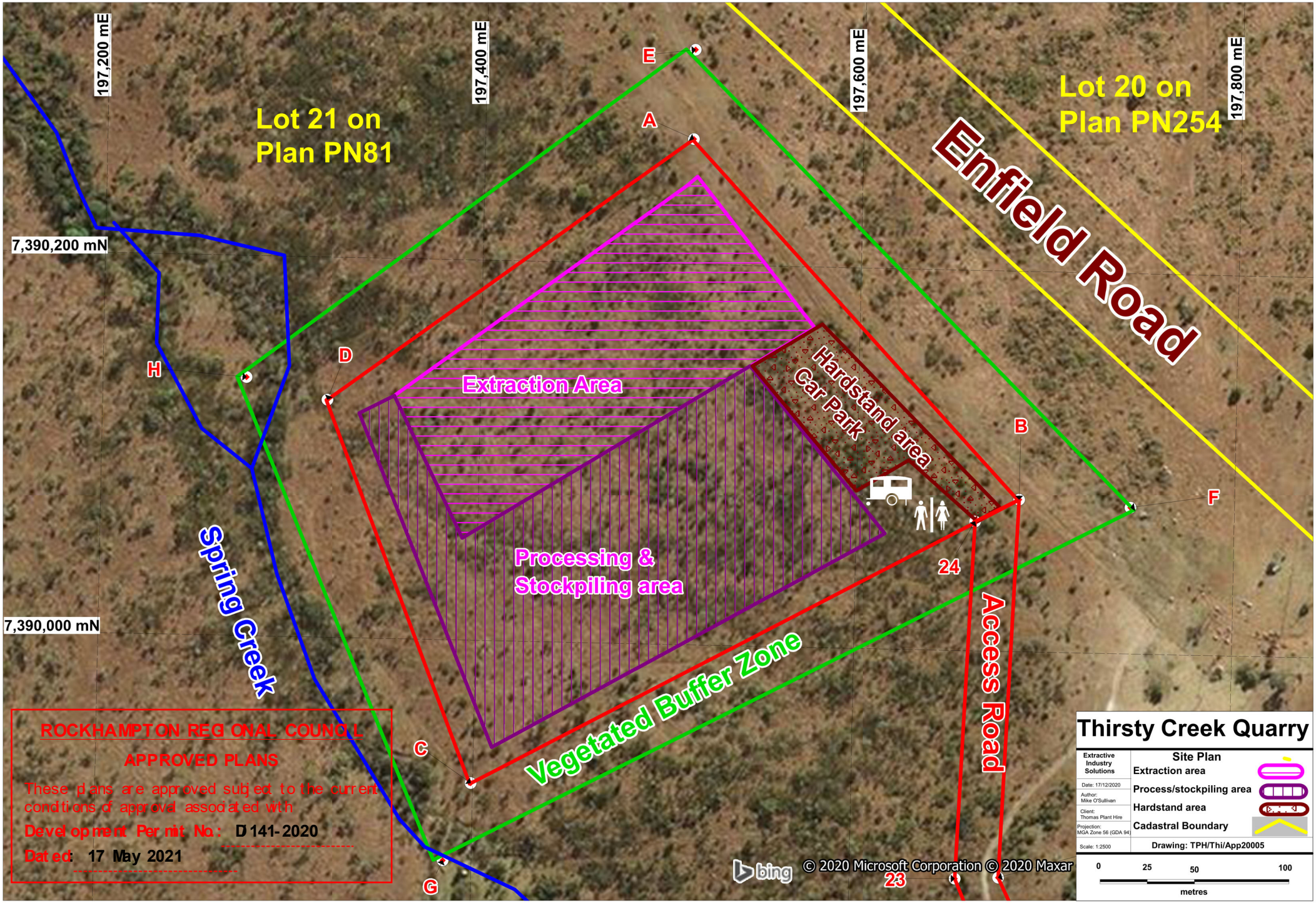
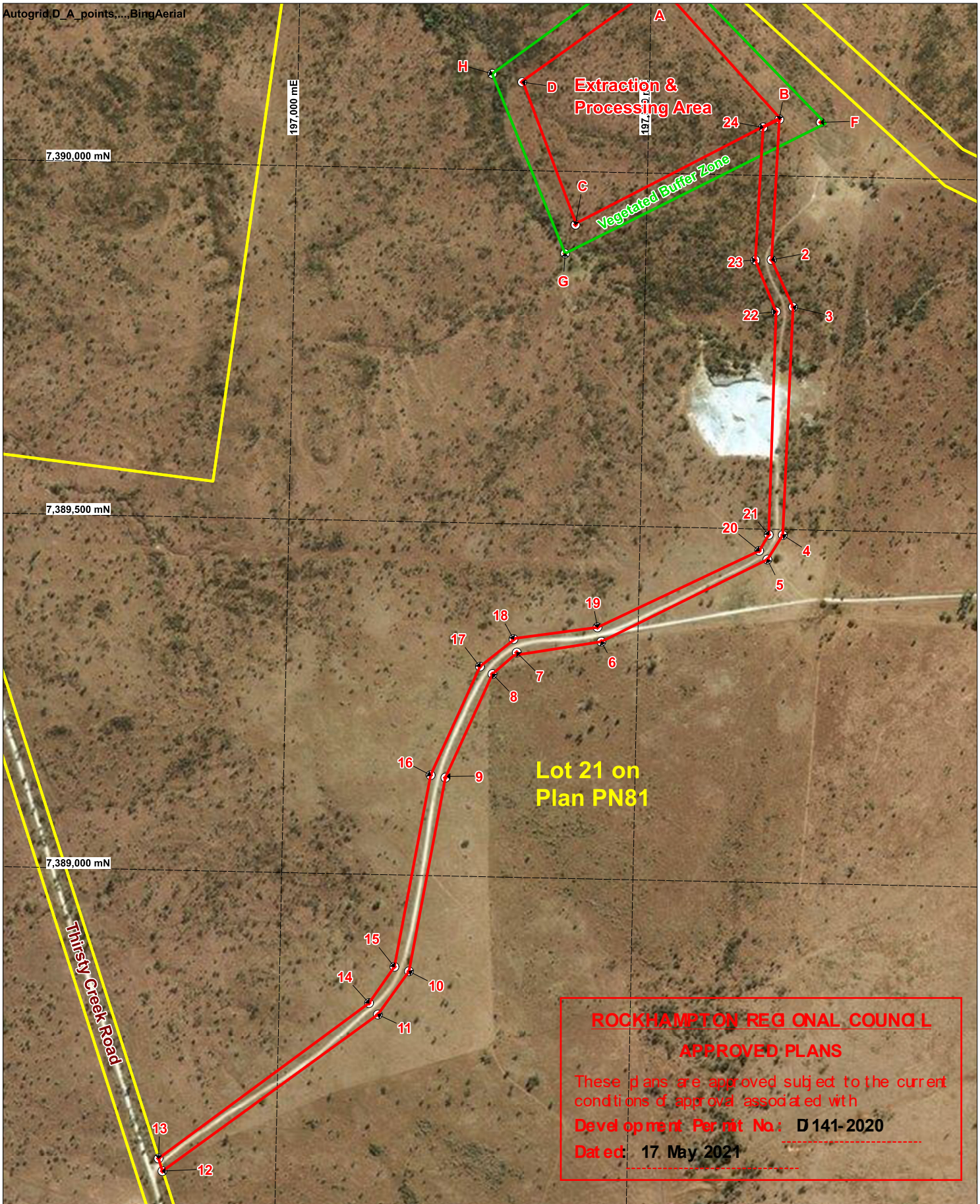

7,390,500 mN
7,390,250 mN
7,390,000 mN
7,389,750 mN
197,000 mE
197,250 mE
197,500 mE
197,750 mE
198,000 mE
Lot 20 on Plan PN254
Lot 21 on Plan PN81
Enfield Road
Extraction & Processing Area
Vegetated Buffer Zone
E
A
H
D
B
F
24
C
G
23
2
22
3
ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D141-2020
Dated: 17 May 2021
bing
© 2020 Microsoft Corporation © 2020 Maxar
Thirsty Creek Quarry
Extractive Industry Solutions
Date: 16/12/2020
Author: Mike O'Sullivan
Client: Thomas Plant Hire
Projection: MGA Zone 56 (GDA 94)
Scale: 1:5000
Extraction & Processing Area co-ordinates
A - 197,510 mE; 7,390,266 mN
B - 197,686 mE; 7,390,080 mN
C - 197,399 mE; 7,389,925 mN
D - 197,319 mE; 7,389,125 mN
Drawing: TPH/Thi/App20002
0
50
100
200
metres


197,200 mE
197,400 mE
197,600 mE
197,800 mE
7,390,200 mN
7,390,000 mN
Lot 21 on Plan PN81
Lot 20 on Plan PN254
Enfield Road
Extraction Area
Hardstand area
Car Park
Processing & Stockpiling area
Vegetated Buffer Zone
Access Road
Spring Creek
A
B
C
D
E
F
G
H
23
24
ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No: D 141-2020
Dated: 17 May 2021
Thirsty Creek Quarry
Extractive Industry Solutions
Site Plan
Extraction area
Process/stockpiling area
Hardstand area
Cadastral Boundary
Date: 17/12/2020
Author: Mike O'Sullivan
Client: Thomas Plant Hire
Projection: MGA Zone 56 (GDA 94)
Scale: 1:2500
Drawing: TPH/Thi/App20005
bing
© 2020 Microsoft Corporation © 2020 Maxar
0
25
50
100
metres


7,390,400 mN
7,390,200 mN
7,390,000 mN
7,389,800 mN
197,000 mE
197,200 mE
197,400 mE
197,600 mE
197,800 mE
198,000 mE
Lot 21 on Plan PN81
Lot 20 on Plan PN254
Enfield Road
Extraction & Processing Area
Vegetated Buffer Zone
A
B
C
D
E
F
G
H
24
23
2
22
3
ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D141-2020
Dated: 17 May 2021
Thirsty Creek Quarry
Extractive Industry Solutions
Date: 16/12/2020
Author: Mike O'Sullivan
Client: Thomas Plant Hire
Projection: MGA Zone 56 (GDA 94)
Scale: 1:5000
Vegetated Buffer Zone co-ordinates
E - 197,510 mE; 7,390,313 mN
F - 197,745 mE; 7,390,077 mN
G - 197,385 mE; 7,389,884 mN
H - 197,276 mE; 7,389,136 mN
Drawing: TPH/Thi/App20004
0 50 100 200
metres
bing
© 2020 Microsoft Corporation © 2020 Maxar



ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D 141-2020

Dated: 17 May 2021

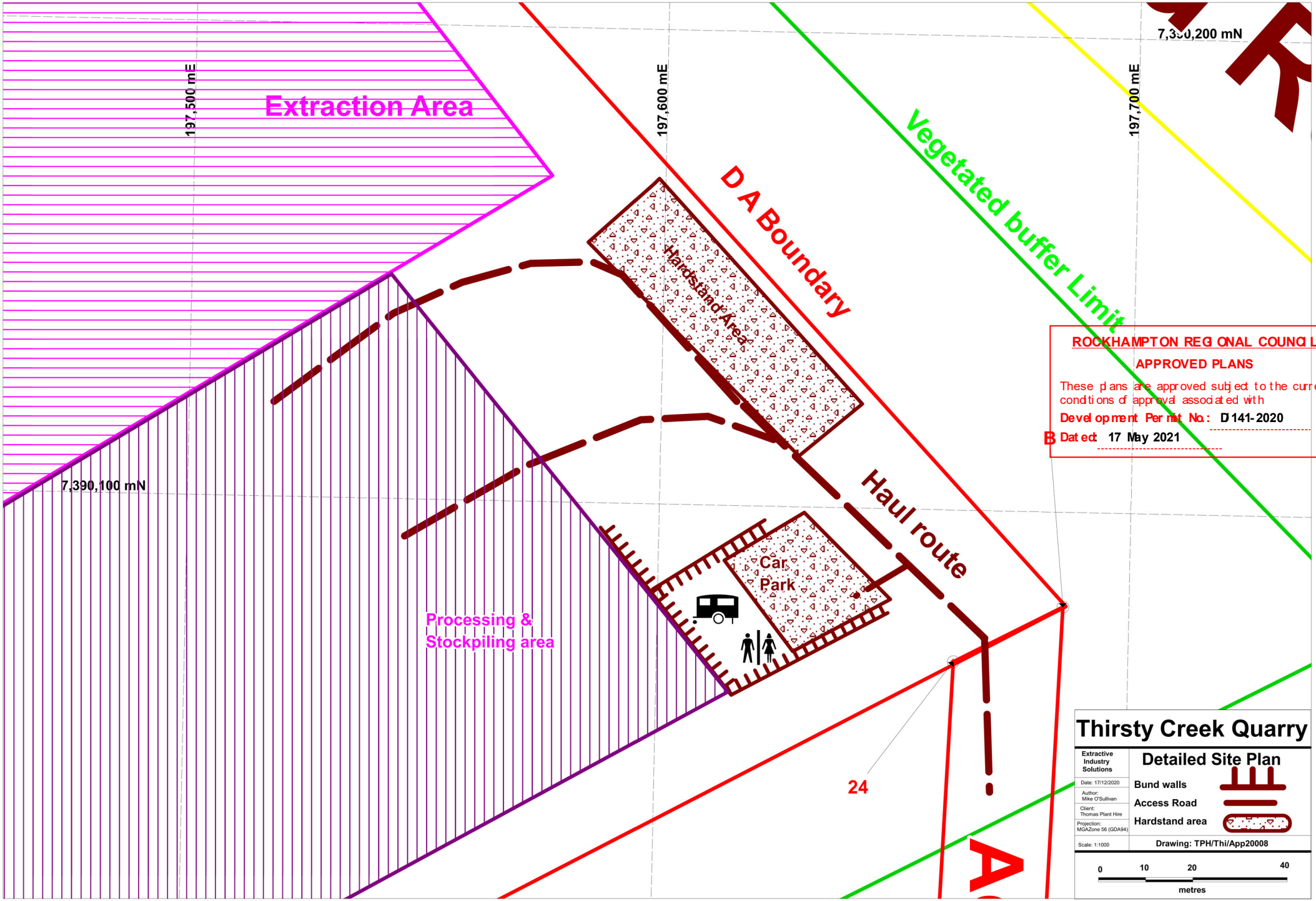
Thirsty Creek Quarry

Extractive Industry Solutions	Haul Road Location
Date: 16/12/2020	Cadastral Boundary
Author: Mike O'Sullivan	Control Points
Client: Thomas Plant Hire	Application area
Projection: GDA94, Zone 56	
Scale: 1:5000	Drawing: TPH/Thi/App20003 - A3

0 50 100 200
metres

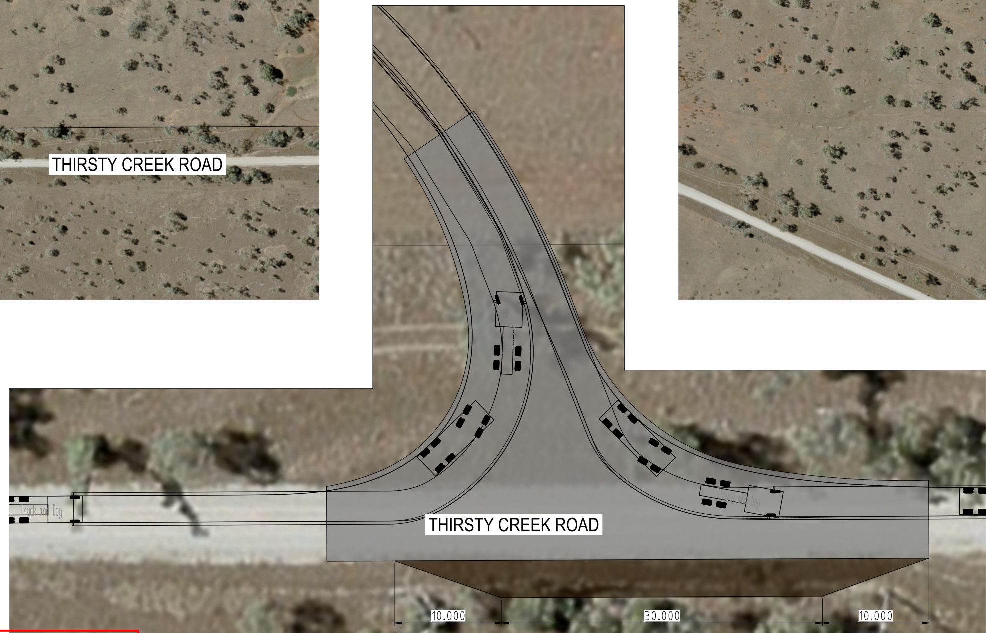
Control Point co-ordinates

1 - 197,686 mE; 7,390,080 mN
2 - 197,679 mE; 7,389,881 mN
3 - 197,711 mE; 7,389,815 mN
4 - 197,703 mE; 7,389,492 mN
5 - 197,682 mE; 7,389,457 mN
6 - 197,448 mE; 7,389,336 mN
7 - 197, 328 nE; 7,389,318 mN
8 - 197,294 mE; 7,389,287 mN
9 - 197,230 mE; 7,389,139 mN
10 - 197,184 mE; 7,388,864 mN
11 - 197,141 mE; 7,389,802 mN
12 - 196,839 mE; 7,388,574 mN
13 - 196,833 mE; 7,388,592 mN
14 - 197,128 mE; 7,388,818 mN
15 - 197,163 mE; 7,388,870 mN
16 - 197,209 mE; 7,389,142 mN
17 - 197,276 mE; 7,389,297 mN
18 - 197,323 mE; 7,389,337 mN
19 - 197,442 mE; 7,389,356 mN
20 - 197,670 mE; 7,389,469 mN
21 - 197,683 mE; 7,389,492 mN
22 - 197,687 mE; 7,389,808 mN
23 - 197,656 mE; 7,389,880 mN
24 - 197,663 mE; 7,390,,068 mN


Extraction Area
197,500 mE
197,600 mE
197,700 mE
7,390,200 mN
7,390,100 mN
D A Boundary
Vegetated buffer Limit
Hardstand Area
Haul route
Car Park
Processing & Stockpiling area
24
ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D141-2020
B Dated: 17 May 2021
Thirsty Creek Quarry
Extractive Industry Solutions
Detailed Site Plan
Date: 17/12/2020
Author: Mike O'Sullivan
Client: Thomas Plant Hire
Projection: MGAZone 56 (GDA94)
Bund walls
Access Road
Hardstand area
Scale: 1:1000
Drawing: TPH/Thi/App20008
0 10 20 40
metres

ATTACHMENT 2

PLAN
SCALE 1:2000(A1) 1:4000(A3)



ACCESS DETAIL
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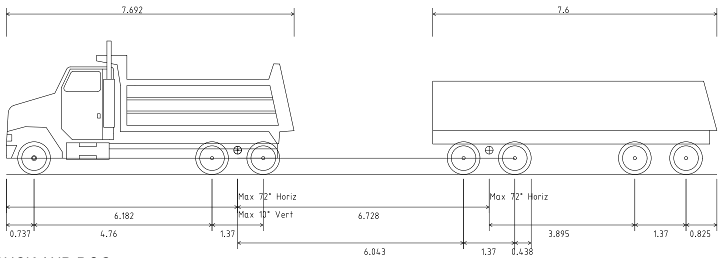

TRUCK AND DOG

OVERALL LENGTH	19.000m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	3.571m
MIN BODY GROUND CLEARANCE	0.408m
TRACK WIDTH	2.500m
LOCK-TO-LOCK TIME	6.00s
CURB TO CURB TURNING RADIUS	16.700m

TRUCK AND DOG VEHICLE PROFILE
SCALE: NTS

40 0 40 80 120 160 200m
SCALE 1:2 000 @ A1 SCALE 1:4 000 @ A3

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/141-2020
Dated: 17 May 2021

INFORMATION ONLY

SURVEYOR									
ADDRESS:									
CO-ORDINATE DATUM									
HEIGHT DATUM			A	15/02/2021	SUBMITTED FOR INFORMATION	SJP	CH	SJP	CH
	DRAWING No.	REFERENCE DRAWING TITLE	REV	DATE	REVISION DESCRIPTION	DFT	DFT CHK	DES	DES CHK

	BY	DATE
REVIEWED		
RPEQ ENG		
RPEQ No:		

CLIENT
THOMAS PLANT HIRE

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SCALE: AS SHOWN

PREPARED BY 0732021

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CLIENT THOMAS PLANT HIRE
PROJECT QUARRY ACCESS ROAD
TITLE
THIRSTY CREEK ROAD
PRELIMINARY ACCESS INTERSECTION LAYOUT AND SWEPT PATH

	DRAWING NUMBER	REVISION
A1	0732021-9001	A

PLOT DATE: 17/02/2021 3:10:50 PM DRAWING LOCATION: S:\PROJECT RECORDS\20-21\073-20-21 -802 THIRSTY CREEK RD - MH & BJ THOMAS T/A THOMAS PLANT HIRE\01 - DESIGN\ACAD\073-20-20 - PRELIM LAYOUT.DWG

ATTACHMENT 1

mcmurtrie
CONSULTING ENGINEERS

STORMWATER MANAGEMENT PLAN

THIRSTY CREEK QUARRY, GOGANGO

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D141-2020
Dated: 17 May 2021

Prepared for:

M H & B J Thomas

PROJECT NUMBER J21005

FEBRUARY 2021

REVISION R1V1

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APPROVED

CHRIS HEWITT
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DOCUMENT CONTROL

Version	Date	Revision	Prepared	Approved
R1V1	23 February 2021	For Council submission	L. Allan	C. Hewitt

CONTENTS

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

McMurtrie Consulting Engineers (MCE) have been engaged by M H & B J, to prepare a Stormwater Management Plan (SMP) for the proposed Thirsty Creek Quarry located at 802 Thirsty Creek Road, Gogango, described as Lot 21 on PN81 as shown on Figure 1.

The site is adjacent to the old Rockhampton Regional Council's (Council) gravel pit which has been used over the past 25 years to supply gravel to the local road network. The proposed site has potential reserves of 1.68 to 2.2 million tonnes of crushable rock, the application is requesting approval to produce a maximum of 300,000 tonnes per annum, of crushed rock products for the first two years and 100,000 tonnes per annum thereafter, with an expected operational life of 20 to 25 years.

The site is currently covered by Environmental Authority EA0002041. The site is subject to the following conditions:

- W1. Stormwater contaminated by the activity must be managed to minimise or prevent adverse impacts on the values of the receiving environment.
- W2. Ponds used for the storage or treatment of aqueous waste must be constructed, installed, and maintained to: -
  - Prevent any release of aqueous waste from the ponds
  - Ensure the stability of the pond structure
- W3. Erosion and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment.
- W4. The stormwater runoff from the facility generated by a 24 hour storm event with an average recurrence interval of one in five years must be retained on site and treated to remove contaminants before release.

The quarry area is not prone to flooding and is drained by an order 1 stream, as shown on Figure 2.

This SMP has been prepared in response to a Item 5 of Council's Information Request (IR) dated 7 January 2021 (ref D/141-2020), for the proposed development, in order to support a Material Change of Use (MCU) Development application (DA).

2.0 SITE DESCRIPTION

2.1 EXISTING SITE

The site is located 10.0 kilometres north of Gogango access to the site, from the Capricorn Highway, will be through Gogango township, 1.95 kilometres along Riverslea Road, 8.00 kilometres along Thirsty Creek Road to Thirsty Creek property and 1.75 kilometres along the old shire haul road which will be used as the access road for the development.

