Notice of Meeting

Infrastructure Advisory Committee Meeting

An Infrastructure Advisory Committee Meeting of Byron Shire Council will be held as follows:

Venue	**Conference Room, Station Street, Mullumbimby**
Date	**Thursday, 16 June 2022**
Time	**9.00am**

Phillip Holloway
Director Infrastructure Services

I2022/690
Distributed 09/06/22

BYRON SHIRE COUNCIL

CONFLICT OF INTERESTS

What is a "Conflict of Interests" - A conflict of interests can be of two types:

Pecuniary - an interest that a person has in a matter because of a reasonable likelihood or expectation of appreciable financial gain or loss to the person or another person with whom the person is associated.

Non-pecuniary – a private or personal interest that a Council official has that does not amount to a pecuniary interest as defined in the Code of Conduct for Councillors (eg. A friendship, membership of an association, society or trade union or involvement or interest in an activity and may include an interest of a financial nature).

Remoteness – a person does not have a pecuniary interest in a matter if the interest is so remote or insignificant that it could not reasonably be regarded as likely to influence any decision the person might make in relation to a matter or if the interest is of a kind specified in the Code of Conduct for Councillors.

Who has a Pecuniary Interest? - a person has a pecuniary interest in a matter if the pecuniary interest is the interest of the person, or another person with whom the person is associated (see below).

Relatives, Partners - a person is taken to have a pecuniary interest in a matter if:

- The person's spouse or de facto partner or a relative of the person has a pecuniary interest in the matter, or
- The person, or a nominee, partners or employer of the person, is a member of a company or other body that has a pecuniary interest in the matter.

N.B. "Relative", in relation to a person means any of the following:

(a) the parent, grandparent, brother, sister, uncle, aunt, nephew, niece, lineal descends or adopted child of the person or of the person's spouse;

(b) the spouse or de facto partners of the person or of a person referred to in paragraph (a)

No Interest in the Matter - however, a person is not taken to have a pecuniary interest in a matter:

- If the person is unaware of the relevant pecuniary interest of the spouse, de facto partner, relative or company or other body, or
- Just because the person is a member of, or is employed by, the Council.
- Just because the person is a member of, or a delegate of the Council to, a company or other body that has a pecuniary interest in the matter provided that the person has no beneficial interest in any shares of the company or body.

Disclosure and participation in meetings

- A Councillor or a member of a Council Committee who has a pecuniary interest in any matter with which the Council is concerned and who is present at a meeting of the Council or Committee at which the matter is being considered must disclose the nature of the interest to the meeting as soon as practicable.
- The Councillor or member must not be present at, or in sight of, the meeting of the Council or Committee:

    (a) at any time during which the matter is being considered or discussed by the Council or Committee, or

(b) at any time during which the Council or Committee is voting on any question in relation to the matter.

No Knowledge - a person does not breach this Clause if the person did not know and could not reasonably be expected to have known that the matter under consideration at the meeting was a matter in which he or she had a pecuniary interest.

Non-pecuniary Interests - Must be disclosed in meetings.

There are a broad range of options available for managing conflicts & the option chosen will depend on an assessment of the circumstances of the matter, the nature of the interest and the significance of the issue being dealt with. Non-pecuniary conflicts of interests must be dealt with in at least one of the following ways:

- It may be appropriate that no action be taken where the potential for conflict is minimal. However, Councillors should consider providing an explanation of why they consider a conflict does not exist.
- Limit involvement if practical (eg. Participate in discussion but not in decision making or vice-versa). Care needs to be taken when exercising this option.
- Remove the source of the conflict (eg. Relinquishing or divesting the personal interest that creates the conflict)
- Have no involvement by absenting yourself from and not taking part in any debate or voting on the issue as of the provisions in the Code of Conduct (particularly if you have a significant non-pecuniary interest)

RECORDING OF VOTING ON PLANNING MATTERS

Clause 375A of the Local Government Act 1993 – Recording of voting on planning matters

(1) In this section, **planning decision** means a decision made in the exercise of a function of a council under the Environmental Planning and Assessment Act 1979:

(a) including a decision relating to a development application, an environmental planning instrument, a development control plan or a development contribution plan under that Act, but

(b) not including the making of an order under that Act.

(2) The general manager is required to keep a register containing, for each planning decision made at a meeting of the council or a council committee, the names of the councillors who supported the decision and the names of any councillors who opposed (or are taken to have opposed) the decision.

(3) For the purpose of maintaining the register, a division is required to be called whenever a motion for a planning decision is put at a meeting of the council or a council committee.

(4) Each decision recorded in the register is to be described in the register or identified in a manner that enables the description to be obtained from another publicly available document, and is to include the information required by the regulations.

(5) This section extends to a meeting that is closed to the public.

BYRON SHIRE COUNCIL

BUSINESS OF MEETING

1. APOLOGIES

2. DECLARATIONS OF INTEREST – PECUNIARY AND NON-PECUNIARY

3. STAFF REPORTS

Infrastructure Services

STAFF REPORTS - INFRASTRUCTURE SERVICES

Report No. 3.1 Election of Chair and Committee Constitution

Directorate: Infrastructure Services

Report Author: Shelley Flower, Executive Assistant IS

File No: I2022/565

Summary:

The Infrastructure Advisory Committee elect a Committee Chairperson and ratify draft Committee Constitution.

RECOMMENDATION:

That Council supports the following:

1. **Election of Cr …….. as the Chairperson of the Infrastructure Advisory Committee.**

2. **The Infrastructure Advisory Committee adopting the draft Committee Constitution.**

Attachments:

1 DRAFT Infrastructure Advisory Committee Constitution 2022, E2021/148639 , page 7⇩

Report

The Infrastructure Advisory Committee is to elect a Chairperson and ratify the draft Committee Constitution (attached).

Strategic Considerations

Community Strategic Plan and Operational Plan

CSP Objective	CSP Strategy	DP Action	Code	OP Activity
Community Objective 5: We have community led decision making which is open and inclusive	5.2: Create a culture of trust with the community by being open, genuine and transparent	5.2.4: Support Councillors to carry out their civic duties	**5.2.4.3**	Deliver Council meeting secretariat – including agenda preparation, minutes and council resolutions monitoring

Recent Resolutions

This is a new advisory Committee as per Council resolution 22-026. Prior to creation of this Committee, similar subject matter was covered by the Transport and Infrastructure Advisory Committee.

Legal/Statutory/Policy Considerations

The Constitution has been prepared with reference to Council's Code of Conduct and Code of Meeting Practice.

The Committee is an advisory Committee of the Council. The objectives of the Committee are outlined in the Constitution. The role of the Committee is to report to Council and provide appropriate advice and recommendations on matters relevant to the Constitution.

Financial Considerations

Not applicable.

Consultation and Engagement

Not applicable.

