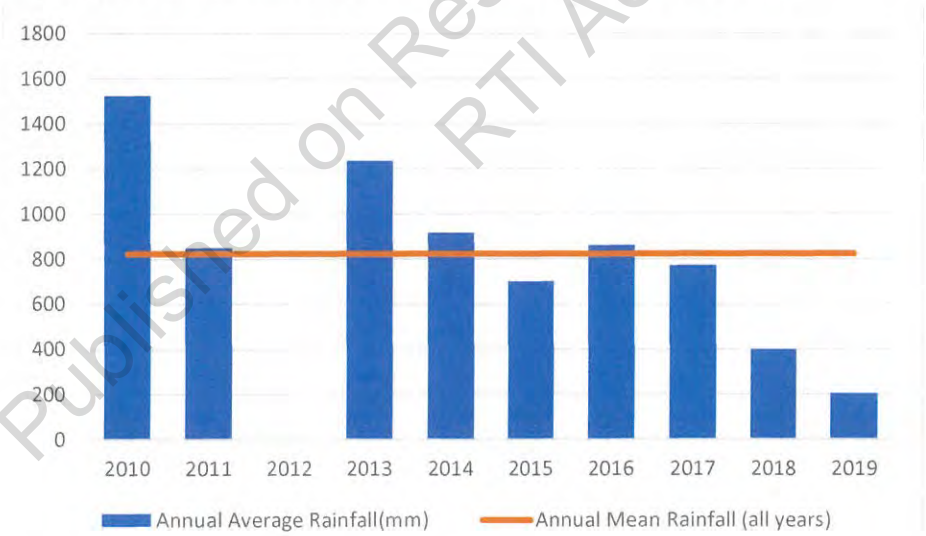


Figure 4.3: Annual Average Rainfall (2010-2019)

As stated in **Section 4.1**, surface slopes within the Site fall to the north-east corner of the site, and whilst in recent years the area has experienced below average rainfalls, the current topography of the area is conducive to surface

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water runoff consolidating and reporting to the north-east corner. Even during small rainfall events the Site is likely to receive significant surface water runoff.[2]

As a result of the historical highwall remaining at the facility boundary, rainfall and subsequent surface water runoff is captured and will most likely be held within the north-east corner. Therefore, without a clear pathway beyond the highwall, surface water is likely to be held indefinitely until natural infiltration through local underlying geology or evapotranspiration occurs.

Historical photographic evidence supports the notion that the area on which the Landfill is established acts as a consolidatory point for the immediate surrounding rainfall and subsequent runoff, which eventually reports to the northeast corner of the Site. This is particularly evident in aerial photography taken in 1991 and 2013.

4.4 Geology

The Site is fully contained within the Gracemere Gabbro rock unit (Department of Natural Resources, Mines and Energy, 2020 – refer to **Figure 4.4**) being primarily composed of Permian/Triassic aged grey medium to course-grained foliated gabbro.

The area immediately surrounding the Site is of similar lithology and is devoid of any major geological features including fault lines.

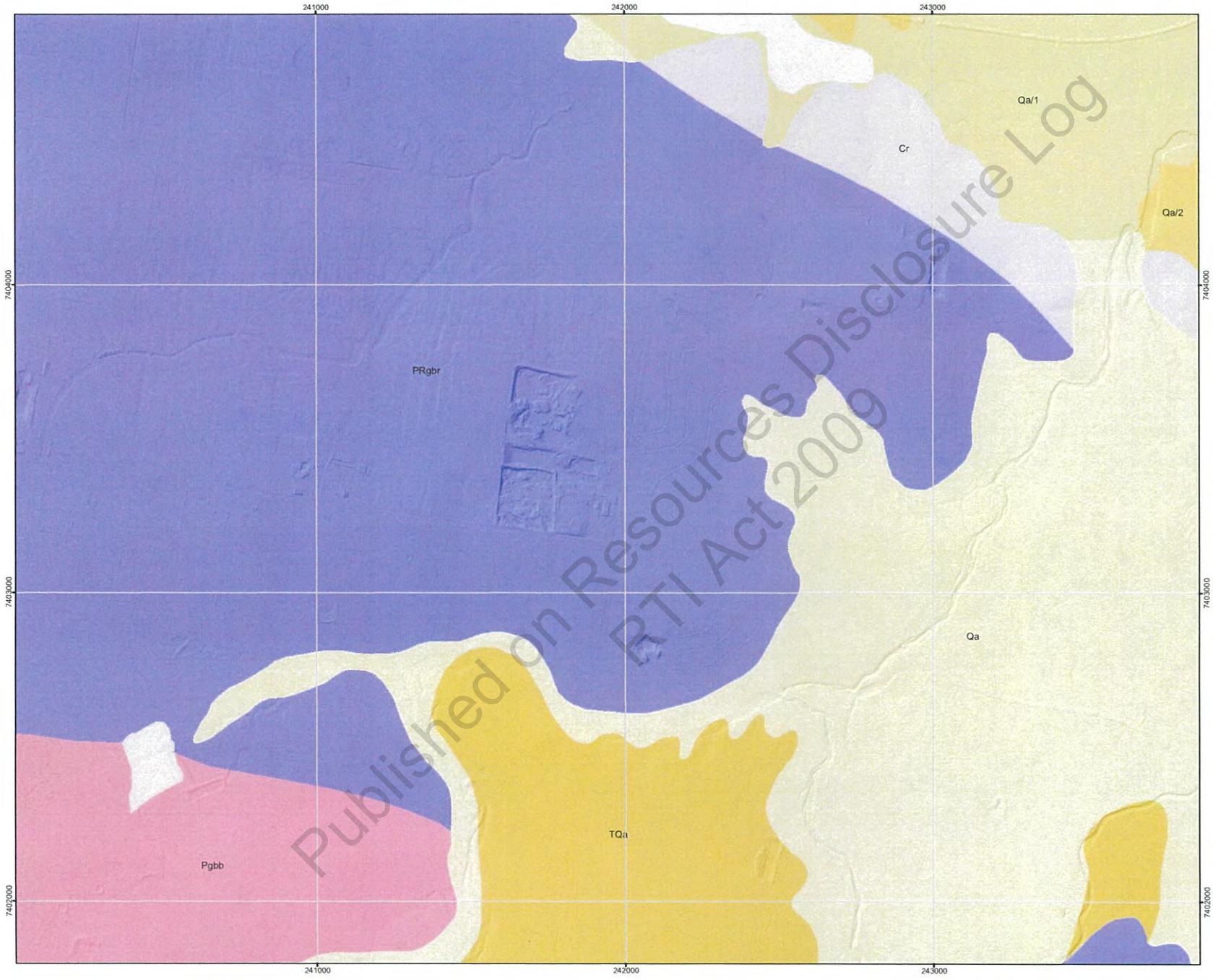
4.5 Bathymetry

The bathymetry survey data indicates the standing water level at March 2018 was 12.6 m AHD and minimum pit floor height of approximately 10m AHD. The survey indicates that at its deepest point there was approximately 1.75 m of water above the pit floor.