The proposed Enfield Road is located adjacent to the development however, Council has not developed this route and it is used for property access only by landholders. The proposed quarry site will border the road reserve between Lot 21 on PN81 and Lot 20 on PN254.

The quarry site will cover approximately 1.38% of Lot 21 on PN81, which contains a total area of 761.606 hectares that is used for beef cattle production. A Council a gravel pit is located immediately south of the proposed development site.

The site is currently identified as a Rural Zone on Council's Planning Scheme.

2.2 PROPOSED DEVELOPMENT

The proposed quarry operational areas will cover 6.515 hectares when fully developed, as shown on Figure 3, which is expected to take approximately 20 years. The Development Approval application area will cover 14.75 hectares which will include the 30 metre wide vegetated buffer zone required under the Extractive Industry Code – Rockhampton Region Planning Scheme, a 20 metre wide clear buffer zone required under Code 16 – State Development Assessment Provisions (SDAP) and a 20-metre access corridor to Thirsty Creek Road.

The proposed development is purely a project specific operations-based use and does not involve any permanent building works. The activities will be limited to mechanical operations and may include some temporary on-site structures (e.g. amenities block and containers).

The extraction will be conducted in a 2-phase process to gain the most efficient use of the resource and restricted area. Phase 1 will use a processing area at ground level and Phases 2 will use the previously extracted areas for processing and stockpiling areas as well as the existing ground level infrastructure.

The extraction area will consist of a multi bench excavation with the top bench of weathered material and underlying benches of fresh rock. The excavation area will cover 2.16 hectares under stage 1 of the development and 5.5 hectares when fully developed.

The quarry design consists of a 5 to 8 metre shallow bench consisting of weathered material with the walls battered at 1 in 1 with underlying benches to a maximum height of 11 metres battered at 80°. The terminal width of these benches will be 6 metres.

The processing pads and stockpile pads will be constructed adjacent to the extraction area and will cover approximately 2.51 hectares. These pads will drain into a fully functional stormwater management system which will capture and treat all the runoff from the site prior to any releases.

The buffer zone will be fenced so to promote the regeneration of native shrubs and trees in the buffer zone and to limit access to the development.

Organic material and topsoil, from the development, will be stockpile outside the excavation area, adjacent to the processing pad, on the eastern side to form a noise and dust buffer against the adjoining lot and the road reserve. This material will be reused during the rehabilitation processes.

The weathered rock layer will be processed into MRTS05 Type 2.5 (CBR 15) or select fill materials which is a saleable item from the quarry. This will expose the rock suitable for crushing into high value crushed rock products, such as concrete aggregate, cover aggregate and pavement materials.

The amenities and office block, car park and hardstand area will cover 0.36 hectares and this area will also be included in the stormwater catchment area.

2.3 SITE ACCESS

Access to the site will be via the old Council haul road which leads from Thirsty Creek Road to the proposed site through the existing council pit. The new section of access road will follow the existing property road that services the northern end of the property.

The access road is an existing haul road and property access road but one section will require upgrading to meet the requirements of the Capricorn Municipal Development Guidelines.

2.4 TOPOGRAPHY

Limited topographic information for the site is available, with only 30 metre (1 arc second) SRTM topographic information available. It is anticipated that site survey will be obtained at a future stage of the development to facilitate the detailed design of the quarry.

Lot 21 on PN81 is located with the Thirsty Creek catchment a sub-catchment of Spring Creek which discharges to the Fitzroy River, as shown on Figure 1. The quarry site itself is situated within a smaller unnamed tributary that discharges west towards the Fitzroy River, as shown on Figure 2.

The quarry site is lightly timbered with regrowth, however, it has previously been cleared of all vegetation and seeded as an improved pasture and is located on an undulating ridge that varies considerably in relief from 4% to 20% in areas where there is outcropping rock, the quarry falls from approximately 99 mAHD in the north-east corner of the proposed development to approximately 83 mAHD in the south-west corner.

2.5 SOIL TYPES

The dominant soil type, in the extraction area, is derived from the weathering of the underlying basalt. The soil profile changes considerably from no soil profile at the peak of the ridge to a poorly developed soil profile consisting of three layers which include an “A” horizon with a poorly defined boundary with the “B” horizon and an underlying mottled zone. As the distance from the peak of the ridge increases, the depth of these layer increase, as well as the depth of the extremely weathered zone and the distinctly weathered zone. The soil type is described as a montmorillonite rich soil so it is classified as a Vertosols.

The soil types outside the target area are derived from the weathering of the underlying trachyte and possibly other immediate type rocks. This profile has an extremely poorly developed and defined “B” horizon which contain a high percentage of weathered underlying parent rock. These soils are classified as Tenosols.

Although the site is located adjacent to the banks of a small tributary, there is no evidence of any soils derived from transported material.

2.6 RAINFALL

Rainfall data was been sourced from the Bureau of Meteorology 2016 Design Rainfall Data System. The quarry is within in the lower Fitzroy River catchment area which has a defined wet and dry season with the wet season lasting from December to April.

Table 2-1 details the adopted rainfall depths for this SMP.

TABLE 2-1 ADOPTED DESIGN RAINFALL DEPTHS

Parameter	AEP (%)	Duration	Depth (mm)
First Flush Run-off	63.2	30 minute	27.3
Sediment Basin Design Volume	20	24 hour	125
Basin Outlet Structures	5	24 hour	189

The retention period for the runoff entering the sediment pond will be 15.9 hours minimum.

3.0 STORMWATER MANAGEMENT PLAN

3.1 GENERAL

The activities of extracting and crushing rock will be on going at the site and will result in an ongoing risk of contaminating stormwater at the site. As development at the site is in its early stages, there are areas where disturbed topsoil and extremely weathered rock are exposed to stormwater and these areas are considered at greater risk of contaminating run-off. Other risks to stormwater quality include leaks and spill of hydrocarbons, which includes oils and fuel used at the site.

The stormwater management system, at the site, has been designed to minimise disturbance outside the extraction and processing areas.

Stormwater run-off at the Thirsty Creek Quarry site will be managed by:

- Diverting external catchment areas around the quarry and processing area such that no 'clean' run-off enters the site;
- Containing run-off within the quarry and processing area and only release from the site after treatment;
- Maintaining original release points from the site, with similar drainage areas, prior to site development;
- Maintaining a stormwater management system that is suited to the various stages of development at the site;
- Constructing and maintaining all the required structures to capture and treat the onsite stormwater (e.g. bund walls rock lined drains, flat bottom drains, sediment ponds and rock lined release outlets);
- Minimising disturbed areas that contain materials prone to erosion;
- Installing sediment and erosion structures that will control the movement of sediment in areas prone to erosion;
- Regular maintenance inspections of all the associated structures;
- Using the stormwater captured in the sediment ponds for dust suppression;
- Using the water from the sediment ponds in the crushing process to minimised dust emissions and to ensure a conforming product (e.g. no segregation);
- Installing bunded areas refuelling operations where possible;
- Where refuelling occurs outside bunded areas, ensuring that the best practise and documented procedures are used; and
- Retaining spill kits on site and training of all staff in the use of the kits.

3.2 STAGED DEVELOPMENT

The stormwater management system will be developed to suit the level of development that the site is at. Runoff from the uncleared sections of the extraction area will be diverted around the site until the relevant areas are cleared.

Temporary drainage structures will be constructed to divert runoff from uncleared areas of the extraction area around the disturbed areas on the site. As some of the catchment areas within the site are currently smaller than the final design, the sediment ponds have been designed to capture runoff at the respective level. As development of the site continues, the size of the sediment ponds will be increased to capture the required amount of runoff.

3.3 BUFFER ZONES

The Rockhampton Region Planning Scheme requires a 30 metre vegetated buffer surrounding the site to protect the environmental values of the surrounding environment. The State Development Assessment Provisions (SDAP) require a 20-metre clear buffer zone around the development for essential management (bushfire) purposes. This buffer zone will also assist with treating run-off from the site.

3.4 SITE REHABILITATION

A site-specific rehabilitation plan has been prepared by Extractive Industry Solutions (December 2020), and generally includes:

- Stockpiling of topsoil from extraction operations;
- Progressive preparation of areas, that have been fully exploited, for rehabilitation;
- Earthworks to drain the site into sediment ponds for the terminal shape of the site;
- Spreading and preparation of the topsoil for seeding;
- Seeding the topsoil with native species suited to the clayey soil types derived from weathered sediments; and
- Monitoring of the site for stability, plant growth and compliance to the objectives of rehabilitation plan.

The quarry area, when fully rehabilitated, will be returned to grazing land and the extraction area will be utilised as a water storage for stock use.

3.5 REFUSE REMOVAL

A site-specific waste management plan has been prepared by Extractive Industry Solutions (December 2020), and generally includes:

- Domestic refuse from the amenities block will be removed by the quarry operator and taken to the Council Refuse Facility. If required, any other refuse will be placed into skip bins and removed from site by suitably qualified contractors;
- Regulated waste will be stored on site in approved containers in signed areas and removed by suitably qualified contractors. A register of these removals will be maintained at the operator's head office; and
- Any other refuse from the activities will be assessed for recycling purposes, stockpiled, or removed and sold to contractors that process and recycle that particular type of waste, including excess sediment from the sediment basins.

3.6 STORMWATER MANAGEMENT SYSTEM DESIGN

The design of the stormwater management system will include sediment basins to capture the runoff from a 24 hour 20% AEP storm event.

The site has been broken in to two main catchments:

- Catchment A – the main quarry extraction area; and
- Catchment B – the processing and stockpile area.

The runoff from Catchment A will be captured in a sediment sump at the south-western end of the extraction area which will be approximately 11 metres below the adjacent processing area. The area uphill of the extraction area will be drained onto the processing pad and into the catchment system. As the area required for extraction increases, the diversion bank will be moved uphill until there is not requirement for the bank.

Run-off from the processing and stockpile area (Catchment B) will be directed via on-site diversion drains to a single sediment basin in the site's south end, as shown on Figure 3. This will allow the designed release point to be located in the same position as the natural release point prior to development.

Runoff from the areas containing the topsoil stockpiles and other disturbed areas will also be directed into the Catchment B Basin through diversion banks and primary sediment traps.

Sediment basin deign details are contained within Table 5-1, and are conceptually shown on Figure 3.

As no chemicals will be onsite, with the exception of fuel and oil, the stormwater management system will be design with a primary propose of removing sediment from the runoff so that water quality at the site in maintained at an acceptable level.

No fuel or oil will be stored on site. Any refuelling or topping up of oil will occur in a designated area, where a spill kit is accessible.

The design is based on:

- Any releases from the site will be through the same exist drainage lines that existed, prior to the existence of the quarry site for the first half of the life of the development. During the second half of the expected life of the site, the extraction area will encroach on the processing and stockpiling area.
- The stormwater storage capacity on site will be greater than a 24 hour, 1 in 5 year event (20% AEP).
- The release structures will be designed with a capacity to control a 24 hour, 1 in 20 year weather event (5%AEP).
- The retention rate of runoff at the site, including hardstand areas and car park was calculated at 22% (Group C soil) for 125 mm rainfall and for the extraction area the retention rate was calculated at 9% (Group A soil) for 125 mm rainfall.
- The water level in the ponds will be controlled so that at the end of the dry season (1 December), the available capacity of the ponds is greater than the runoff calculated for a 24 hour, 1 in 5 year weather event.
- Construction design utilises a maximum gradient on the topsoil pads, hardstand areas and car park of 4.0% with an average gradient of 2.0%.
- The surface of the hardstand areas consist of a crushed impermeable pavement material.
- Any materials stockpiled in the extraction area will range from coarse sand to fine sand materials with a low to nil clay content.
- Disturbed soil areas will be minimised within the catchment areas for the stormwater management system.
- Runoff from areas where soil is exposed, will pass through sediment traps prior to entering the stormwater management system.
- All runoff will be capture and diverted into a system of diversion drains and banks.