BYRON SHIRE COUNCIL

INFRASTRUCTURE ADVISORY COMMITTEE

CONSTITUTION

DRAFT

INFORMATION ABOUT THIS DOCUMENT

(INTERNAL USE ONLY)

Date Adopted by Council	TBC	**Resolution No.**	TBC
Responsibility	Infrastructure Services		
Review Timeframe	Each Term of Council		
Last Review Date:	December 2021	**Next Scheduled Review Date**	December 2024

Document History

Doc No.	Date Amended	Details Comments eg Resolution No.
E2016/90827	This document	Constitution as adopted by Council 29/09/16
E2016/90827	1 June 2017	Constitution amended as per Council Resolution 17-203, increasing community membership from 3 to 4 community members.

Further Document Information and Relationships

Related Legislation	Section 355, Local Government Act (1993)
Related Policies	Code of Conduct 2016 Work Health Safety Policy Code of Meeting Practice
Related Procedures/ Protocols, Statements, documents	

Table of Contents

1. Preamble

The Infrastructure Advisory Committee is an advisory Committee of the Council and does not have executive power or authority to implement actions.

The role of the Committee is to report to Council and provide appropriate advice and recommendations on matters relevant to this Constitution.

2. Purpose

The purpose of the Infrastructure Advisory Committee is:

a) develop and review policies and priorities for addressing the management of civil infrastructure to meet the needs and aspirations of the Shire's population in a sustainable way

b) review Council's Asset Management Plan and 10 year works program

c) review the level of service to be provided by the Council in the maintenance and renewal of assets within the available budget and resources

d) advise on opportunities or concerns regarding infrastructure to Council as required, including but not limited to, funding opportunities, government policy, practice or guidelines, safety, accessibility, and other such relevant issues

3. Timeframe for Committee

The lifespan of the Infrastructure Advisory Committee is for the term of Council 2022-2024.

4. Responsible Directorate

This Committee is administered by the Infrastructure Services Directorate. The Director or their delegate will attend these meetings and minutes will be taken by a member of their staff.

5. Membership

Council must appoint all advisory Committee members. Appointment must take place prior to a member being conferred the responsibilities and rights as set out in this document.

Council may release individual members from the advisory Committee at any time by a resolution of Council. Council may also appoint any new members to a Committee at any time by a resolution of Council.

Membership is to include:

- 3 Councillors
- 4 relevantly qualified community representative
- Byron Shire Council General Manager (or staff member delegate)

Note: Staff members participating on the Committee do not have any voting entitlements.

6. Induction

All members will be required to participate in an induction process at the establishment of a new Committee, and at any time a replacement voting member joins a Committee. The induction will be scheduled prior to the first meeting of the Committee and will cover topics such as this Constitution, the Code of Meeting Practice, Conflicts of Interest and Code of Conduct.

Replacement voting members will be inducted by experienced Committee members at, or prior to, their first meeting.

7. Quorum

A quorum is to constitute at least half the number of members, two of which are to be Councillors. The General Manager or delegate, who must be a member of staff, is to attend the Advisory Committee meeting and is not counted in the quorum for the meeting.

8. Confidentiality

Members of the Committee will, in those circumstances where confidential matters are subject to deliberation, maintain confidentiality.

9. Election of Chairperson

The position of Chairperson is to be elected from Councillors comprising the Committee but only in circumstances where the Mayor elects not to assume the position of Chairperson.

10. Voting

a) Each member of the Committee (with the exception of staff members) is to have one vote, with the Chairperson to have a casting vote in addition to a deliberative vote.

b) Members of the Committee who are not Councillors may abstain from voting in any circumstances without such abstention being recorded in the negative.

11. Majority Decision

A majority decision of the Committee requires a majority of elected members to be present and voting on any item subject to the requirements of a quorum being met at the meeting.

12. Convening Meetings

Meetings will be held as required, generally every quarter. An annual timetable of meetings will be prepared in advance and adopted by Council for the following 12 months.

A meeting of the Committee may be convened in response to either the direction of the Mayor (or in the Mayor's absence the Deputy Mayor) in written form to the General Manager; or two Councillors in written form to the General Manager, or by resolution of the Council.

13. Agenda Preparation

It is the responsibility of the chairperson to prepare the agenda in consultation with the relevant Director, setting out the terms of business to be considered.

The agenda is an organised list of the business, in order, that will be transacted at the meeting. An agenda for each meeting, containing a brief report on each item, is to be provided to Committee members and available on Council's website at least 7 days prior to the meeting being held.

Each item of business to discuss at the meeting is required to be listed on the agenda and in written form. Verbal reports at the meeting are not an acceptable practice.

For some matters, it will be necessary to attach other relevant information to the agenda to inform and direct discussion. Such information is to be circulated with the agenda.

Committee members may request items for inclusion in future agendas, through the Chair.

14. Conduct of Business

Each item of business is discussed in the order in which it appears on the agenda. No new matters will be introduced at the meeting. New items of business may be included in a future agenda as noted in clause 13 above.

15. Records of meetings

a) The minutes of meetings are to be circulated to members of the group within 7 days of the meeting so that members can provide feedback through the Chair on the draft unconfirmed minutes.

b) Minutes of Committee meetings will be kept and presented to Council at its next meeting via a report of the Committee meeting.

16. Absence from Committee Meetings

All Committee members are required to advise the chair when they are unable to attend Committee meetings. The absence of Committee members from the meeting is to be recorded in the minutes. A Committee member (other than the Mayor) ceases to be a member of a Committee if the member:

a) Has been absent from three consecutive meetings of the Committee without having given reasons acceptable to the Committee for the member's absence, or

b) Has been absent from at least half of the meetings of the Committee held during the immediately preceding year without having given to the Committee acceptable reasons for the member's absences.

17. Project Reference Groups

Project Reference Groups may be established by Council at the recommendation of the Committee to address issues clearly identified by the Committee.

Project Reference Groups operate in accordance with Council's adopted Constitution template for Project Reference Groups.

18. Section 377 Delegation

The Committee does not have any delegated functions pursuant to section 377 of the Local Government Act (1993) and does not have the power to direct staff.

19. Meeting Practice

Meetings are to be conducted in accordance with this Constitution and, where required, reference to Council's Code of Meeting Practice.

20. Miscellaneous

a) **Insurance**: All group members are covered by the public liability policy of Council. This insurance does not preclude the Advisory Committee from due diligence and all Council policies must be adhered to.

b) **Code of Conduct**: All group members to abide by Council's adopted Code of Conduct at all times.

c) **Pecuniary Interest**: Pecuniary Interest may be defined as an interest that a person has in a matter, as a group member or employee of a company or other body, because of a reasonable likelihood or expectation of appreciable financial gain or loss to the person, or another person with whom the person is associated. Such other person includes the spouse or de-facto partner or relative of the group member.

   Section 446 of the Local Government Act states that "a member of a council Committee, other than a Committee that is wholly advisory, must disclose pecuniary interests..."

   Even though the Local Government Act provides an exemption to disclose pecuniary interests Council's preference is for all members to declare pecuniary interests where applicable.

d) **Work Health Safety:** All group members are required to comply with the "Worker Responsibilities" as prescribed in the Work Health Safety Policy.