A projected digital elevation model (DEM) (**Figure 4.5**) for the pit floor has been produced from the bathymetric survey results provided by DNRME.

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[2] Surface water runoff calculated using a 20% AEP (Annual Exceedance Probability) rainfall event over a 6-hour period. Initial loss estimated at 15mm and continuing loss estimated at 2mm/h. Catchment size = 3.8ha. Total runoff = 2.55ML.



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Legend

- Bundaleer Tonalite
- Gracemere Gabbro
- Qa-QLD
- Qa/1-YARROL/SCAG
- Qa/2-YARROL/SCAG
- Rockhampton Group
- TQa-QLD
- Water body (unspecified)

N

Scale 1:12,000(A3)

0 125 250 500

Metres

Map Projection: Map Grid of Australia 1994 Zone 56

Figure 4.4

Geology

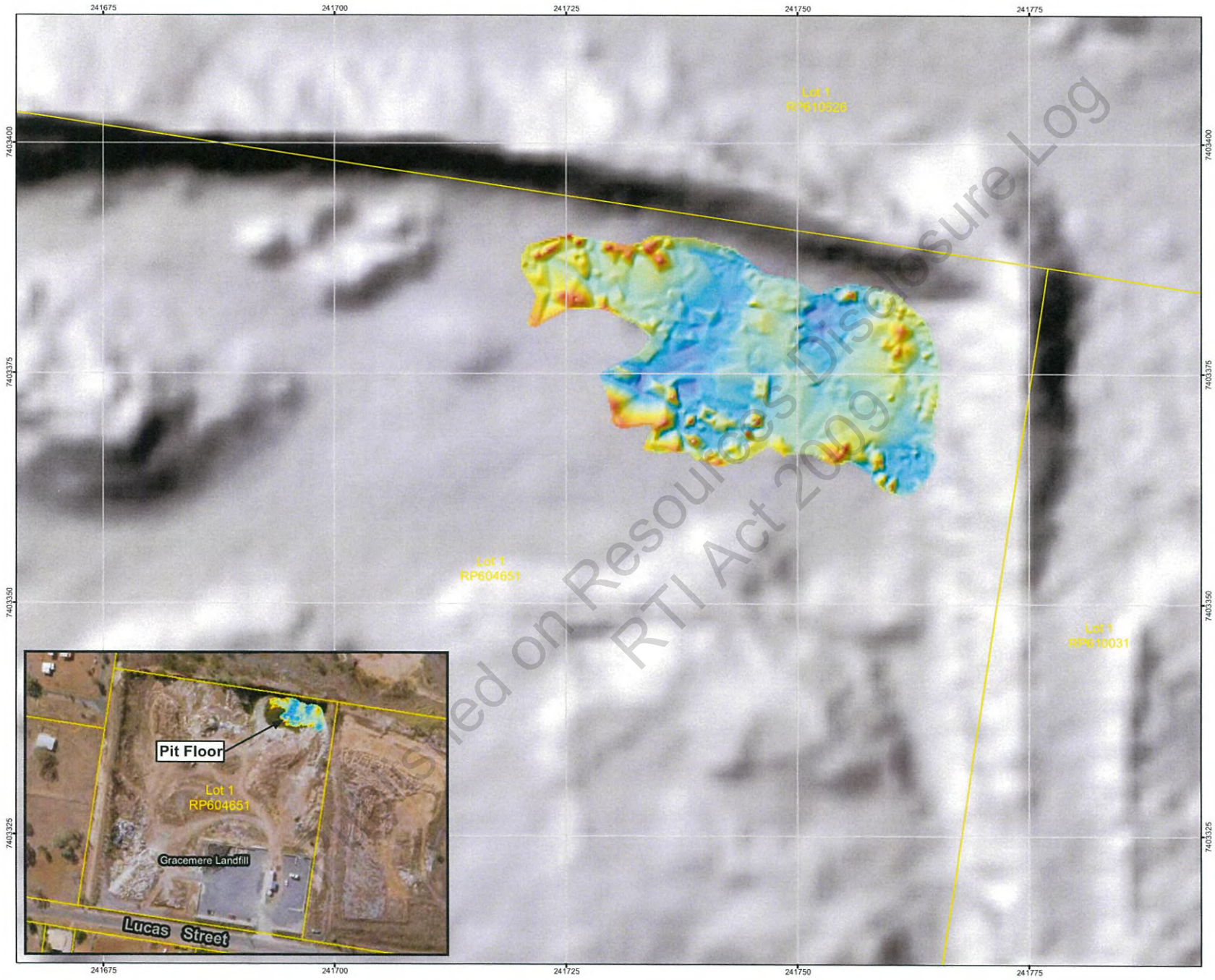
Gracemere Landfill

Groundwater Investigation

Project no.: 19124

CQG Consulting
180 Quay Street, Rockhampton Q 4700
PO Box 8384, Allenstown 4700
Ph: +61 7 4922 9252 Fax: +61 7 4922 8195

2 March 2020



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Legend

- Cadastral Boundaries
- **Pit Floor Elevation Model**
  - High : 12.25
  - Low : 9.5

N

Scale 1:400 (A3)

0 2.5 5 10

Metres

Map Projection: Map Grid of Australia 1994 Zone 56

Figure 4.5

Gracemere Landfill

Pit Floor Elevation Model

Project no.: 19124

CQG Consulting
180 Quay Street, Rockhampton Q 4700
PO Box 8384, Allenstown 4700
Ph: +61 7 4922 9252 Fax: +61 7 4922 0195

10 March 2020

Release

4.6 Hydrogeology

A search of the Queensland Governments groundwater bore database via the Queensland Globe application (DNRME, 2019a) revealed 28 bores within one kilometre of the Site. Of these, six were chosen to provide a snapshot of the groundwater levels in the local area given their proximity to the Site (~1 km). The results from the selected bores (refer to **Figure 4.6**) are shown in **Table 4.1**.

No groundwater bores are present on the Site and as a result limited data is available to fully characterise the hydrogeology at the Site properly. Furthermore, the current status of the local bores is unknown however without an alternate source this information has been deemed suitable.

Table 4.1 – Groundwater Bore Data (DNRME, 2019a)

Bore ID	Drilling Date	Targeted Aquifer	Strata	Bore Depth (m)	SWL (m)	Latitude	Longitude	Ground Elevation (mAHD)[1]	Distance from Site (km)
RN97965	21/09/1998	Sub-Artesian	Granite	22.5	8.6	-23.45265308	150.4717899	16.39	0.78
RN111710	22/06/2002	Sub-Artesian	Granite	32	13	-23.45189935	150.4737768	17.11	0.90
RN111370	21/05/2000	Sub-Artesian	Granite	20.4	6	-23.45385338	150.4774622	21.51	0.90
RN97425	1/05/1991	Sub-Artesian	Granite	19.5	9	-23.46027376	150.4684789	24.22	0.30
RN84817	25/06/1989	Sub-Artesian	Granite	24.4	8.1	-23.46176412	150.4688378	18.27	0.33
RN111844	1/05/1998	Sub-Artesian	Basalt	24	5	-23.46447739	150.4799544	12.86	1.02

[1] Ground elevation data approximated from Qld Govt. 2015 DEM.