Water from the sediment ponds will be used for dust suppression on the haul roads within the quarry site and the haul road during the drier months of the year.

The management of runoff in the primary sediment ponds, will include lowering the water levels in the sediment ponds so that free board within the ponds is off greater capacity than the runoff from a first flush weather event.

Any materials or sediments removed from the sediment ponds will be used in the production of pavement materials around the site.

All hydrocarbons will be stored in accordance with “AS1940-2004 - The storage and handling of flammable and combustible liquids”. The fuel will be stored in bunded containers and will be connected to bunded areas which are used for refuelling. When refuelling occurs in the extraction area or the processing area, refuelling procedures adopted by the operating company will be used.

4.0 MONITORING AND MAINTENANCE

The system that delivers the runoff to the sediment ponds and structures associated with the sediment ponds required regular monitoring and maintenance too ensure compliance with the Environmental Authority, Development Approval, the SMP. These assessments are the responsibility of the Site Environmental Officer or this delegate. Non-conformances must be reported to the Quarry Manager.

Appendix A contains an "Inspection checklist" that requires completing:

- after each weather event where the rainfall registered at the office exceeds 27.3 millimetres (first flush event) or,
- at the cessation of activities at the beginning of each wet season; and / or
- at the commence of work after the wet season.

Damage to the stormwater management system which could cause a release of untreated stormwater into the surrounding environment is treated as urgent and requires repairing within 7 days or prior to the next weathered event.

Sediment structures that are not working to capacity require maintenance based on a regular maintenance program, based on a monthly to 3 monthly maintenance programme.

All the primary sediment ponds require cleaning out so that their capacity is at the design level, prior to the wet season. The main pond requires checking for capacity and cleaning out if required. Drains that are overgrown with vegetation or silted up require maintenance so that their design capacity is realised. Eroded areas require treatments or the construction of control devices that will prevent that level of erosion occurring again.

4.1 WATER QUALITY MONITORING

The stockpiled quarried material at the site will vary in size from fines in pavement material through to 500-millimetre rock products. The extraction area is all located below the surrounding landform. No groundwater or soaks have been observed or are expected in the extraction area.

As the use of chemicals, outside of hydrocarbons, is not required by the development activities, water quality testing of a release will be restricted to:

- pH;
- Electrical conductivity (µS/cm); and
- Turbidity.

All sampling will be conducted in accordance with "Monitoring and Sampling Manual 2009" version 2 July 2013. Sampling will be conducted as the release points.

In the absent of a Water Quality Objectives Guidelines for the Fitzroy River catchment, the document "Establishing Environmental Values, Water Quality Guidelines and Water Quality Objectives for the Fitzroy Basin", "Queensland Water Quality Guidelines 2009" and "ANZECC Guidelines" 8 May 2014 will be used to determine if any further testing requirements are applicable.

4.2 STORMWATER CAPTURE AND DISCHARGE REQUIREMENTS

The statutory requirements relating to the capture and discharge of runoff from the site, include:

- Building of diversion banks and drains to direct external clean water around the site around, and to direct water from within the site to stormwater management structures;
- Treating stormwater prior to release;
- Minimise the amount of erosion that stormwater runoff may causes on site; and
- A stormwater management system that has a capacity greater than the design runoff from a 20% AEP storm of 24 hours duration.

To meet the statutory requirements, the following data shall be recorded, if a release occurs:

- Date and time, discharge commenced;
- Date and time the discharge was completed;
- Daily rainfall amounts;
- Rate of discharge;
- Amount of discharge;
- Any environmental impacts observed in the release area; and
- The following properties of the release;
    - pH;
    - Electrical Conductivity; and
    - Total Suspended Solids and/or Turbidity.

5.0 RESPONSE TO COUNCIL INFORMATION REQUEST

Council issued an IR dated 7 January 2021 (ref D/141-2020), for the proposed development, as response to Item 2 and 5 of this IR is detailed herein.

2.0 Please provide the Sedimentation Basin design details prepared and certified by a Registered Professional Engineer of Queensland (RPEQ) or suitably qualified professional that as a minimum include:

2.1 Design Flow;

2.2 Size for Treatment;

2.3 Type of Basin;

2.4 Size and Dimension of the Basin:

- 2.4.1 Sedimentation Basin Area;
- 2.4.2 Storage Volume for Sediments;
- 2.4.3 Internal Batters;

2.5 Design inflow systems;

2.6 Design outlet systems (low / high flow);

2.7 Vegetation Specification;

2.8 Maintenance access and plan;

2.9 Sediment disposal method;

2.10 Rehabilitation process for the basin area; and

2.11 Basin's operational procedures.

Note: If the proposal is for weir flow / spillway for high flow then please provide weir hydraulic details including energy dissipation structure, if any required.

Sediment basin parameters are detailed in Table 5-1, designed in accordance with IECA (June 2018).

TABLE 5-1 SEDIMENT BASIN DETAILS

Parameter	Basin A	Basin B1
Design Flow	20% AEP, 24 hour	
Basin Catchment Area (ha)	1.92	3.33
Type of Basin	Type D	
Settling Volume (m^3)	2,406	4,158
Sediment Storage Volume (m^3)	1,203	2,079
Total Basin Volume (m^3)	3,609	6,236
Settling Depth (m)	1.2	
Storage Depth (m)	1.2	
Overall Basin Depth (m)	2.4	
Internal Batters	1 in 4	
Sedimentation Basin Bed Area (m^2)	828	1.687
Design inflow systems	Sheet flow with diversion drains to basins	
Design outlet systems	Not applicable, situated within quarry pit floor, basin will be pumped as required.	10 metre weir, min 0.3m deep situated 2.4m above basin bed with 1 in 2 side batters

Parameter	Basin A	Basin B1
Vegetation Specification	None	
Rehabilitation process for the basin area	As per Site rehabilitation plan (Extractive Industry Solutions, December 2020)	
Operational procedures	In accordance with (IECA, June 2018) guidelines for Type D basins and waste removal per Site waste management plan (Extractive Industry Solutions, December 2020)	

Energy dissipation structure, if required, will be sized as part of the detailed design phase of the development, as the requirements of each basin may differ and detailed ground survey is not currently available. If required, these structres will be designed in accordance with the IECA guidelines (IECA, June 2018).

5.0 Stormwater Management Plan and drawings including all the elements of Stormwater Strategy i.e. channels, bunds, culverts etc must be prepared and certified by a Registered Professional Engineer of Queensland (RPEQ). Further, please provide detailed drawings of those elements.

This SMP has been written and prepared by a RPEQ. Due to the stage of the DA, limited topographic information is available at this time, as such the diversion channels and bunds will be designed and sized at a later stage of the DA process as part of the detailed design of the site.

6.0 CONCLUSION & QUALIFICATIONS

This SMP has been prepared by MCE for the proposed MCU DA the proposed Thirsty Creek Quarry located at 802 Thirsty Creek Road, Gogango, described as Lot 21 on PN81. The development is subject to detailed design, and further supporting analysis may be required as part of future applications.

Stormwater within the site is generally managed by:

- Only capturing stormwater from within the activity area;
- Diverting water from outside the activity area around the site;
- Capturing stormwater and storing the treated runoff on site for a 24 hour 20% AEP storm event;
- Controlled releases into the surrounding environment of treated water only through release structures designed to manage a 5% AEP storm event.

This SMP has been prepared specifically to respond to Item 5 of Council's Information Request (IR) dated 7 January 2021 (ref D/141-2020), for the proposed development, in order to support a MCU DA.

The analysis and overall approach was specifically catered for the particular project requirements, and may not be applicable beyond this scope. For this reason, any other third parties are not authorised to utilise this report without further input and advice from MCE.

7.0 REFERENCES

Ball, J., Babister, M., Nathan, R., Weeks, W., Weinmann, E., Retallick, M., & Testoni, I. (Eds.). (2019). *Australian Rainfall and Runoff: A Guide to Flood Estimation*. Commonwealth of Australia (Geoscience Australia).

DILGP. (July 2017). *State Planning Policy*. Department of Infrastructure, Local Government and Planning.

Extractive Industry Solutions. (December 2020). *Rehabilitation Plan for Thirsty Creek Quarry*.

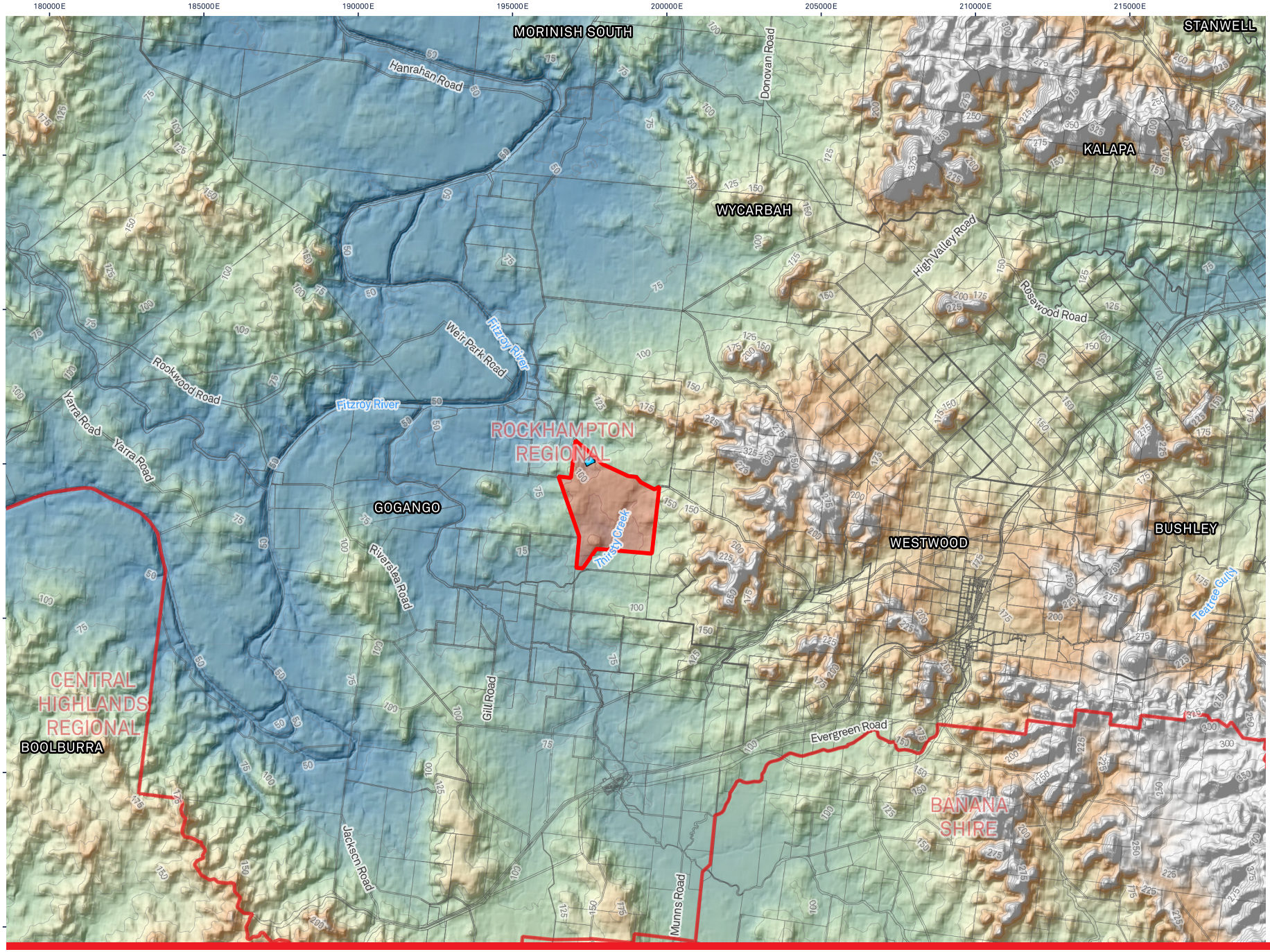
Extractive Industry Solutions. (December 2020). *Waste Management Plan*.