Report No. 3.2 Mullum to Bruns/Ocean Shores Cycleway - Route Options

Directorate: Infrastructure Services

Report Author: Kirk Weallans, Project Engineer

File No: I2022/631

Summary:

The first stage of the Mullum to Bruns Cycleway was to complete an investigation of route options. This options study is to help Council determine a preferred route from a risk, budget and user perspective. The options study is now complete, and two routes have been shortlisted by Council as being worthy of more detailed investigation.

Route A – a trail following the disused rail corridor north from Mullumbimby and connecting to Ocean Shores and Brunswick Heads via a combination of road reserve, private property and existing paths.

Route D – a trail along Mullumbimby Road, Hambly Road, through sugar cane fields directly to Henderson Lane, The Saddle Road and Tweed Street.

The route alignments are conceptual only at this stage and a final alignment would only proceed following full consultation, additional investigations/design and be ratified by Council.

Council have resolved to take the two preferred options to the community consultation phase of the project prior to considering selection of a final option.

RECOMMENDATION:

That the Infrastructure Advisory Committee note the Mullum to Bruns Cycleway – Route Options Report.

Attachments:

1 24.2021.3.1 - Mullum to Bruns Cycleway - Route Options Report - Oct 2021, E2021/135561 , page 18⇩

Report

Council is exploring options for a new cycleway project to connect the town of Mullumbimby to Brunswick Heads/Ocean Shores and beyond. Council's original objective for the project was to provide a cycleway connection between Mullumbimby township and Brunswick Heads, however, the options study includes solutions that cover the other suburbs in the north of Shire. The project, if successful, is significant for the region and could provide a safe and accessible alternative transport route for the local community linking urban areas to schools and workplaces along the route, helping achieve the goals of the Byron Shire Council's Community Strategic Plan, Pedestrian Access and Mobility Plan and Bike Plan.

A preliminary investigation of route options has been undertaken to help determine a preferred route from a risk, budget and user perspective.

The various cycleway routes were assessed against the following categories:

- Route distance
- Grades
- Travel Time
- Intersections to navigate
- Planning & Environmental Constraints
- Land acquisitions
- Connectivity to population groups

Following two workshops with Councillors in which risk and opportunities were discussed, two routes were shortlisted for community consultation (refer figure 1), namely Route A and Route D.

Route A – a trail following the disused rail corridor north from Mullumbimby and connecting to Ocean Shores and Brunswick Heads via a combination of road reserve, private property and existing paths.

Route D – a trail along Mullumbimby Road, Hambly Road, through sugar cane fields directly to Henderson Lane, The Saddle Road and Tweed Street.

Native title, planning and environmental approvals, ecological impact, safety, flooding, budget, community views, land acquisitions and project timeframes are a few of the risks associated with the cycleway route options presented.

The route alignments are conceptual only at this stage and a final alignment would only proceed following full consultation, additional investigation and design activities and be ratified by Council.

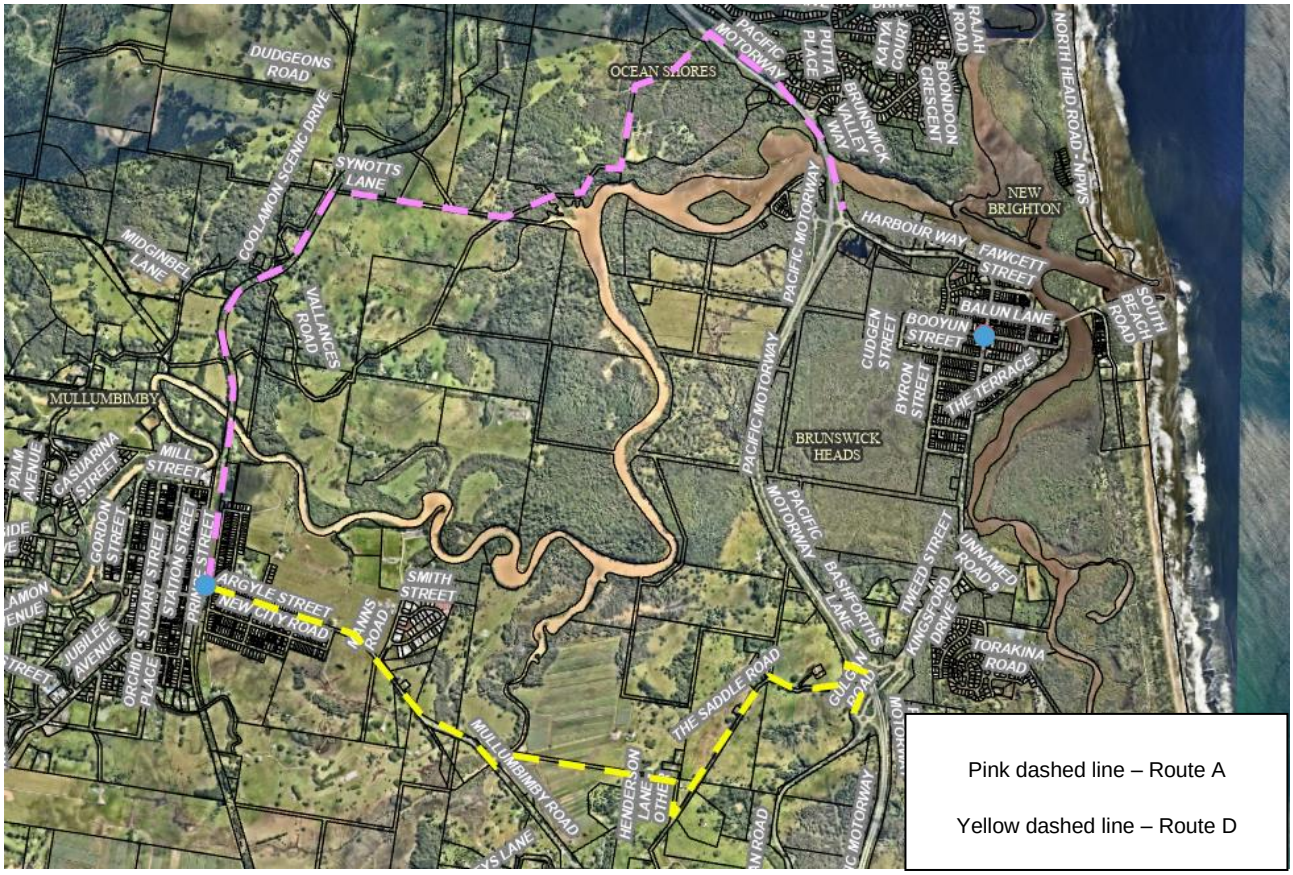

Figure 1 – Route A and Route D options to connect Mullumbimby to Brunswick Heads

Next steps

Community consultation regarding the two shortlisted options Route A and Route D is being developed and will commence soon. The outcomes will be reported to the Infrastructure Advisory Committee and then Council with an aim to select a preferred route.