Bore location, topography and depth to water table information was collated and compared to create a regional depth to water table regression analysis (refer to **Attachment D**). This regression analysis was used to extrapolate anticipated depth to groundwater at the Site. At the pit floor height of approximately 10 m AHD it would be expected that the depth to water table would be near the pit floor level.

However as noted above, standing water is persistent within the pit. Without detailed knowledge of the regional lithology and local groundwater levels, it cannot be determined if this standing water is groundwater that has been perched as a result of hyperlocal influences (e.g. historical quarry activities) and no longer representative of the surrounding groundwater levels. However, given the height of the standing water level above the anticipated surrounding groundwater level it is likely that another source of inflow is influencing water levels within the pit.

Surface water capture and direction to the pit is the most likely source of waters in this location.

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Legend

DRM Registered Bores

- DNRM Registered Bores
- Gracemere Landfill
- Cadastral Boundaries

N

Scale 1:7,000 (A3)

0 50 100 200 300

Metres

Map Projection: Map Grid of Australia 1994 Zone 56

Figure 4.6

Gracemere Landfill

Registered Groundwater Bore Location

Project no.: 19124

CQG Consulting
180 Quay Street, Rockhampton Q 4700
PO Box 5384, Allenstown 4700
Ph: +61 7 4922 9252 Fax: +61 7 4922 0195

10 March 2020

Published by DNRM under RTI Act 2009 - Sources: Disclosure Log

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; QSpatial - DNRM Registered Bores, Cadastral Boundaries.

Release

5 Summary

This desktop groundwater assessment has considered relevant publicly available data to determine the Sites potential interaction with groundwater.

Bathymetry data provided by DNRME indicates that the pit floor elevations are approximately 10 m AHD. s/commercial/pr

sch4p4(7)(1)(c) Business/commercial/professional/financial affairs

However, review of historical aerial imagery and rainfall data reveals that the Site, and in particular the northern pit area, which is bunded by historical highwalls from quarrying activities, retains a significant amount of surface water runoff following heavy rainfall events, suggesting that surface waters are likely contributing to the continued presence of the water in the northern pit area.

Yours sincerely,

sch4p4(6) Personal information

Senior Environmental Scientist
CQG Consulting

Quality ISO 9001 SAI GLOBAL
Environment ISO 14001 SAI GLOBAL
Health & Safety AS 4801 SAI GLOBAL

Attachments:

Attachment A: DNRME Remedy Request Notice – I04194-2019

Attachment B: Environmental Authority – EPPR02378914

Attachment C: Historical Aerial Imagery

Attachment D: HGEC – Depth to Water Table Regression Analysis

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References

Bureau of Meteorology (BoM), 2020a, Climate Data Online; Monthly Rainfall: Gracemere – Lucas Street (Station Number 39049), http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_startYear=&p_c=&p_stn_num=039049, accessed 10/03/2020

Department of Natural Resources, Mines and Energy, 2019a, Queensland Globe; Layer: Registered water bores (DNRME and private), https://qldglobe.information.qld.gov.au/qldglobe/public/registered-bores-0, accessed 10/03/2020

Department of Natural Resources, Mines and Energy, 2020, GeoResGlobe, Layer: Geology Detailed 1:100k, https://georesglobe.information.qld.gov.au/, accessed 10/03/2020

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Limitations

This report has been prepared for the use of the client, Diliegh Consulting Engineers, for the purpose of this commission only.

CQG[3] takes no responsibility and disclaims all liability for any loss or damage that any party may suffer as a result of using or relying on any such information or recommendations contained in this report.

To the maximum extent permitted by law CQG expressly disclaims responsibility for or liability arising from:

- Any error in, or omission in connection with assumptions, or
- Reliance on the report by a third party, or use of the report other than for the purpose stated.

The report relates only to the project described herein and must be reviewed by a competent expert before being used for any other purpose. CQG accepts no responsibility for other use of the data.

This report does not provide a complete assessment of the environmental status of the site but is limited to the scope defined herein.

Should further information become available regarding the conditions of the Study Area, CQG reserves the right to review the report in the context of the additional information.

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[3] *CQ Environmental Pty Ltd (ABN 61 107 574 514) trading as CQG Consulting (CQG)*

Attachment A:

DNRME Remedy Request Notice – I04194-2019

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eleas

Queensland Government

Department of Natural Resources, Mines and Energy

Notice

Water Act 2000

Remedy Request Notice

Our Ref: I04194-2019

4 November 2019

J.P.J.R.T PTY LTD
36 Tasman Crescent
YEPPOON QLD 4703

This remedy request is issued to you by the Department of Natural Resources, Mines and Energy (the department) in respect to the activities conducted on site known at the waste disposal site on land described as Lot 1 on Plan RP604651 (subject lot) located 231 Lucas Street Gracemere Qld 4702.

Officers of the department have conducted an investigation into a suspected breach of the *Water Act 2000* (the Act) involving the offence of interfering with underground water.

Under section 808 of the Act it is an offence to take or interfere with water to which this Act applies and subsequently section 101(1)(c) take or interfere with underground water for any purpose without an authorisation.

The subject lot is located within the Fitzroy Groundwater Management Area and under section 116(2) of the Water Plan (Fitzroy Basin) 2011, a person may only take or interfere with groundwater in a groundwater management area—

(a) under a water permit; or
(b) under a water licence; or
(c) under an interim water allocation; or
(d) under a water allocation; or
(e) under section 124; or
(f) for stock or domestic purposes; or
(g) for an activity prescribed under a regulation for section 101(1)(c) of the Act

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The facts and circumstances forming the basis for issuing this notice are:

- The department has received several complaints regarding the alleged contamination of groundwater located near the site and was concerned that waste deposited into the area was having an effect on surrounding bores.
- Evidence received over a period of time indicated that the pit continued to be excavated and that the water remained in the pit even in drought conditions.
- Departmental records show that none of the above authorisations to take or interfere with groundwater are associated with the subject lot.
- On 13 March 2019 a site inspection was conducted by DNRME departmental officers. A bathymetric survey was undertaken to measure the depth of the water body within the excavation. The department's view following this site inspection is that this excavation has the ability to interfere with groundwater.

The department requires actions to be undertaken at the site to prevent any interference with groundwater, and on completion, a report by a suitably qualified person to be provided to the department by **25 January 2020**.

If you do not comply with this request within the timeframe specified above without a reasonable excuse, the department may consider taking further action.

Should you have any questions in relation to this notice, please contact Danielle Tighe, Natural Resource Officer, Water Services of the department on telephone number (07) 48373 301 or email danielle.tighe@dnrme.qld.gov.au.

sch4p4(6) Personal information

Date: 4/11/2019

Danielle Tighe
Natural Resource Officer
Water Services
Authorised Officer - *Water Act 2000*

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RTI Act 2009

Attachment B:

Environmental Authority – EPPR02378914

Queensland Government

Department of
Environment and Heritage Protection

06-JAN-2015

To: J. P. J. R. T. Pty Ltd
C/- PO Box 442
YEPPOON QLD 4703

Email: Personal i@dileigh.com.au

Attention: sch4p4(6) Personal information

Your reference: EPPR02378914
Our reference: 419478

Application details

I refer to the application that was received by the administering authority on 26-NOV-2014.