IECA. (June 2018). *Best Practice Erosion and Sediment Control*.

IPWEAQ. (2016). *Queensland Urban Drainage Manual – Forth Edition*. Institute of Public Works Engineering Australasia, Queensland.

Pilgrim, D. H. (Ed.). (1987). *Australian Rainfall & Runoff – A Guide to Flood Estimation – Volume 1*. The Institution of Engineers, Australia.

FIGURES



LEGEND

- Site Boundary
- Proposed Quarry
- Cadastre
- LGA Boundary

Topography (mAHD)

- 50
- 100
- 150
- 200
- 250
- 25m Contour

mcmurtrie CONSULTING ENGINEERS

DATE
23 February 2021

SIZE
A3

REFERENCE
J21005

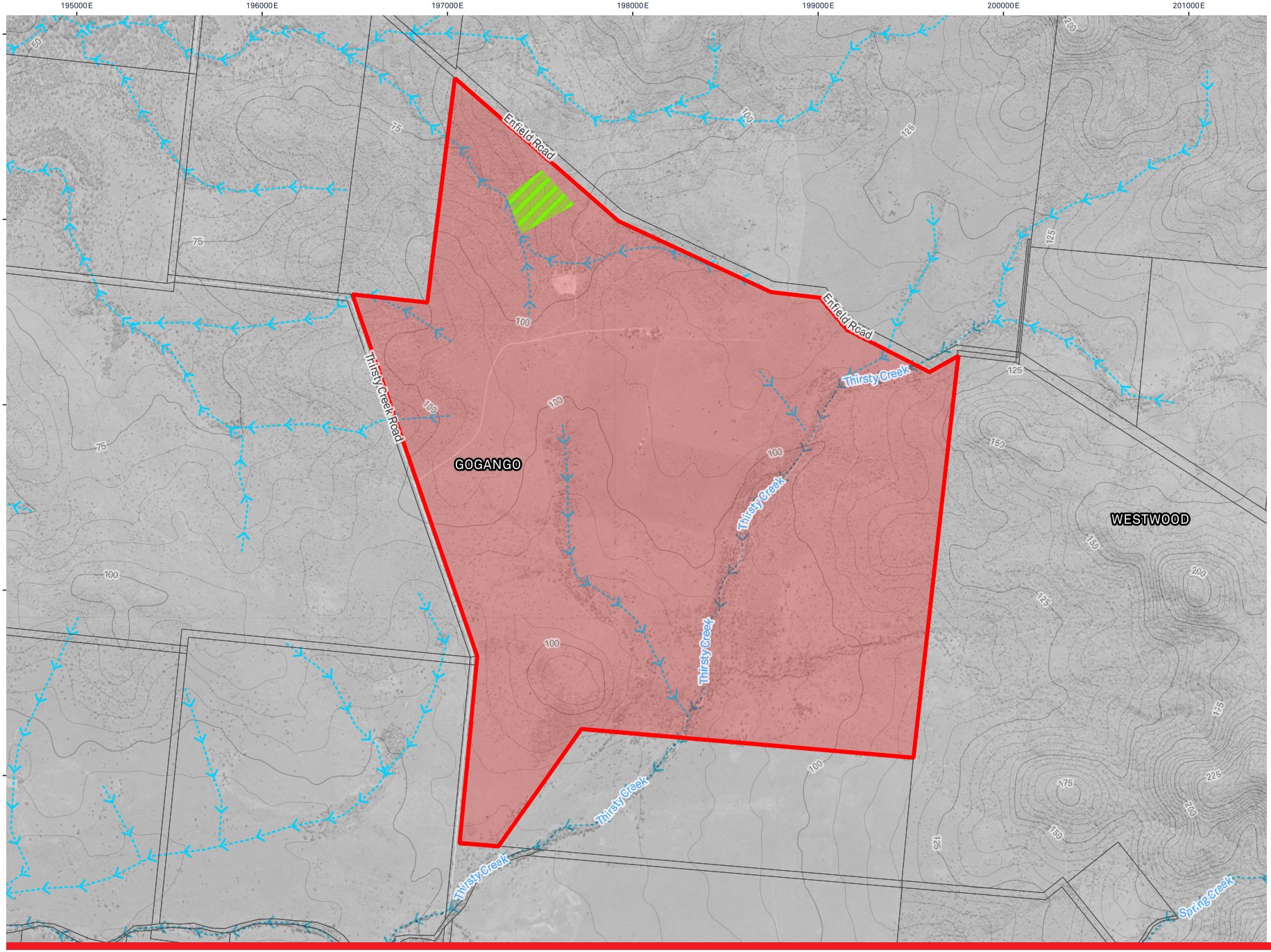
SCALE
1:120,000

0 3 6 9 12 15 km

FIGURE 1

SITE LOCATION

Thirsty Creek Quarry, Gogango
Stormwater Management Plan
M H & B J Thomas



N

LEGEND

- Site Boundary
- Proposed Quarry
- Cadastre
- Catchment Flow Paths (Indicative)
- 25m Contour
- 55m Contour

mcmurtrie CONSULTING ENGINEERS

DATE
23 February 2021

SIZE
A3

REFERENCE
J21005

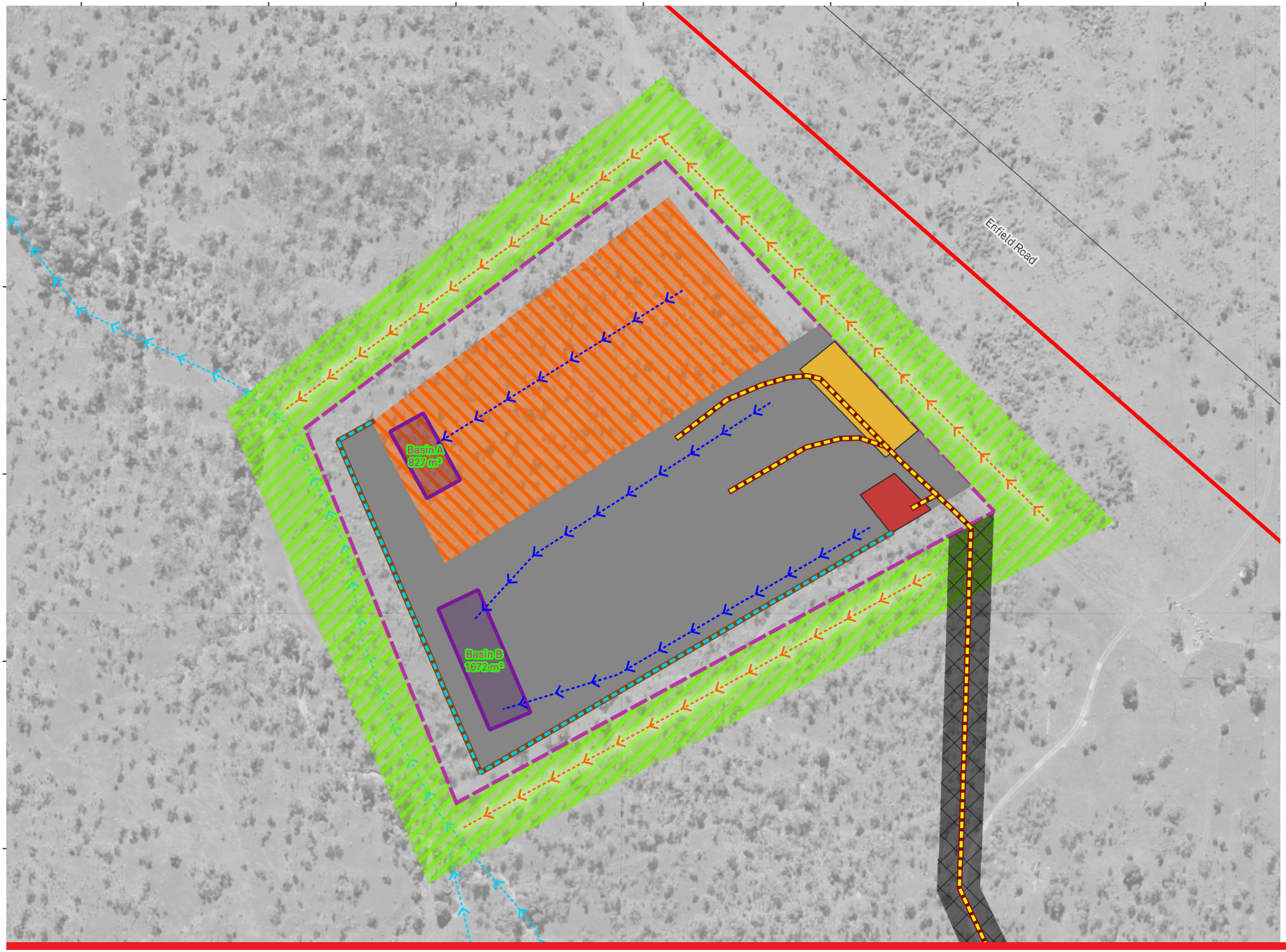
SCALE
1:20,000

0 0.5 1 1.5 2 2.5 km

FIGURE 2

CATCHMENT FLOW PATHS

Thirsty Creek Quarry, Gogango
Stormwater Management Plan
M H & B J Thomas



mcmurtrie CONSULTING ENGINEERS

DATE
23 February 2021

SIZE
A3

REFERENCE
J21005

SCALE
1:2,000

0 40 80 120 160 200 m

FIGURE 3

PROPOSED QUARRY INDICATIVE LAYOUT & STORMWATER MANAGEMENT

Thirsty Creek Quarry, Gogango
Stormwater Management Plan
M H & B J Thomas

APPENDIX A
INSPECTION CHECKLIST

Table 1.1 Inspection Checklist

Inspection Date:	Inspection by:		Thirsty Creek Quarry Stormwater Management Plan	
Structure	Status W - Working R – Requires repairs M – Requires maintenance D – Requires redesign N – Not applicable	Urgency U – Urgent M – Maintenance Y - Year shutdown	Action required	Completed
Extraction Area				
Main sediment ponds (inlet)				
Release structure (Overflow)				
Sediment ponds associated with the diversion banks				
Processing pad for fuel and/or oil spills				
Haul road and access road.				