Upon selection of a preferred a route the detail design phase will be commenced.

Strategic Considerations

Community Strategic Plan and Operational Plan

CSP Objective	CSP Strategy	DP Action	Code	OP Activity
Community Objective 1: We have infrastructure, transport and services which meet	**1.6: Manage traffic and parking in an efficient manner**	**1.6.3: Ensure new infrastructure is planned and funded to meet the needs of the current and**	**1.6.3.4**	**Deliver Mullumbimby to Brunswick Heads On Road Cycleway**

our expectations		**future population (SP)**		

Recent Resolutions

Res- 22-140

Resolved that Council:

1. Commences community consultation on Route Options A and D as part of the Mullum to Bruns cycleway project.

2. Reports the findings of the community consultation back to Council with a view to inform a single preferred route for the cycleway which is to be progressed in terms of investigation, planning and design activities.

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Mullum to Bruns Cycleway Investigation

Site Investigation and Route Options Analysis Report

Client: Byron Shire Council

Project No: BE210132
Document No: BE210132-RP-SIR-01

October 2021

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Document Control Record

Prepared by:	Mike Halliburton
Position:	Planning Lead
Signed:	
Date:	29.10.2021

Reviewed by:	Toby Bennett
Position:	Senior Civil Engineer / Project Manager
Signed:	
Date:	29.10.2021

Version No.	Description	Date	Author	Review
00	Original Issue - DRAFT	9.08.2021	MH	TB
01	Updated following Council Review	29.10.2021	MH	TB

Recipients are responsible for eliminating all superseded documents in their possession

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Executive Summary

This report provides a summary of the route options investigation and analysis completed for the proposed Mullumbimby to Brunswick Heads (Mullum to Bruns) Cycleway project for Byron Shire Council. Concept design documentation for a proposed cycleway route following Mullumbimby and Gulgan Roads has been completed by Council however significant constraints exist along this route and Council are seeking advice on potential improvements and alternative routes.

We have carried out detailed desktop and field investigations for alternative cycleway routes between the two villages and completed an assessment of the constraints and opportunities to enable Council to make an informed decision on the preferred route to take forward for design development.

Our investigations identified six (6) general route options for the cycleway as detailed in this report and summarised as follows:

- Option A – A route that follows the disused rail corridor north over the Brunswick River. This route considers two sub-options: Option A1 is a trail on the original rail formation while Option A2 is a trail off the original rail formation (i.e. adjacent to the rail corridor).
- Option B – A riverside route along the Brunswick River.
- Option C – Council's original concept design route.
- Option D – A variation to Option C with an alternative alignment through private properties from Hambly Road to The Saddle Road.
- Option E – A variation to Option C with an off-road route from Hambly Road to The Saddle Road then follows the same route as Option D from Henderson Lane.
- Option F – Similar to Option D but with a different route through private property from Hambly Road to The Saddle Road.

Each route achieves Council's overall objective for the project to provide a safe cycleway connection from Mullumbimby to Brunswick Heads. Some opportunities presented by the various route options include active transport, recreation, and regional tourism. The six (6) route options all have their own issues including land tenure, ecological impacts, construction costs, and approval and delivery timeframes. The final decision on the preferred route shall be made by the Council considering the balance of all the constraints and opportunities of each option.

A multi-criteria analysis (MCA) was completed for the route options considering a number of assessment criteria developed by the project team and weighted according to their relative importance. The MCA is a tool designed to assist Council with making an informed decision on the best route considering the full range of potential issues. It is highly subjective and it is recommended that the criteria and weightings are reviewed and adjusted as required to best reflect the values of the community and stakeholders.

The results of our MCA showed Option D scoring the highest with 3.60 followed by Option A1 (3.30), Option E (3.05), Option F (3.05), Option A2 (2.90), Option C (2.60), then Option B (2.30).

It should be noted that the MCA is a comparative analysis only and does not reflect the overall value of the development of each route. For example, Option B is probably the most attractive route in terms of user experience and tourism/recreation opportunities, however this was weighed down by

the likely issues around land tenure, construction costs, delivery timeframes, and regulatory approvals that may be extremely difficult to overcome. Conversely, Option D scored well due to the relative ease of delivery while Option A represents a good balance between the constraints and opportunities.

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1. Introduction

1.1 Background

The Mullum to Bruns Cycleway project is a proposed active transport and recreational trail linking the villages of Mullumbimby and Brunswick Heads using a combination of on road cycleways and off road shared pedestrian and cycle paths. The project is significant for the region and will provide a safe and accessible alternative transport route for the local community linking urban areas to schools and workplaces along the route helping achieve the goals of the Byron Shire Council's Community Strategic Plan and Bike Plan.

Council has previously prepared concept design documentation for a proposed route following Mullumbimby and Gulgan Roads however significant constraints exist along this route. Burchills have been engaged by Council to investigate whether any feasible alternative routes exist and to complete an assessment of all route options to assist Council with making a decision on the preferred route to take forward to design development.

1.2 Project Objectives

The objective of the project is to provide a safe cycleway connection from Mullumbimby to Brunswick Heads. The project is intended to deliver the following outcomes:

- Create a shared trail of regional significance that will attract cyclists and walkers to the area providing opportunities for tourism and some economic benefits.
- Provide a commuter and recreational pathway, separated from traffic that includes high standard safety features suitable for all confidence and skill levels.
- Provide integration with adjacent land uses including local parks, schools, workplaces, and links to the existing Council pathway network.
- Preserve any historical or culturally significance sites along the route and minimise environmental impacts through the design process.

1.3 Scope

The scope of this site investigation report includes the following tasks:

- Background information review to establish constraints, including the previous work on this project and other similar shared use pathways;
- Desktop investigation using GIS databases to determine potential alternative routes;
- Field investigations to identify opportunities and constraints for each route;
- High level cost estimates for each route for comparison purposes; and
- Route options analysis via a structured MCA to compare the outcomes from our technical assessment and field investigations.

2. Investigation of Route Options

2.1 Initial Desktop Assessment

Our initial desktop investigations were focussed on finding potential alternatives to Council's concept design route. Three (3) main corridors of investigation were identified as follows:

- Rail route – a trail following the disused rail corridor north from Mullumbimby and connecting to Brunswick Heads via a combination of road reserves, private property, and existing paths.
- River route – a riverside trail following the Brunswick River.
- Concept route – a route that generally follows Council's concept design route with alternative alignments through private property and road reserve to improve the route.

The potential cycleway routes and alternatives identified through our initial desktop investigation are presented in Figure 2.1.