Land description: 231 Lucas Street, Gracemere Lot 1 Plan RP604651.

Decision

Your application has been approved and your environmental authority (reference EPPR02378914) is attached.

Should you have any further enquiries, please contact Nicole Naylor on telephone 1300 130 372.

Yours sincerely

sch4p4(6) Personal information

Signature

6 January 2015

Date

Olga Hawas
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

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Nicole Naylor
Waste and Contaminated Land Assessment
Department of Environment and Heritage Protection
GPO Box 2454
BRISBANE QLD 4001
Phone: 07 3330 5736
Email: nicole.naylor@ehp.qld.gov.au
Website **www.ehp.qld.gov.au**
ABN 46 640 294 485

Enclosed

Permit - environmental authority (reference EPPR02378914)

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Release

Permit[1]

Environmental Protection Act 1994

Environmental authority EPPR02378914

This environmental authority is issued by the administering authority under Chapter 5 of the Environmental Protection Act 1994.

Permit[1] number: EPPR02378914

The anniversary date of the environmental authority remains the same, 27 October.

An annual return and the payment of the annual fee will be due each year on this day.

Environmental authority holder(s)

Name	Registered address
J. P. J. R. T. Pty Ltd	8 Woodbury Road ADELAIDE PARK QLD 4703

Environmentally relevant activity and location details

Environmentally relevant activity(ies)	Location(s)
60-(1a) Waste disposal <50000t yr (1)(a)	231 Lucas Street and Gracemere - Lot 1 Plan RP604651

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Additional information for applicants

Environmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority is issued is a restatement of the ERA as defined by legislation at the time the approval is issued. Where there is any inconsistency between that description of an ERA and the conditions stated by an environmental authority as to the scale, intensity or manner of carrying out an ERA, then the conditions prevail to the extent of the inconsistency.

An environmental authority authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the authority specifically authorises environmental harm.

A person carrying out an ERA must also be a registered suitable operator under the *Environmental Protection Act 1994* (EP Act).

Contaminated land

It is a requirement of the EP Act that if an owner or occupier of land becomes aware a notifiable activity (as defined in Schedule 3 and Schedule 4) is being carried out on the land, or that the land has been, or is being,

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation

contaminated by a hazardous contaminant, the owner or occupier must, within 22 business days after becoming so aware, give written notice to the chief executive.

sch4p4(6) Personal information

Signature

6 January 2015

Date

Olga Hawas
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Nicole Naylor
Waste and Contaminated Land Assessment
Department of Environment and Heritage Protection
GPO Box 2454
BRISBANE QLD 4001
Phone: 07 3330 5736
Email: nicole.naylor@ehp.qld.gov.au

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Obligations under the *Environmental Protection Act 1994*

In addition to the requirements found in the conditions of this environmental authority, the holder must also meet their obligations under the EP Act, and the regulations made under the EP Act. For example, the holder must comply with the following provisions of the Act:

- general environmental duty (section 319)
- duty to notify environmental harm (section 320-320G)
- offence of causing serious or material environmental harm (sections 437-439)
- offence of causing environmental nuisance (section 440)
- offence of depositing prescribed water contaminants in waters and related matters (section 440ZG)
- offence to place contaminant where environmental harm or nuisance may be caused (section 443)

Location: 231 Lucas Street GRACEMENRE QLD 4702

Lot 1 on Plan RP604651

Relevant activity/ies:

ERA 60(1a) Waste disposal < 50,000t

The environmentally relevant activity(ies) conducted at the location as described above must be conducted in accordance with the following site specific conditions of approval.

Agency interest: General	
Condition number	**Condition**
G1	Activities conducted under this environmental authority must not be conducted contrary to any of the following limitations: a) There must be no disposal of waste that will generate **leachate**; b) The only waste to be disposed of at the site is construction and demolition waste.
G2	All reasonable and practicable **measures** must be taken to prevent or minimise environmental harm caused by the activities.
G3	Any breach of a condition of this environmental authority must be reported to the **administering authority** as soon as practicable within 24 hours of becoming aware of the breach.
G4	All records must be kept for a period of at least 5 years and provided to the **administering authority** upon request.
G5	When required by the **administering authority**, monitoring must be undertaken in the manner prescribed by the administering authority to investigate a complaint of environmental nuisance arising from the activity. The monitoring results must be provided within 10 business days to the administering authority.

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G6	Other than as permitted by this environmental authority, the **release of a contaminant into the environment** must no occur.
G7	The **activity** must be undertaken in accordance with written procedures that: 1. Identify risks to the environment from the activity during routine operations, closure and an emergency 2. Establish and maintain control measures that minimise the potential for environmental harm 3. Ensure plant, equipment and measures are maintained in a proper and effective conditions 4. Ensure plant, equipment and measures are operated in a proper and efficient manner 5. Ensure that staff are trained and aware of their obligations under the *Environmental Protection Act 1994* 6. Ensure that reviews of environmental performance are undertaken at least annually.

Agency interest: Air

Condition number	Condition
A1	Odours or airborne contaminants which are **noxious** or **offensive** or otherwise unreasonable disruptive to public amenity or safety must not cause nuisance to any **sensitive place** or **commercial place**.

Agency interest: Water

Condition number	Condition
W1	Contaminants must not be released to waters.
W2	Contaminants must not be released to **groundwater** or at a location where they are likely to be released to **groundwater**.
W3	The stormwater runoff from disturbed areas, generated by a storm event up to and including a **24 hour storm event with an average recurrence interval of 1 in 10 years** must be retained on site and managed to remove contaminants before release offsite.

Agency interest: Noise

Condition number	Condition
N1	Noise generated by the **activity** must not cause environmental harm to any sensitive place or commercial place.

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N2

Noise from the **activity** must not exceed the levels identified in **Table 1 – Noise limits** when measured in accordance with the associated monitoring requirements.

Table 1 – Noise limits

Noise level measured in dB	Monday to Saturday			Sunday and Public Holidays		
	7am-6pm	6pm-10pm	10pm-7am	7am-6pm	6pm-10pm	10pm-7am
	Noise measured at the nearest sensitive place					
$L_{Aeq\ adj,\ 1\ hr}$	Background +5	Background + 3	Background + 0	Background +5	Background + 5	Background +0
$Max_{\ LpA,\ 1\ hr}$	Background +10	Background +8	Background + 5	Background + 10	Background + 8	Background + 5
	Noise measured at a commercial place					
$L_{Aeq\ adj,\ 1\ hr}$	Background +10	Background + 8	Background + 5	Background + 10	Background + 8	Background + 5
$Max_{\ LpA,\ 1\ hr}$	Background + 15	Background + 13	Background + 10	Background + 15	Background + 13	Background + 10

Associated Monitoring requirements

1. All monitoring devices must be correctly calibrated and maintained.
2. Any monitoring must be in accordance with the most recent version of the administering authority's Noise Measurement Manual.
3. Any monitoring of noise emission from the activity must be undertaken when the activity is in operation.