Drainage off the bench into primary sediment pond a) scouring b) excessive vegetation build up c) sediment traps working d) erosion or undermining of benches				
Seepage of groundwater from benches				
Diversion banks carrying runoff around the site.				
Diversion banks preventing runoff from entering the site.				
Water quality in main pond for: - 1. discolouration, 2. smell 3. weed growth				

Car park, hardstand, Processing and Stockpiling area				
Primary Sediment Pond (inlet and capacity)				
Outlet into the extraction area				
Vegetated sediment traps				
Stormwater diversion drains and banks within the catchment				
Diversion drains around the hardstand areas				
Pipes and roll over banks across the access roads around the hardstand areas.				
Drainage structures on the main haul road to the extraction area and access roads				
Hardstand areas for oil and fuel spills				

General				
Weeds infestations or unidentified plants.				
Evidence of unauthorised entry onto site				
Signage at entrance to quarry site				
Comments:				

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ABN: 56 891 923 704 Telephone: 1800 Dilaps (345 277) Email: info@ausdilaps.com.au

PRE CONSTRUCTION CONDITION SURVEY - GEOREFERENCED VIDEO

COMMISSIONED BY:

Acciona Australia
Level 5, 88 Creek Street
BRISBANE QLD 4333

PROJECT:

Rookwood Weir, Rookwood QLD

SITE SURVEYED:

Council Assets
Thirsty Creek Road
GOGANGO QLD 4702

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No: D141-2020
Dated: 17 May 2021

INSPECTION DATE:

30 November 2020

JOB REFERENCE:

AD3537C

INSPECTOR:

Naser Mahan
Civil Engineer
NER, RPEQ

WEATHER:

Sunny, 39°C

REPORT PREPARED BY:

Brittany Schneider

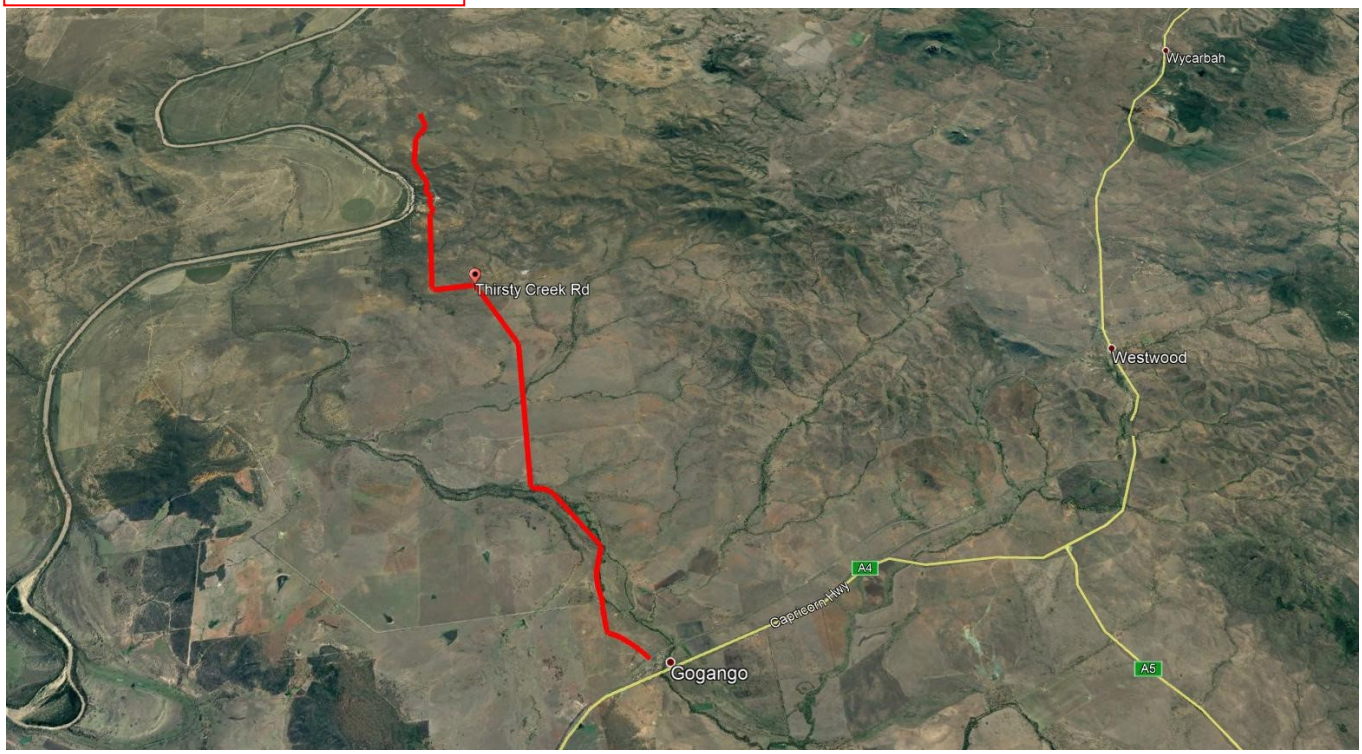

Table of Contents

BRIEF

Australian Dilapidations was commissioned by
Acciona Australia
to carry out pre-construction condition inspection and report in accordance with AS.4349.0 for the
Rookwood Weir, Rookwood QLD project.

PURPOSE OF THIS REPORT

This is a visual pre-construction inspection in accordance with AS 4349.0 and is intended to record the pre-construction condition of the property inspected and the surrounding areas. This is not a structural report and will not provide comment on the structural integrity or design of the inspected property; however it does include a photographic record of the main defects visible at the time of the inspection. The report is intended to be used to determine if change has occurred post-construction and if so, to what extent. This report and included photographs will be retained for use in/or during post-construction condition surveys.

LIMITATIONS

In accordance with AS 4349.0:
1. A visual only inspection may be of limited use to the client. In addition to a visual inspection, to thoroughly inspect the readily accessible areas of the property, further testing may be required whenever necessary.
2. This report does not include the inspection and assessment of items or matters outside the scope of the requested inspection and report.
3. This report does not include the inspection and assessment of items or matters that do not fall within the consultant's direct expertise.
4. The inspection only covers the readily accessible areas of the property and does not include areas, which were inaccessible or obstructed at the time of inspection. Obstructions are defined as any condition or physical limitation which inhibits or prevents inspection.
5. Australian Standard Inspection of Buildings, Part 1: Property Inspections – Residential buildings recognises that a standard property inspection report is not a warranty or an insurance policy against problems developing with the building in the future.

VIDEO LIMITATIONS

1. GPS Trilateration typical accuracy is <4m.
2. The first 15 seconds of an inspection allows for enough time to reach maximum accuracy before movement is commenced.
3. Cellular network reception and other factors outside of AusDilaps control may affect GPS accuracy.
4. In the event that adequate GPS accuracy is unachievable (<10m) we will perform a standard inspection. It is difficult to know whether desired GPS accuracy is able to be achieved until we arrive at site location.

EXCLUSIONS

The client acknowledges that this report does not cover or deal with:
(i) solving or providing costs for any rectification or repair work;
(ii) the structural design or adequacy of any element of construction;
(iii) detection of wood destroying insects such as termites and wood borers;
(iv) the operation of fireplaces and chimneys;
(v) any building services or appliances on the property;
(vi) any swimming pools and associated pool equipment or spa baths and spa equipment or the like;
(vii) whether the ground on which the building rests has been filled, is liable to subside, swell or shrink, is subject to landslip or tidal inundation, or if it is flood prone.

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TERMS AND CONDITIONS

Important information regarding the scope and limitations of inspection and this report: Any person who relies upon the contents of this report does so acknowledging that the following clauses form an integral part of the report.

1. **This report is not an all encompassing structural survey.** It is a reasonable attempt to identify any obvious or significant defects apparent at the time of the inspection. Whether a defect is considered significant or not, to a large extent, depends on the age and type of the building or property inspected. This report is not a Certificate of Compliance with the requirements of any act, regulation, ordinance or by-law or, as a warranty or an insurance policy against problems developing with the building or property in the future.

2. **Only areas to which reasonable access is available were inspected.** AS 4349.0 defines reasonable access as “areas where safe, unobstructed access is provided and the minimum clearances specified below are available, or where these clearances are not available, areas within the inspector’s unobstructed line of sight and within arm’s length...”. Reasonable access does not include removing screws and bolts to access covers or the use of destructive/invasive inspection methods, cutting or making access traps, moving heavy furniture, floor coverings or stored goods.

3. **This report does not and cannot make comment upon:**
   - The assessment or detection of defects which may be subject to the prevailing weather conditions.
   - Whether or not services have been used for some time prior to the inspection and whether this will affect the detection of leaks or other defects.
   - The presence or absence of timber pests, gas-fittings, common property areas, environmental concerns, the proximity of the property to flight paths, railways, or busy traffic.
   - Noise levels, health and safety issues, heritage concerns, security concerns or systems; fire protection, site drainage.
   - Detection and identification of illegal building work, illegal plumbing work, durability of exposed finishes, neighbourhood problems, electrical installation, cables or reception systems, any matters that are solely regulated by statute.
   - Accordingly, this report does not guarantee that defects and/or damages do not exist in any inaccessible or partly inaccessible areas or sections of the property.

4. **Asbestos, Lead and Mould Disclaimer:**
   No inspection for asbestos, lead or mould was carried out at the property and no professional report on the presence or absence of them is provided. If asbestos is noted as present within the property or if the building was built prior to 1990 and you are concerned they may be present within the property then you should seek advice from a qualified specialist to identify the amount and importance of their presence and the cost of sealing or removal.

5. **Estimating Disclaimer:**
   This report does not provide any estimates on repair or remedial works. We recommend you consult a licenced builder to give an estimate on any work required.

6. **Disclaimer of Liability:**
   No liability shall be accepted on an account of failure of the report to notify any problems in the area(s) or section(s) of the subject property physically inaccessible during inspection, or to which access is denied. No responsibility can be accepted for defects which are latent or otherwise not reasonably detected on a visual inspection.

7. **Disclaimer of Liability to Third Parties:**
   This report is made solely for the use and benefit of the client named on the front of this report. No liability or responsibility whatsoever, in contract or tort, is accepted to any third party who may rely on the report wholly or in part. Any third party acting or relying on this report, in whole or in part does so at their own risk.

PROPERTY DESCRIPTION

Property Type:

- Council Assets

GENERAL INSPECTION RESTRICTIONS

1. None noted at the time of the inspection.

SAFETY ISSUES

1. Please refer to 'Major Defects' for any Safety Issues related to building defects.

Important Note: Per AS 4349.0 Clause 4.2.f.2, the report shall identify any observed item that may constitute a present or imminent serious safety hazard.

PROPERTY SITES INSPECTED

- ✓ External Building Elements
- ✓ Roudabouts
- ✓ Kerbs/Gutters/Footpaths
- ✓ Roadways

Inspection Records: AD3537C-1 Rookwood Weir_Thirsty Creek Road_1.mp4
Length: Not applicable

Important Note: The areas listed above are a broad indication of the areas inspected. Within these areas, some further restrictions may have been present restricting or preventing our inspection. If any recommendation has been made within this report to gain access to areas, gain further access to areas, or any area has been noted as being at "High Risk" due to limited access then further access must be gained. We strongly recommend that such access be gained to enable a more complete report to be submitted.

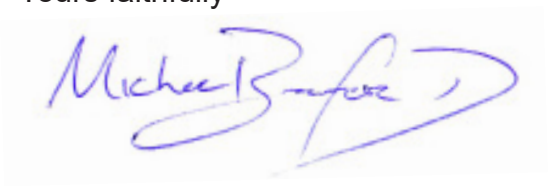
Drainage - Surface Water: Not Inspected
Important Notes: The site should be monitored during heavy rain to determine whether the existing drains can cope. If they cannot cope, then additional drains may be required.

Services: Not Inspected
Important Notes: In regard to plumbing or electrical, it should be noted that we are not plumbers or electricians and no comments are made to electrical or plumbing. We recommend that a qualified contractor be engaged to make comment on any matter dealing with plumbing or electrical issues.