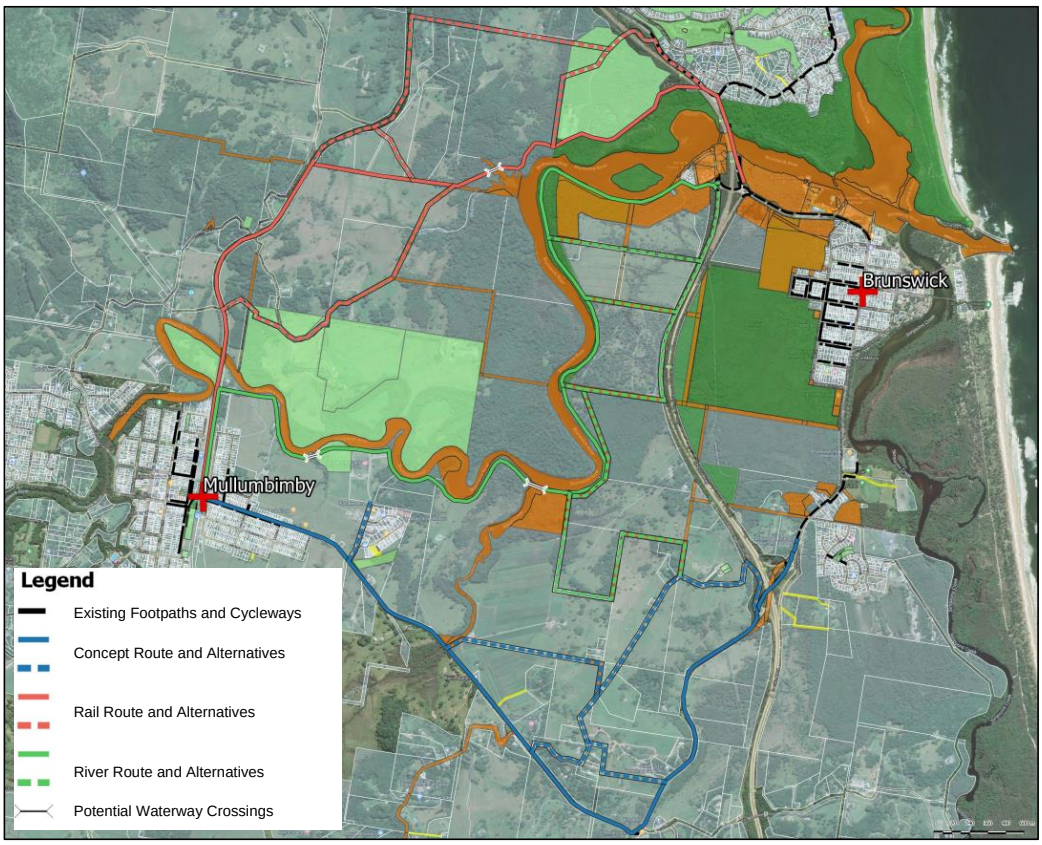


Figure 2.1 Potential Route Options

2.2 Site Investigations

A visual inspection of each route was then carried out where possible to observe the physical constraints on the ground and confirm the best routes to take forward for further assessment. Some of the key observations from our field investigations are outlined below.

User safety is a critical element in the consideration of options. The existing shoulder on Mullumbimby Road is very narrow for cyclists. There is also limited room to develop an off-road path.

The concept design alternative would require users to navigate a steep climb from Hambly Road to Hendersons Lane. Ideally, a switchback trail would be constructed but this will require land acquisition.

Byron Shire Council has expressed a desire to develop a cycle link between Mullumbimby and the Manns Road industrial area.

The rail route would take advantage of the magnificent bridge over the Brunswick River at Mullumbimby. Whilst very attractive to users, it will be a significant cost – particularly if Council wish to pursue a cycleway off the existing railway line

Another smaller creek crossing on the rail route would require the existing bridge to be refurbished or construction of a new low level bridge or culvert crossing

Image: David Michie

The rail route would make use of the 50 m long tunnel under Vallances Road. Bypassing the tunnel in pursuit of an off alignment route would be challenging and costly.

Image: David Michie

Using existing roads such as Synotts Lane would reduce costs. An off-road path or an upgrade to the existing road surface is an option.

The rail route would require the development of a trail through virgin bushland and river flats between the eastern end of Synotts Lane and Brunswick Valley Way, potentially passing through land occupied by the Ocean Shores Sewage Treatment Plant.[1]

Image: David Michie

Developing a trail along the Brunswick River will require good design to navigate through the caravan park at Mullumbimby.

[1] One option put forward by David Michie followed a route closer to the Brunswick River, staying south of the Ocean Shores Sewage Treatment Plant, travelling under the Pacific Motorway close to the northern shore of the Brunswick River, and onto the Brunswick Valley Way bridge to cross the Brunswick River.

A river trail can be constructed on existing trails in part (with upgrades) thus minimising environmental impacts.

The river route would use existing high quality infrastructure such as the boardwalk under the Pacific Motorway and Brunswick Valley Way.

The rail or river route would use existing infrastructure east of the Pacific Motorway to access Brunswick Heads. New construction and management decisions may be required to allow cyclists to use some sections.

2.3 Options Refinement

Based on our initial site investigations and subsequent review by Council, six (6) routes were identified as being potentially feasible for the development of the cycleway as follows:

- Option A – a trail using the existing rail corridor north from Mullumbimby to Synotts Lane, along Synotts Lane (constructed road) and Synotts Road (part of which is a privately owned former road reserve) to the sewage treatment plant and onto Brunswick Valley Way (via Smokey Valley Way). The trail would then continue to Brunswick Heads using Council's existing footpath network.
- Option B – a riverside trail using the roadside trail (Option C) from Mullumbimby to Manns Rd, along Manns Road to the Mullumbimby caravan park, and then following the Brunswick River to Riverside Crescent west of the Pacific Motorway and using existing roads and paths to access Brunswick Heads.
- Option C – the concept alignment as initially investigated by Byron Shire Council following Mullumbimby and Gulgan Roads.
- Option D – a variation to Option C which follows Mullumbimby Road from Mullumbimby to Hambly Road then follows a privately owned former road reserve to Henderson Lane, the Saddle Road and back to Gulgan Road.
- Option E – a variation to Option C which follows Mullumbimby Road from Mullumbimby to Hambly Road, then an off-road route to The Saddle Road then travels along The Saddle Road to its junction with Henderson Lane then follows the same route as Option D.
- Option F – a variation to Option C which follows Mullumbimby Road from Mullumbimby to Hambly Road, follows the same alignment as Option D very briefly then stays on Hambly Road (named and formed but privately owned) and a series of formed farm access tracks on private land heading north before turning east onto publicly owned road reserve, and turning south onto the more western end of the Bashforth Lane (a named road that appears to be constructed only for property access) before joining The Saddle Road (and then follows the same route as Options D and E).

Options B, D, E, and F vary from Option C at the Mullumbimby end of the route whereby they include a separated off-road cycleway between Manns Road and Mullumbimby to improve user safety.

The route options described above are general routes only and are not intended to described the final alignment of the cycleway. A more precise alignment for the preferred route would need to be determined during the concept design phase of the project and may vary considerably from these descriptions following detailed site investigations and community consultation.