Agency interest: Land

Condition number	Condition
L1	When the deposition of waste to the **landfill unit** ceases, a final capping system to the **landfill unit** must be designed by an **appropriately qualified person** and installed to minimise: 1. Infiltration of water into the landfill unit and water ponding on the surface; and 2. The likelihood of any erosion occurring to either the final capping or the landfilled materials. A final capping system is not required where the deposition of water to a **landfill unit** ceases temporarily for the purpose of using an alternative working face.

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L2	Land that has been disturbed for activities conducted under this environmental authority must be rehabilitated in a manner that: 1. suitable species of vegetation for the location are established and sustained for earthen surfaces. 2. potential for erosion is minimised 3. the quality of water, including seepage, released from the site does not cause environmental harm 4. potential for environmental nuisance by dust is minimised 5. the water quality of an residual water body does not have potential to cause environmental harm 6. the final landform is stable and protects public safety 7. the containment concentrations within the final capping layer are appropriate for the final land use and in accordance with the 'National Environmental Protection (Assessment of Soil Contamination) Measure 1999'.
Agency interest: Waste	
Condition number	**Condition**
W1	The following waste streams must not be permitted to be placed at the landfill facility at any time: 1. liquid or semiliquid, other than; a) liquid or semi-liquid which has been produced in the carrying out of the activity; b) liquid or semi-liquid waste that is incidental to, and commingled with, the permitted waste streams; 2. hot ash; 3. material that is smouldering or a flame; 4. material containing a substance which is ignitable, corrosive, radioactive or toxic material (other than materials containing a toxic substance from domestic premises unless this material is to be disposed 5. all radioactive wastes, unless otherwise approved under the *Radiation Safety Act 1999* or approved contaminated soil; 6. .an explosive; 7. ammunition, other than ammunition that no longer contains explosives, pyrotechnics or propellants apart from trace residues that are no longer capable of supporting combustion or an explosive reaction.

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Definitions

Activity means the environmentally relevant activities, whether resource activities or prescribed activities, to which the environmental authority relates.

Administering authority means the Department of Environment and Heritage Protection or its successor or predecessors.

Appropriately qualified person(s) means a person or person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis to performance relevant to the subject matte using the relevant protocols, standards, methods and literature.

Background means noise, measured in the absence of the noise under investigation, as $L_{A90, T}$ being the A-weighted sound pressure level exceeded for 90 per cent of the time period of not less than 15 minutes, using Fast response.

Commercial place means a place used as a workplace, an office or for business or commercial purposes and includes a place within the curtilage of such a place reasonably used by persons at that place.

Disturbed areas includes areas:

1. that are susceptible to erosion;
2. that are contaminated by the activity; and/or
3. upon which stockpiles of soil or other material are located.

Environmental nuisance as defined in the Chapter 1 of the *Environmental Protection Act 1994.*

$L_{Aeq\ adj, T}$ means the adjusted A weighted equivalent continuous sound pressure level measures on fast response, adjusted for tonality and impulsiveness, during the time period T, where T is measured for a period no less than 5 minutes when the activity is causing a steady state noise, and no short than one hour when the approved activity is causing an intermittent noise.

Landfill unit means a discrete area of land or an excavation that receives solid waste.

Leachate means a liquid that has [passed thorough or emerged from , or is likely to have passed through or emerged from, a material stored, processed or disposed of at the site that contains soluble, suspended or miscible contaminants likely to have been derived from the said material.

Liquid means any substance that:

1. has an angle of repose of less than five degrees; or
2. becomes free flowing at or below 60 degrees Celsius or when it is transported;
3. is not generally capable of being picked up by a spade or shovel.

Max LpA, 1 hr means the maximum A-weighted sound pressure level measured over a period of time of not less than 12 minutes, using Fast response.

Measures has the broadest possible interpretation and includes plant, equipment, physical objects, bunding, containment systems, monitoring, procedures, actions, directions and competency.

Noxious means harmful or injurious health or physical well-being.

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Offensive means causing offence or displease; is unreasonable disagreeable to the sense; disgusting, nauseous or repulsive.

Release of a contaminant into the environment means to:

1. deposit, discharge, emit or disturb the contaminant; and
2. cause or allow the contaminant to be deposited, discharged, emitted or disturbed;
3. fail to prevent the contaminant from being deposited, discharged, emitted or disturbed; and
4. allow the contaminant to escape; and
5. fail to prevent the contaminant from escaping.

Sensitive place includes the following and includes a place within the curtilage of such a place reasonably used by persons at that place:

1. a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
2. a motel, hotel or hostel; or
3. a kindergarten, school university or other educational institution; or
4. a medical centre or hospital; or
5. a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 2004* or a World Heritage Area; or
6. a public thoroughfare, park or gardens, or
7. for noise, a place defined as a sensitive receptor for the purposes of the Environmental Protection Policy 2008.

Substantial low frequency noise means a noise emission that has an unbalanced frequency spectrum shown in a one third octave band measurements, with a predominant component within the frequency range 10 to 200 Hz. It includes any noise emission likely to cause an overall sound pressure level at a noise sensitive place exceeding 55 dB(Z).

Waters includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water, natural or artificial watercourse, bed and banks of any waters, dams, non-tidal or tidal waters, 9including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater and any part thereof.

24 hour storm event with an average recurrence interval of 1 in 10 years means the maximum rainfall depth from a 24 hour duration precipitation event with an average recurrence interval of once in 10 years.

END OF PERMIT

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Attachment C:

Historical Aerial Imagery

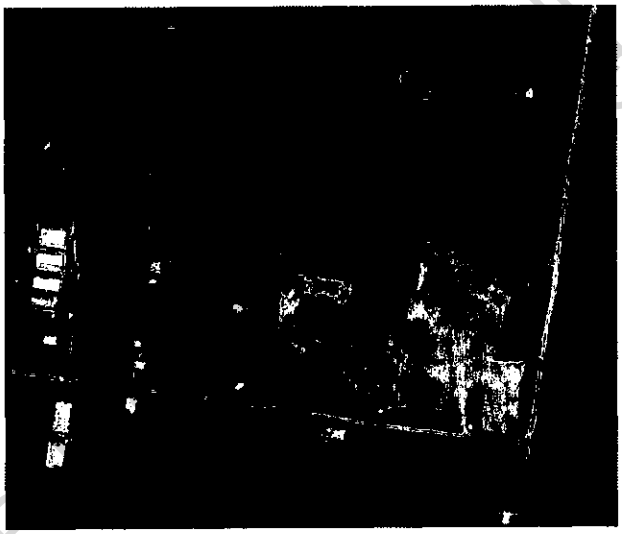
Release



18 May 1956

Notes:

1. Dry conditions.
2. Little infrastructure or disturbance.



27 June 1975

Notes:

1. Little to no change since 18 May 1956

Resources Disclosure Log
ct 2009

Releas



1 February 1978

Notes:

1. Additional fields and buildings since 18 May 1956.
2. Large body of water settled in south eastern corner, likely due to major local flooding which occurred in February 1978.