EXPLANATION OF REVISIONS

- Not applicable

Yours faithfully



Michael Burford

AUSTRALIAN DILAPIDATIONS
Office: 1800 Dilaps (345 277)
Email: info@ausdilaps.com.au

Project: *Rookwood Weir Project*
Client: *Acciona*
Project #: *AD3537C*

Asset: *Roadways- Thirsty Creek Road*
Inspected By: *N.M.*
Data Entered By : *N.M.*

Inspection Date: *30/11/2020*

Weather: *Sunny*
Temp: *39°*

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Inspection Codes	AA = Depressions, AB = Ruts in Bituminous Surface, AD = Shoving of Pavement, AF = Rough Surface, AG = Potholes/ Delamination, BG = Crocodile Cracking, BZ = Cracks, CA = Edge Break, CC = Edge Drop-off/ Roolover, DC = Bleeding Seal, DE = Ravelling/ Stripping Seal, EB = Grass, GC = Scour/ Sediment Built-up, GG = Debries, HD = Wheel Ruts, YB = Joints Spalling/ Defects, TB = General Defect

Ref.#	Asset	Road Name	Element	Element Type	Defect Code	Defect Description	Coordination		Type of Inspection	Comment	Photo(s)		
							Lan	Lot			1	2	3
1	Roadway	Thirsty Creek Rd	Road Sign	Others	**TB**	General Defect	23º 31' 21.4" S	150º 1' 21.9" E	Video	Left side - Right Side	00001		
2	Roadway	Thirsty Creek Rd	Road Sign	Others	**TB**	General Defect	23º 31' 25.9" S	150º 1' 22.6" E	Video	Left side - Right Side	00002		
3	Roadway	Thirsty Creek Rd	Road Sign	Others	**TB**	General Defect	23º 31' 30.7" S	150º 1' 24.0" E	Video	Left side	00003		
4	Roadway	Thirsty Creek Rd	Road Sign	Others	**TB**	General Defect	23º 31' 31.9" S	150º 1' 24.3" E	Video	Left side	00004		
5	Roadway	Thirsty Creek Rd	Road Sign	Others	**TB**	General Defect	23º 31' 32.5" S	150º 1' 24.3" E	Video	Left side	00005		
6	Roadway	Thirsty Creek Rd	Road Sign	Others	**TB**	General Defect	23º 31' 33.4" S	150º 1' 24.2" E	Video	Right Side	00006		
7	Roadway	Thirsty Creek Rd	Road Sign	Others	**TB**	General Defect	23º 31' 35.4 S	150º 1' 22.9" E	Video	Left side - Right Side	00007		
8	Roadway	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 31' 38.1" S	150º 1' 20.5" E	Video	Left side - Right Side	00008		
9	Roadway	Thirsty Creek Rd	Road Sign	Others	**TB**	General Defect	23º 31' 41.9" S	150º 1' 17.1" E	Video	Left side	00009		
10	Roadway	Thirsty Creek Rd	Road Sign	Others	**TB**	General Defect	23º 31' 44.4" S	150º 1' 14.9" E	Video	Left side	00010		
11	Roadway	Thirsty Creek Rd	Road Sign	Others	**TB**	General Defect	23º 31' 46.2" S	150º 1' 13.6" E	Video	Left side	00011		
12	Roadway	Thirsty Creek Rd	Pavement	Concrete	**CA**	Edge Break	23º 31' 57.2" S	150º 1' 11.1" E	Video	-	00012		
13	Roadway	Thirsty Creek Rd	Shoulder	Unsealed/ Gravel	**GC**	Scour/ Sediment Built-up	23º 31' 1.9" S	150º 1' 10.5" E	Video	Right Side	00013		
14	Roadway	Thirsty Creek Rd	Shoulder	Unsealed/ Gravel	**GC**	Scour/ Sediment Built-up	23º 32' 8.8" S	150º 1' 9.0" E	Video	Right Side	00014		
15	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AF**	Rough Surface	23º 32' 31.8" S	150º 1' 12.8" E	Video	-	00015		
16	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**CA**	Edge Break	23º 32' 33.8" S	150º 1' 13.3" E	Video	Left Side	00016		
17	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 32' 34.7" S	150º 1' 13.6" E	Video	Left side - Right Side	00017		
18	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 32' 35.0" S	150º 1' 13.9" E	Video	Left side - Right Side	00018		
19	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 32' 35.9" S	150º 1' 13.9" E	Video	Left side - Right Side	00019		
20	Culvert	Thirsty Creek Rd	Pavement	Concrete	**CA**	Edge Break	23º 32' 36.8" S	150º 1' 16.0" E	Video	Left side - Right Side	00020		
21	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 32' 39.1" S	150º 1' 17.3" E	Video	Left side - Right Side	00021		
22	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 32' 40.6" S	150º 1' 17.6" E	Video	Left side - Right Side	00022		
23	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 32' 45.0" S	150º 1' 18.3" E	Video	Left side - Right Side	00023		
24	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 32' 48.5" S	150º 1' 19.0" E	Video	Right Side	00024		
25	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 32' 49.3" S	150º 1' 19.1" E	Video	Left Side	00025		
26	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 32' 50.3" S	150º 1' 19.3" E	Video	Left side - Right Side	00026		
27	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 32' 50.8" S	150º 1' 19.4" E	Video	Left Side	00027		
28	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 32' 56.3" S	150º 1' 19.9" E	Video	Left side - Right Side	00028		
29	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 32' 57.9" S	150º 1' 19.3" E	Video	Left side - Right Side	00029		
30	Roadway	Thirsty Creek Rd	Shoulder	Unsealed/ Gravel	**GC**	Scour/ Sediment Built-up	23º 33' 0.2" S	150º 1' 18.1" E	Video	Left Side	00030		
31	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**CA**	Edge Break	23º 33' 0.8" S	150º 1' 17.8" E	Video	-	00031		
32	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 33' 13.9" S	150º 1' 13.0" E	Video	Left side - Right Side	00032		
33	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 33' 14.0" S	150º 1' 13.0" E	Video	Left side - Right Side	00033		
34	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 33' 14.2" S	150º 1' 12.9" E	Video	Left side - Right Side	00034		
35	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 33' 14.9" S	150º 1' 12.9" E	Video	Left side - Right Side	00035		
36	Roadway	Thirsty Creek Rd	Shoulder	Unsealed/ Gravel	**CC**	Edge Drop-off/ Roolover	23º 33' 29.1" S	150º 1' 9.2" E	Video	Left Side	00036		
37	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 33' 50.6" S	150º 1' 6.2" E	Video	Left side - Right Side	00037		

Project: *Rookwood Weir Project*
Client: *Acciona*
Project #: *AD3537C*

Asset: *Roadways- Thirsty Creek Road*
Inspected By: *N.M.*
Data Entered By : *N.M.*

Inspection Date: *30/11/2020*

Weather: *Sunny*
Temp: *39°*

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Ref.#	Asset	Road Name	Element	Element Type	Defect Code	Defect Description	Coordination		Type of Inspection	Comment	Photo(s)		
							Lan	Lot			1	2	3
38	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 33' 50.8" S	150º 1' 6.2" E	Video	Left side - Right Side	00038		
39	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 33' 50.9" S	150º 1' 6.2" E	Video	Left side - Right Side	00039		
40	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 33' 51.1" S	150º 1' 6.2" E	Video	Left side - Right Side	00040		
41	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 33' 51.3" S	150º 1' 6.2" E	Video	Left side - Right Side	00041		
42	Roadway	Thirsty Creek Rd	Shoulder	Unsealed/ Gravel	**GC**	Scour/ Sediment Built-up	23º 34' 8.3" S	150º 1' 3.2" E	Video	Left side - Right Side	00042		
43	Roadway	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 34' 8.5" S	150º 1' 3.2" E	Video	Right Side	00043		
44	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 34' 12.6" S	150º 1' 2.7" E	Video	Left Side	00044		
45	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**GC**	Scour/ Sediment Built-up	23º 34' 12.7" S	150º 1' 2.7" E	Video	-	00045		
46	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DE**	Ravelling/ Stripping Seal	23º 34' 13.4" S	150º 1' 2.6" E	Video	Left Side	00046		
47	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**GC**	Scour/ Sediment Built-up	23º 34' 14.8" S	150º 1' 2.3" E	Video	Left side - Right Side	00047		
48	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**GC**	Scour/ Sediment Built-up	23º 34' 17.8" S	150º 1' 1.9" E	Video	Right Side	00048		
49	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**BZ**	Cracks	23º 34' 21.7" S	150º 1' 1.3" E	Video	Middle	00049		
50	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 34' 26.6" S	150º 1' 0.9" E	Video	Left Side	00050		
51	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 34' 29.3" S	150º 1' 3.4" E	Video	Right Side	00051		
52	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**GC**	Scour/ Sediment Built-up	23º 34' 29.8" S	150º 1' 7.6" E	Video	Left side - Right Side	00052		
53	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 34' 30.1" S	150º 1' 10.3" E	Video	Left Side	00053		
54	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**GC**	Scour/ Sediment Built-up	23º 34' 30.6" S	150º 1' 14.3" E	Video	Left side - Right Side	00054		
55	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 34' 31.1" S	150º 1' 19.2" E	Video	Left Side	00055		
56	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**CA**	Edge Break	23º 34' 31.7" S	150º 1' 24.2" E	Video	Left Side	00056		
57	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**GC**	Scour/ Sediment Built-up	23º 34' 31.7" S	150º 1' 24.4" E	Video	Left Side	00057		
58	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**GC**	Scour/ Sediment Built-up	23º 34' 31.8" S	150º 1' 25.6" E	Video	Left side - Right Side	00058		
59	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DE**	Ravelling/ Stripping Seal	23º 34' 32.5" S	150º 1' 31.0" E	Video	Left Side	00059		
60	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**GC**	Scour/ Sediment Built-up	23º 34' 32.6" S	150º 1' 31.4" E	Video	Left side - Right Side	00060		
61	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DE**	Ravelling/ Stripping Seal	23º 34' 33.0" S	150º 1' 34.3" E	Video	Left Side	00061		
62	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**GC**	Scour/ Sediment Built-up	23º 34' 38.9" S	150º 1' 37.2" E	Video	Left side - Right Side	00062		
63	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 34' 41.1" S	150º 1' 37.9" E	Video	Left Side	00063		
64	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**GC**	Scour/ Sediment Built-up	23º 34' 42.8" S	150º 1' 38.5" E	Video	Left Side	00064		
65	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DE**	Ravelling/ Stripping Seal	23º 34' 47.3" S	150º 1' 40.1" E	Video	Left Side	00065		
66	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**BZ**	Cracks	23º 34' 47.8" S	150º 1' 40.2" E	Video	Left Side	00066		
67	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**GC**	Scour/ Sediment Built-up	23º 34' 54.1" S	150º 1' 42.4" E	Video	Left side - Right Side	00067		
68	Roadway	Thirsty Creek Rd	Pavement	Unsealed/ Gravel	**DE**	Ravelling/ Stripping Seal	23º 35' 26.2" S	150º 1' 53.6" E	Video	Left side - Right Side	00068		
69	Roadway	Thirsty Creek Rd	Shoulder	Unsealed/ Gravel	**CC**	Edge Drop-off/ Roolover	23º 35' 56.0" S	150º 1' 54.5" E	Video	Left Side	00069		
70	Roadway	Thirsty Creek Rd	Pavement	Unsealed/ Gravel	**GC**	Scour/ Sediment Built-up	23º 36' 15.2" S	150º 1' 52.2" E	Video	Left side - Right Side	00070		
71	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 36' 19.9" S	150º 1' 51.5" E	Video	Left side - Right Side	00071		
72	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 36' 27.9" S	150º 1' 49.9" E	Video	Left side - Right Side	00072		
73	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 37' 42.2" S	150º 1' 54.6" E	Video	Left side - Right Side	00073		
74	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 37' 42.3" S	150º 1' 54.7" E	Video	Left side - Right Side	00074		

Project: *Rookwood Weir Project*
Client: *Acciona*
Project #: *AD3537C*

Asset: *Roadways- Thirsty Creek Road*
Inspected By: *N.M.*
Data Entered By : *N.M.*