The six (6) route options described above are present in Figure 2.2.

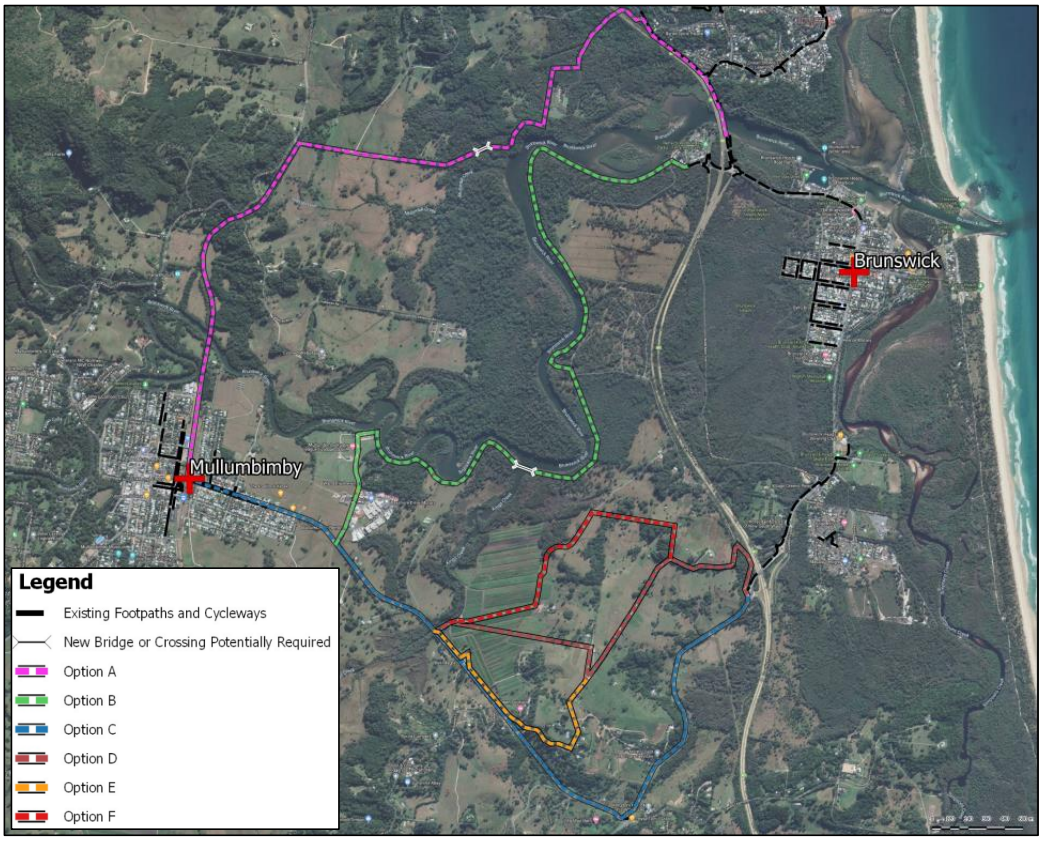


Figure 2.2 Refined Route Options

3. Development Constraints

3.1 Environmental and Coastal Management Overlays

The environmental constraints of Options C, D, E, and F are relatively limited. Roadside vegetation is likely to need clearing to create space for an off-road path particularly east of Hambly Road (affecting Options C and E) and a new separated bridge over Kings Creek (needed for Options C, D, E, and F) will pass through Coastal Wetland and Coastal Wetland Proximity Area. The north western section of Option F will pass through Coastal Wetland Proximity Area and may impinge upon Coastal Wetland. Some of the eastern portion of Option A passes through Coastal Wetland and Coastal Wetland Proximity Area. The Option A alternative route (put forward by David Michie) passes through more land classified as Coastal Wetland and Coastal Wetland Proximity Area and more land classified as Koala Habitat than Option A. It may also pass through the existing Brunswick Heads Nature Reserve. Most of Option B will be constructed in land classified as either Coastal Wetland, Coastal Wetland Proximity Area, or Koala Habitat.

Any routes requiring earthworks and/or vegetation clearing within these areas are likely to trigger the need for an environmental impact study which can have significant cost and time implications for the project. The mapped environmental constraints (High Environmental Value and Koala Habitat) are presented in Figure 3.1 while the Coastal Management SEPP mapping is presented in Figure 3.2.