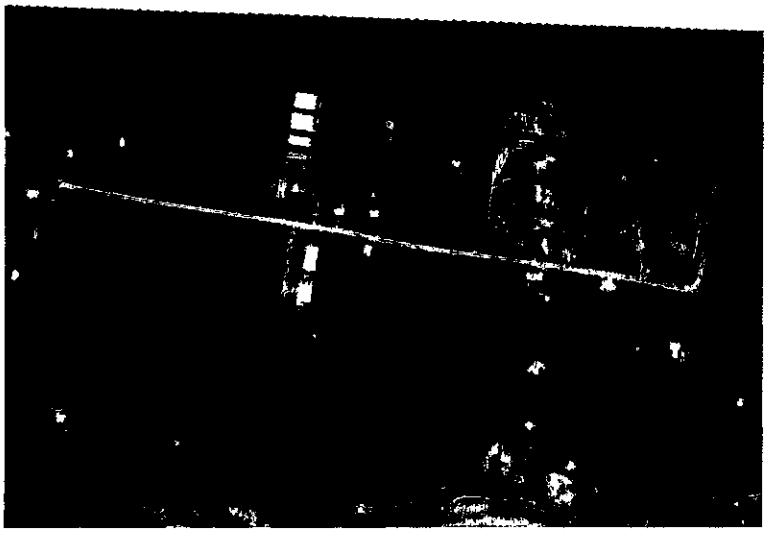


1 July 1978

Notes:

1. Addition of crops on the western side of the landfill since 1 February 1978.

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RTI Act 2009



28 September 1981

Notes:

1. Addition of crops in surrounding properties.
2. No bodies of water present.
3. Minor earthmoving works appeared to have occurred since 1 July 1978.



1 December 1982

Notes:

1. Minor changes since 28 September 1981.
2. No significant flooding since 28 September 1981.

Freedom of Information Disclosure Log



1 August 1985

Notes:

1. Minor change to the north end of the landfill since 1 December 1982.
2. Minor to Major flooding occurred in the region between May-June 1983 and January-February 1984.



1 March 1998

Notes:

1. No change since 1 August 1985.
2. Major flooding associated with Cyclone "Charlie" occurred in March 1988.
3. Extensive inundation of low-lying areas occurred on the 11th March 1988.

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RTI Act 2009



1 October 1988

Notes:

1. Minor changes to stockpiles within the landfill, addition of roads in northern section.
2. No significant rain or flooding.



2 October 1990

Notes:

1. Minor changes since 1 October 1988.
2. No significant rain or flooding.

Published in Resources Disclosure Log 1 Oct 2009



14 January 1991

Notes:

1. Minor changes since 2 October 1990.
2. Extensive flooding occurred in January 1991 resulting in large bodies of settled water.



23 March 1991

Notes:

1. Minor changes since 14 January 1991.
2. Small bodies of water settled in south easterly corner of the landfill.

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17 March 1994

Notes:

1. Earthmoving works occurred in southerly section since 23 March 1991, the addition of roads.
2. Heavy rainfall recorded in early March, resulting in several bodies of water in the landfill.



20 December 1995

Notes:

1. Minor change since 17 March 1994.
2. No significant rainfall.

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RTI Act 2009

19124: Gracemere Landfill Historical Imagery Rev 1

Releas



22 March 1998

Notes:

1. Some changes to the landfill since 20 December 1995, pits appear to be deeper.
2. No significant rain or flooding since 1995.



27 March 1999

Notes:

1. Minor changes since 22 March 1998.
2. No significant rain or flooding in surrounding areas.
3. Small bodies of water settled throughout the landfill, similar to March 1994.

Published by Resources Disclosure Log under GIPA Act 2009



27 May 2003

Notes:

1. Southern end of the landfill appears to have been cleared since 27 March 1999.
2. Minor flooding occurred in Rockhampton in Feb 2003.
3. Small bodies of water settled in the landfill, in the same area as March 1999.



29 June 2004

Notes:

1. Minor changes since 27 May 2003.
2. Dry conditions with no flooding in surrounding areas.
3. One small body of water in the same place as May 2003.

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RTI Act 2009



9 July 2004

Notes:

1. No major changes since 29 June 2004.
2. Dry conditions, no significant rain or flooding.
3. One small by of water resting in usual place.



20 June 2010

Notes:

1. Minor changes since 9 July 2004.
2. Earthmoving operations appear to have occurred in the northern and south easterly corners of the landfill.
3. High level of urban development in the northern and eastern surrounding areas.

Public Records Act 2009 Disclosure Log



29 June 2014

Notes:

1. Minor change to the northerly and southerly ends of the landfill.
2. Major flooding occurred in early 2013 and minor local flooding in March 2014.
3. Some bodies of water in the northern and southern ends.



12 January 2016

Notes:

1. No major changes since 29 June 2014.
2. Small bodies of water settles in same locations as 29 June 2014.

19124: Gracemere Landfill Historical Imagery Rev 1

Released under RTI Act 2009 Disclosure Log



2 November 2017

Notes:

1. Minor changes since 12 January 2016.
2. Tropical Cyclone Debbie resulted in major flooding of the Rockhampton region in March 2017.



15 July 2019

Notes:

1. Minor changes to since 2 November 2017.
2. Very dry conditions, no significant rain events or flooding.

19124: Gracemere Landfill Historical Imagery Rev 1

Public Records Disclosure Log
RTI Act 2009

Published on Resources Disclosure Log
RTI Act 2009

Attachment D:

HGEC – Depth to Water Table Regression Analysis

Release

WILLIAMS Mark (ROCKHAMPTON)