Inspection Date: *30/11/2020*

Weather: *Sunny*
Temp: *39°*

AUSDILAPS
Specialist Building Inspections

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Ref.#	Asset	Road Name	Element	Element Type	Defect Code	Defect Description	Coordination		Type of Inspection	Comment	Photo(s)		
							Lan	Lot			1	2	3
75	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 37' 42.3" S	150º 1' 54.7" E	Video	Left side - Right Side	00075		
76	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 37' 42.6" S	150º 1' 54.9" E	Video	Left side - Right Side	00076		
77	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 37' 42.7" S	150º 1' 55.1" E	Video	Left side - Right Side	00077		
78	Culvert	Thirsty Creek Rd	Pavement	Concrete	**BZ**	Cracks	23º 37' 42.8" S	150º 1' 55.2" E	Video	Left side - Right Side	00078		
79	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 37' 43.3" S	150º 1' 55.5" E	Video	Left side - Right Side	00079		
80	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**BZ**	Cracks	23º 38' 15.0" S	150º 2' 12.6" E	Video	Left side - Right Side	00080		
81	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DE**	Ravelling/ Stripping Seal	23º 39' 12.3" S	150º 2' 9.5" E	Video	Left Side	00081		
82	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DE**	Ravelling/ Stripping Seal	23º 39' 15.0" S	150º 2' 9.2" E	Video	Left side - Right Side	00082		
83	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 39' 25.5" S	150º 2' 8.0" E	Video	Left side - Right Side	00083		
84	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 39' 27.8" S	150º 2' 8.7" E	Video	Left Side	00084		
85	Roadway	Thirsty Creek Rd	Shoulder	Asphalft/ Bitumen	**CA**	Edge Break	23º 39' 31.7" S	150º 2' 12.4" E	Video	Left Side	00085		
86	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 39' 32.7" S	150º 2' 13.9" E	Video	Left Side	00086		
87	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**BZ**	Cracks	23º 39' 32.7" S	150º 2' 13.9" E	Video	Right Side	00086		
88	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DE**	Ravelling/ Stripping Seal	23º 39' 36.8" S	150º 2' 19.0" E	Video	Left Side	00087		
89	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**BZ**	Cracks	23º 39' 36.8" S	150º 2' 19.0" E	Video	Right Side	00087		
90	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 39' 39.9" S	150º 2' 21.8" E	Video	Left side - Right Side	00088		
91	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DE**	Ravelling/ Stripping Seal	23º 39' 40.3" S	150º 2' 22.2" E	Video	Left side - Right Side	00089		
92	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 39' 41.5" S	150º 2' 23.2" E	Video	Left side - Right Side	00090		
93	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DE**	Ravelling/ Stripping Seal	23º 39' 44.6" S	150º 2' 25.8" E	Video	Left side - Right Side	00091		
94	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 39' 45.3" S	150º 2' 26.4" E	Video	Left side - Right Side	00092		
95	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**EB**	Grass	23º 39' 46.1" S	150º 2' 27.1" E	Video	Left Side	00093		
96	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**CA**	Edge Break	23º 39' 46.4" S	150º 2' 27.3" E	Video	Left Side	00094		
97	Roadway	Thirsty Creek Rd	Pavement	Others	**TB**	General Defect	23º 39' 48.8" S	150º 2' 28.8" E	Video	Left Side	00095		
98	Roadway	Thirsty Creek Rd	Pavement	Others	**TB**	General Defect	23º 39' 48.8" S	150º 2' 28.8" E	Video	Left Side	00096		
99	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DC**	Bleeding Seal	23º 39' 49.6" S	150º 2' 29.3" E	Video	Left side - Right Side	00097		
100	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**AG**	Potholes/ Delamination	23º 39' 49.8" S	150º 2' 29.4" E	Video	Left Side	00098		
101	Roadway	Thirsty Creek Rd	Pavement	Asphalft/ Bitumen	**DE**	Ravelling/ Stripping Seal	23º 39' 50.4" S	150º 2' 29.7" E	Video	Left Side	00099		

Figure: 0001

Figure: 0002

Figure: 0003

Figure: 0004

Figure: 0005

Figure: 0006

Figure: 0007

Figure: 0008

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MCE
McMurtrie Consulting Engineers

Engineering reimagined.

ROCKHAMPTON REGIONAL COUNCIL
AMENDED PLANS APPROVED
5 March 2025
DATE
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/141-2020
Dated: 17 May 2021

Technical Memorandum

To:	From
Thomas Plant Hire C/- Extractive Industry Solutions eis@activ8.net.au	Chris Hewitt RPEQ 5141 McMurtrie Consulting Engineers chris@mcmengineers.com

1 Introduction

McMurtrie Consulting Engineers (MCE) have been engaged by Thomas Plant Hire as owners of Thirsty Ck Quarry to examine the pavement impacts of an adjusted tonnage of material to be hauled on the Rockhampton City Council Controlled Road network.

Note: A separate Technical Memorandum has been prepared to address the proposed cartage on the State Controlled Network.

The Quarry has a current approval of 1MT p.a. to haul material predominantly for the supply of developments associated with the Rookwood Weir including the approved 'feedlot' and 'macadamia tree' developments, however, is precluded from carting material on the SCR network (Capricorn Highway).

2 Proposal

In terms of the Council Controlled Road Network the following tonnages are expected to be carted.

1. 40,000 tonnes per annum to Capricorn Highway (for TMR, QR and Aurizon projects). The route is via Thirsty Creek Road to Riverslea Road, across the rail line, to Second Street then Third Street and further to the Capricorn Highway. The distance is 9.97kms.
2. 10,000 tonnes per annum for any ongoing maintenance activities at the Rookwood weir site. The route being via Thirsty Creek Road for a distance of approximately 6.6kms.
3. 70,000 tonnes per annum to Lot 21 on Plan PN81 (Feedlot construction and various agricultural projects located on the same lot number as the quarry). Product delivery will not use council roads.

The total production is estimated at 120,000 tonnes per annum.

3 Development Traffic

Based upon the delivery locations and tonnages outlined in Section 2 of this memorandum and with the assumption that all cartage is being carried out by legally loaded truck and dog combination vehicles, *Figure 1* and *Table 1* have been derived.

	Truck + 4 Dog	O	OO	OO	OO					
	Axles Tyres	Single Single	Tandem Dual	Tandem Dual	Tandem Dual				Totals	
	Legal Loading (t)	6	16.5	16.50	16.50				55.50	tonne
	Base Load / ESA	5.4	13.8	13.8	13.8					
Unloaded	Axle Group Load (t)	4.5	5	5	5				19.5	tonne
	ESA's	0.482	0.017	0.017	0.017				0.53	ESA
Loaded	Axle Group Load (t)	6.00	16.50	16.50	16.50				55.50	tonne
	ESA's [1]	1.524	2.044	2.044	2.044				7.66	ESA
	Payload =	36.0	tonne				ESA/t Payload =		0.0148	unloaded
	Max Legal Payload =	36.0	tonne [2]				ESA/t Payload =		0.2126	loaded

Figure 1– ESA/CV for Truck and Dog Combination Vehicle

Table 1 provides a summary of development ESA (SAR4) to each destination at the Capricorn Highway and the Rookwood Weir Site.

Site		Tonnage to/past Site (Tpa)	Dev ESA (SAR)/year
Capricorn Highway		40,000	8,511
Rookwood Weir Site		10,000	2,128

Table 1 – Summary of Development ESA (SAR4)

4 Impact Assessment

Council has previously accepted calculations for the adjacent feedlot development assuming an equivalent figure for the same route of Third Street, Second Street, Riverslea Road and Thirsty Creek Road, of 13.6 cents per SAR km based on the Department of Transport and Main Roads (DTMR) Guide to Traffic Impact Assessment (GTIA) Marginal Cost Methodology.

For consistency and transparency, we propose to utilise the same figure.

As such, Table 2 below summarises the necessary calculations to arrive at a yearly and tonnage contribution rate for the quarry development.

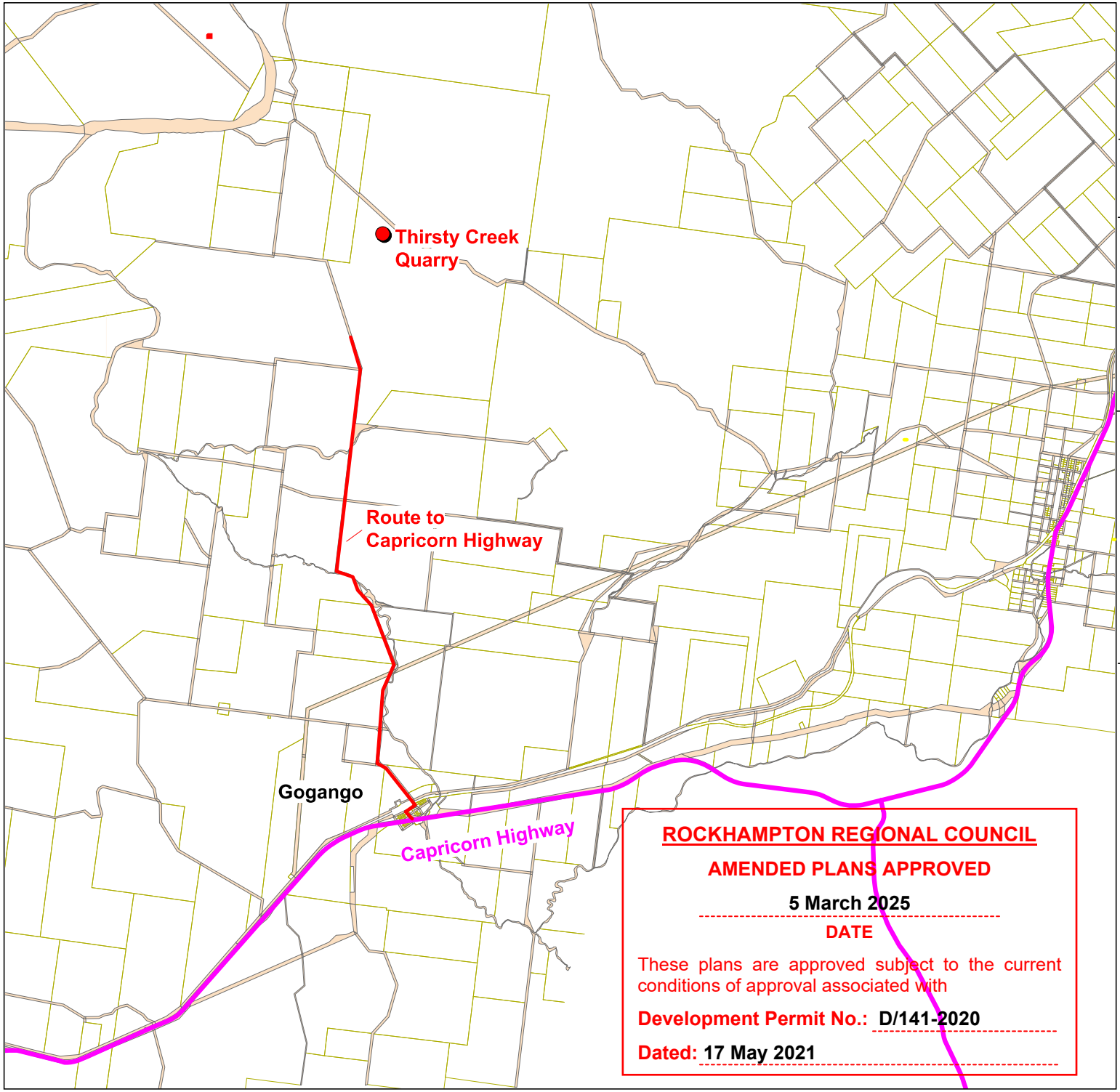
Site	Marginal cost c/SAR.km	SAR	Route Length kms	Total Annual Contribution $	$/Tonne
Capricorn Highway	13.6	8,511	9.97	$11,540	$0.29/tonne
Rookwood Weir Site	13.6	2,128	6.6	$1,910	$0.19/tonne

Table 2

I trust the proposal provided herein meets with council's requirement.

Chris Hewitt

Associate Director/Principal Civil Engineer



Thirsty Creek Quarry

Haulage Route

Haulage Route

compiled by: Extractive Industry Solutions

Client: Thomas Plant Hire

Date: 4/10/2024

Author: M O'Sullivan

Co-ordinates GDA2020, Z55

Plan No: TPH/THI/App24001

0 5

kilometres

Scale 1:100,000

ROCKHAMPTON REGIONAL COUNCIL

AMENDED PLANS APPROVED

5 March 2025

DATE

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/141-2020

Dated: 17 May 2021