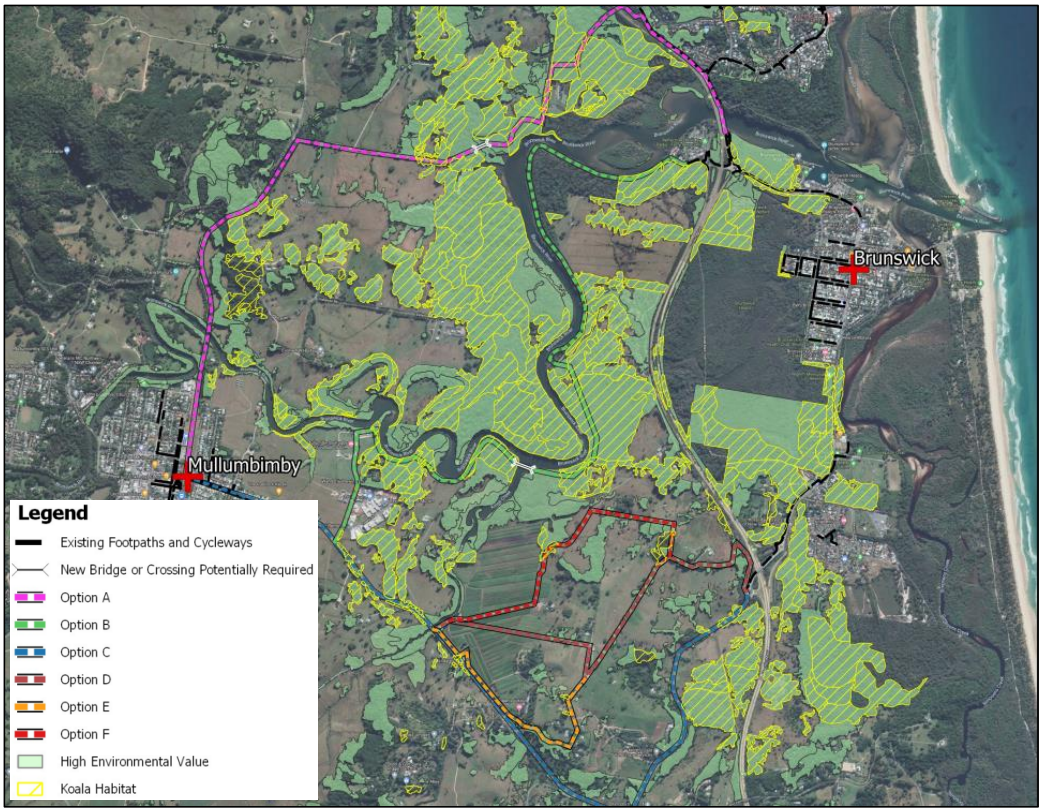


Figure 3.1 Environmental Constraints

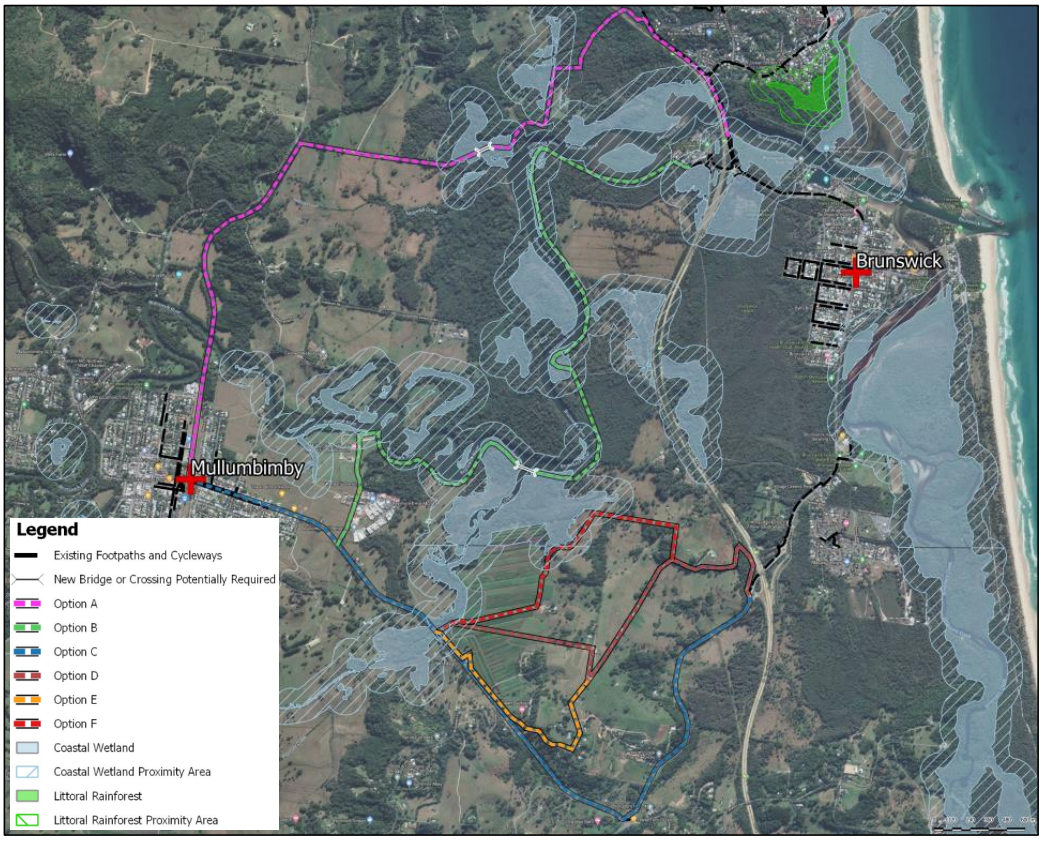


Figure 3.2 Coastal Management SEPP

3.2 Flood Inundation

All routes are affected by the 1 in 100 year flood extents and may be subject to flood impact assessment and/or be required to achieve some level of flood immunity. It is worth noting that Option F is subject to flooding for more of its route than comparative options in the same locality.

The 1 in 100 year flood inundation overlay mapping is present in Figure 3.3.

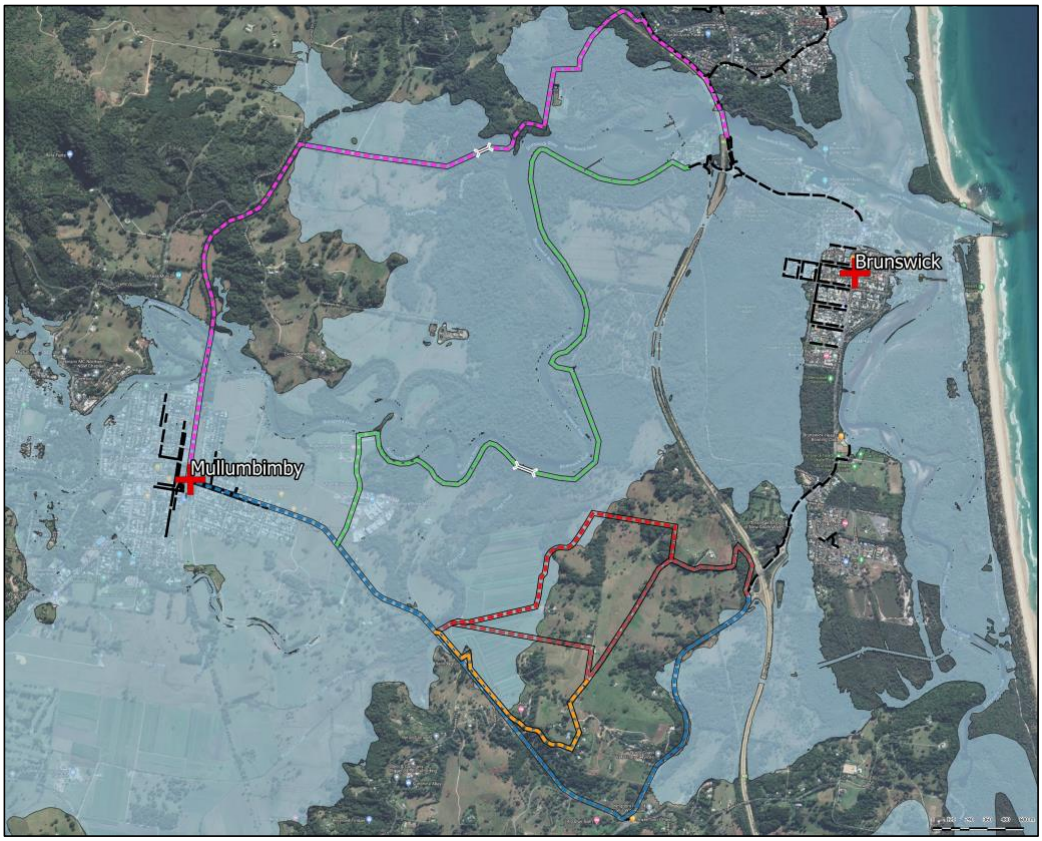


Figure 3.3 1 in 100 Year Flood Inundation

3.3 Topography

All routes except Option B encounter difficult terrain that may require significant earthworks to achieve suitable grades on the trail to accommodate a wide range of user groups. Suitable grades can be achieved by creating switchbacks along steeper sections otherwise some steeper sections of the trail may not be suitable for all users.

Option B being almost entirely flat would produce the most accessible trail.

A map showing the slope constraints along the routes is presented in Figure 3.4.