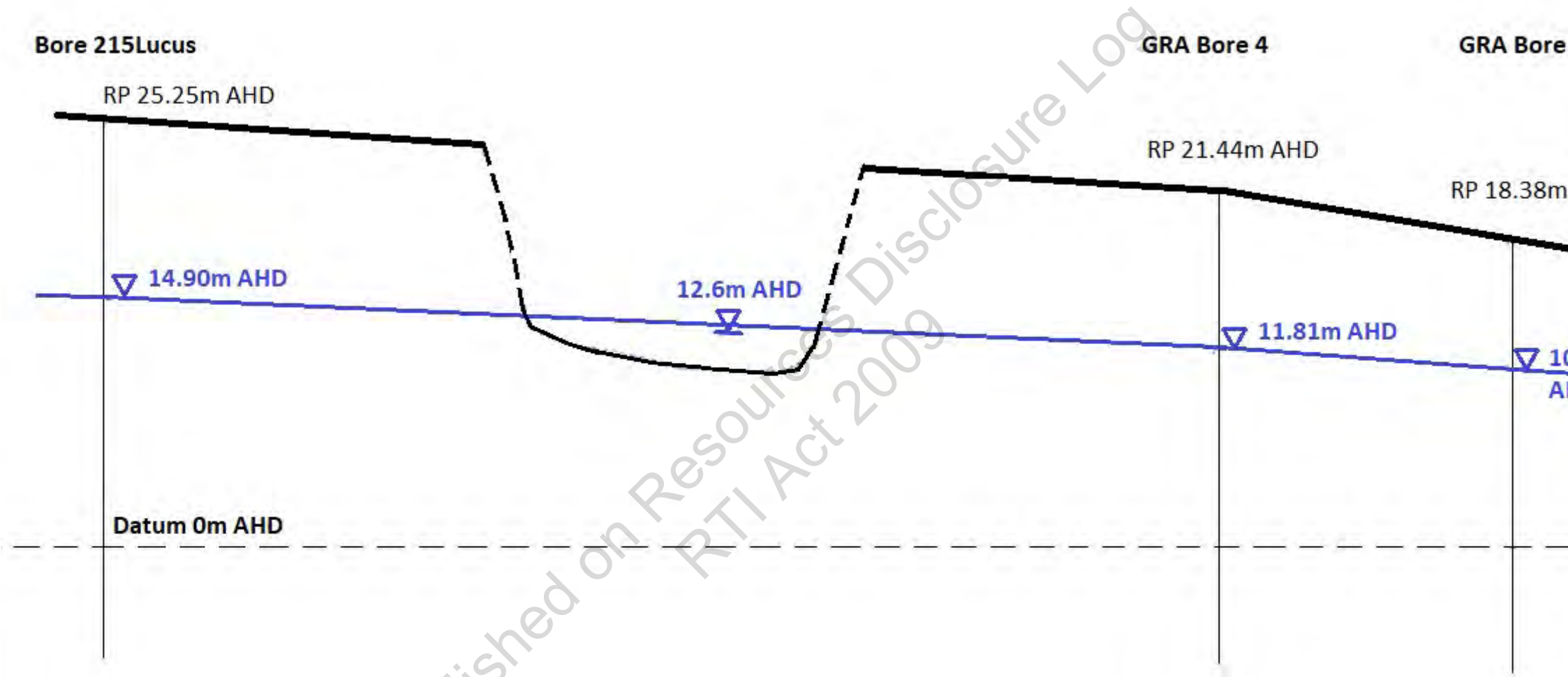
From: GORDON Peter
Sent: Tuesday, 2 April 2019 9:00 AM
To: GERKE Leslie
Subject: Emailing: Copy of Gracemere Bores.xlsx
Attachments: Copy of Gracemere Bores.xlsx

Your message is ready to be sent with the following file or link attachments:

Copy of Gracemere Bores.xlsx

Note: To protect against computer viruses, email programs may prevent you from sending or receiving certain types of file attachments. Check your email security settings to determine how attachments are handled.

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RTI Act 2009



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RTI Act 2009

Release



Published on Search Application Log

Release



Published by the Planning Assessment Log

Date : 27/02/2020 12:21:26 PM
From : "CAGNEY Justin"
To : "TIGHE Danielle"
Cc : "MEACLE Kristy" , "WILLIAMS Mark (ROCKHAMPTON)" , "BOYD Wayne" , "RYAN Brianna"
Subject : RE: JPJRT Gracemere Landfill
Attachment : image003.png;image005.jpg;image006.png;image001.png;image002.png;

Thanks Danni,

Is the analysis report required by DNRME by 31 March 2020 intended to provide an expert's view as to potential for groundwater interaction between 6) Personal inf property and the groundwater at the landfill?

There are two main issues here. One is the alleged acceptance of material at the landfill which is not authorised under the conditions of the EA. The second is the alleged interaction between the groundwater at the landfill and the groundwater on 6) Personal inf property (potential for contamination of 6) Personal inf groundwater).

The first issue is under investigation by DES and is progressing. The second issue as I understand it requires advice from DNRME as to the likelihood of the alleged groundwater interaction. If the analysis report required from JRT will assist in that space, DES would certainly appreciate any advice (or a copy of the report) that can be provided by DNRME.

Thank you.

Regards,

Justin Cagney
Director Compliance
Coal and Central Queensland Compliance
Department of Environment and Science

P 07 4837 3318

209 Bolsover Street Rockhampton 4700
PO Box 413 Rockhampton 4700



From: TIGHE Danielle <Danielle.Tighe@dnrme.qld.gov.au>
Sent: Thursday, 27 February 2020 11:52 AM
To: CAGNEY Justin
Cc: MEACLE Kristy; WILLIAMS Mark (ROCKHAMPTON)
Subject: RE: JPJRT Gracemere Landfill

HI Justin

The Department has issued JRT a remedy request notice to provide an analyses report by the 31 March 2020. Advice received that they have engaged a consultant to undertake this works.

From several conversations with Geoff Clark his main concern was what was actually being dumped into the water at the pit. Geoff's belief is that JRT are in breach of their EA and that the contaminants from certain materials have the potential to leach into the ground.

Hence the department referring this matter onto DES on several occasions.

As I have taken this case on from Les Gerke (sch4p4(6) Personal information I was unaware that DES was waiting for an outcome from our investigation.

Happy to further discuss this matter.

Regards

Danielle Tighe
Natural Resource Officer
Water Management and Use | Compliance
Department of Natural Resources, Mines and Energy

P: 0748373301 **M** 4(6) Personal inform
E: danielle.tighe@dnrme.qld.gov.au
A: Level 1, 209 Bolsover Street, Rockhampton | PO Box 1762

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Rockhampton Qld 4700
W: www.dnrme.qld.gov.au

From: CAGNEY Justin <Justin.Cagney@des.qld.gov.au>
Sent: Thursday, 27 February 2020 10:41 AM
To: TIGHE Danielle
Cc: BOYD Wayne; RYAN Brianna; MEYER Anita
Subject: JPJRT Gracemere Landfill

Morning Danni,

I just had Geoff Clarke visit our office regarding JPJRT Gracemere Landfill. He mentioned that he had been speaking with yourself this morning.

Wayne Boyd has been dealing with the matter in my office, however he is h4p4(6) Personal informati

I just wanted to confirm my understanding that DES is awaiting expert advice from DNRME in relation to groundwater flows and potential for impacts from the landfill? Is that correct?

I advised 6) Personal in that I would touch base with yourself and Wayne (next week) and would provide him an update afterward.

Appreciate your assistance.

Regards,

Queensland Government

Justin Cagney
Director Compliance
Coal and Central Queensland Compliance
Department of Environment and Science

P 07 4837 3318

209 Bolsover Street Rockhampton 4700
PO Box 413 Rockhampton 4700



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Date : 17/04/2020 5:00:18 PM
From : "MEACLE Kristy"
To : "WILLIAMS Mark (ROCKHAMPTON)"
Cc : "RUSSELL Stephen" , "TIGHE Danielle"
Subject : RE: JRT report review
Attachment : image004.gif;image005.png;image006.png;image007.png;

Hi Mark,

As discussed I note the observations and summary from the report. I note that the report is not definitive in its determination of the water source. However did indicate that a significant amount of surface water run off was likely contributing to the presence of water in the pit area.

Based on the information, I would support no further action being taken at this time, it is not clear that an offense has occurred, however the client should be reminded of their obligations under the *Water Act 2000*.

Kristy.

From: WILLIAMS Mark (ROCKHAMPTON) <Mark.Williams@dnrme.qld.gov.au>
Sent: Monday, 6 April 2020 9:10 AM
To: MEACLE Kristy
Subject: FW: JRT report review

Hi,

Response from JRT attached, with some observations. Suggest a meeting to discuss further

Thanks

Regards Mark

Mark Williams
Senior Natural Resources Officer
Water Services | Central Region
Department of Natural Resources, Mines and Energy

P: (07) 48373347 **M:** 4p4(6) Personal informa
E: mark.williams@dnrme.qld.gov.au
A: Level 1, 209 Bolsover Street, Rockhampton, QLD 4700 | PO Box 1762 Rockhampton 4700
W: www.dnrm.qld.gov.au

CENTRAL
People. Outcomes. Future.

From: RUSSELL Stephen <Stephen.Russell@dnrme.qld.gov.au>
Sent: Monday, 6 April 2020 8:57 AM
To: WILLIAMS Mark (ROCKHAMPTON)
Subject: FW: JRT report review

A few points for consideration from the JRT report

Data used:

- One site visit to review runoff direction and facility management.
- No physical data collected for report determination, only historical records.
- DNRME bathometric analysis.
- DNRME historical imagery.
- DNRME bore data. Consists of one data point from initial bore construction.
- DNRME 2015 published LIDAR data for landscape AHD.
- DNRME Fitzroy Basin 25m digital elevation model used to generate a groundwater regression prediction. The derived AHD from this model conflicts with the 2015 LIDAR data.
- BOM average and annual rainfall data.
- No account for evaporation which is significant for storage levels.
- No reference to pit storage capacity.
- Incorrect data points noted within the report.

Rainfall and catchment analysis:

- Annual and average rainfall has been referenced. The report acknowledges low rainfall for the past two years though focuses on Annual Exceedance Probability.
- Annual Exceedance Probability models takes into account futuristic rainfall and not what has actually occurred. This creates a bias for larger runoff.

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- No reference to or analysis of the pit bed to confirm the ability to hold water. The previous site title was a quarry, this warrants the consideration of what material (such as clay) is present to create a lining capable of storing water.
- A catchment size of 3.8HA has been used to model runoff calculations, this is the entire grounds. A suggested catchment size of 2.45HA would be more realistic.

Report statements:

- The report states it cannot be determined if this standing water is groundwater. Then further states that surface water capture is most likely the source of the water. How can this be evaluated if groundwater is not ruled out?
- Statement of standing water is persistent within the pit. Pooled rainfall runoff is not persistent.
- Groundwater regression prediction is noted at +/- 1 metre accuracy though a decision accuracy of 1 metre has been determined.
- Acknowledgement that the pit bed is 10 metres AHD and the groundwater level is 11 metres AHD though determined not groundwater.

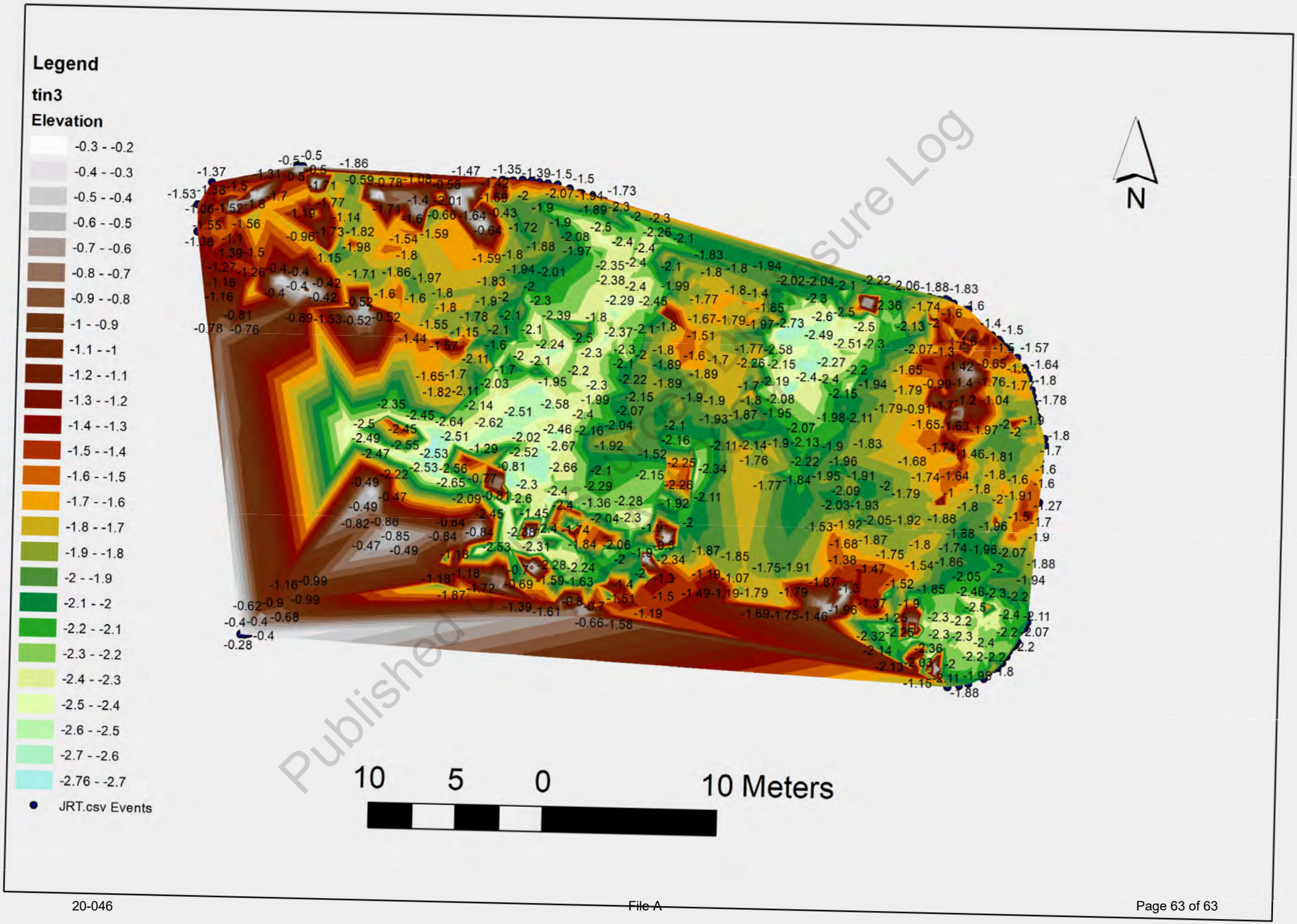
Queensland Government

Regards
Stephen Russell
Acting Project Officer
Water Services | Central Region
Department of Natural Resources, Mines and Energy

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W: www.dnrm.qld.gov.au

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Legend
tin3
Elevation
-0.3 - -0.2
-0.4 - -0.3
-0.5 - -0.4
-0.6 - -0.5
-0.7 - -0.6
-0.8 - -0.7
-0.9 - -0.8
-1 - -0.9
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