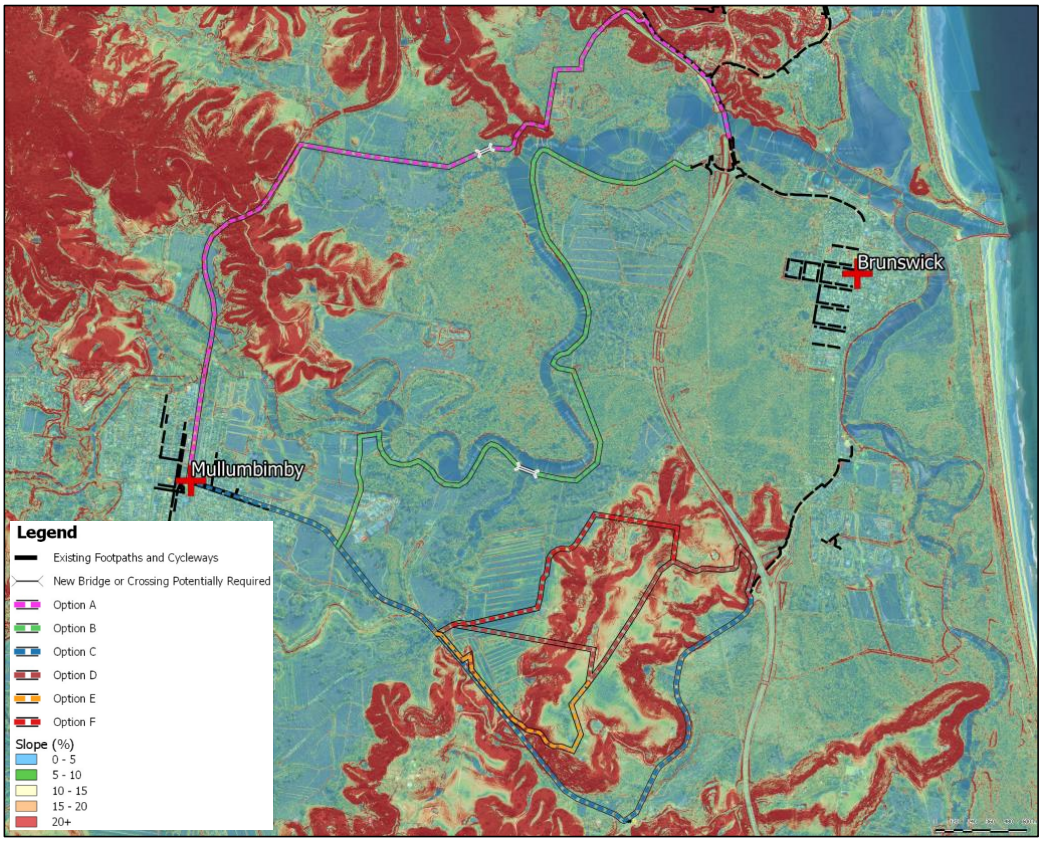


Figure 3.4 Topography

3.4 Impact on Route Options

The constraints mapping shows only a limited number of physical and legislative constraints and how they might impact upon the various options. These constraints are an element in choosing a preferred option and are considered as part of the Multi Criteria Analysis where they make a material difference between options.

A summary of the development constraints outlined above and their effects on the route options are presented in Table 3.1 below. Higher resolution constraints mapping is included in Appendix A.

Table 3.1 Impacts of Mapped Constraints on Route Options

	Environmental	Coastal Management SEPP	Flooding	Topography
Option A	Some impact – Eastern section (from end of constructed road on Synotts Lane) passes through Koala Habitat and Areas of High Environmental Value (mostly on fringe)	Proposed bridge crossing in Coastal Wetland, while the eastern section more generally passes through Coastal Wetland Proximity Area (less impact on wetlands than Option B)	Most of route subject to 1 in 100 year inundation	Shown as subject to steep slope but rail corridor is relatively flat (passing through steep slopes in cuttings). Short steep climb from the sewage treatment plant to Brunswick Valley Way
Option B	Some impact – Trail passes through Koala Habitat and Areas of High Environmental Value	It is likely that almost the entire route passes through areas classified either as Coastal Wetland or Coastal Wetland Proximity Area (the predominant classification). This will be significant in terms of environmental impact generally and approvals needed	All route subject to 1 in 100 year inundation	No impact – flat route
Option C	Low impact – clearing of roadside trees will be required along route (possibly impacting on land with High Environmental Value and Koala Habitat)	Low impact – on constructed roads	Mullumbimby end subject to 1 in 100 year inundation	Quite steep between Hambly Road and the highway
Option D	Some impact – clearing of roadside trees will be required along route (possibly impacting on land with High Environmental Value and Koala Habitat). New section off Hambly Road would pass through environmentally unconstrained farmland. Lower impact than Option C.	Low impact – generally on constructed roads	Mullumbimby end subject to 1 in 100 year inundation	Quite steep on the proposed new section between Hambly Road and Henderson Lane

Table 3.2 Impacts of Mapped Constraints on Route Options (cont.)

	Environmental	Coastal Management SEPP	Flooding	Topography
Option E	Some impact – clearing of roadside trees will be required along route (possibly impacting on land with High Environmental Value and Koala Habitat). In addition, more clearing may be required at the junction of Mullumbimby Road and The Saddle Road to provide better sightlines – though it is acknowledged that the path will likely be off-road so no more clearing would be required to establish sightlines than is otherwise required for an off-road path.	Low impact – on constructed roads	Mullumbimby end subject to 1 in 100 year inundation	Quite steep between Hambly Road and The Saddle Road though not as steep as the connections to The Saddle Rd in both Options D and F.
Option F	Some impact – clearing of roadside trees will be required along route (possibly impacting on land with High Environmental Value and Koala Habitat). New section off Hambly Road would pass through environmentally unconstrained farmland. Lower impact than Option C.	The north western section will pass through Coastal Wetland Proximity Area and may impinge upon Coastal Wetland depending on final location.	Mullumbimby end and north western segment of route through farmland subject to 1 in 100 year inundation	Quite steep on the proposed new section between Hambly Road and Bashforth Lane although slope may be slightly less than corresponding slope for Option D

4. Other Considerations

4.1 User Experience

User experience relates to the accessibility, utility, and enjoyability of the route for the intended users. The more enjoyable the experience for the user, the more likely they are to use it, representing a good return on investment for the trail owner. A high quality user experience, including the development of a “consistent” user experience and ease of user legibility delivers good outcomes in terms of maximising patronage.

In general trail planning, user experiences including tangible factors such as easy and functional trailheads and ease of access and intangible ones such as landscape values. In this particular case, the first two considerations are not particularly relevant due to the nature of the user groups. However, landscape values will be a factor as will accessibility of the route. Bicycle facilities can serve a wide range of existing and potential user groups.

The route (whichever one is chosen) will need to provide an improved cycling environment for a range of users: commuters cycling to work, cyclists using the route for utility purposes (accessing retail outlets in particular), general recreational cyclists, and cycle tourists and visitors to the region who may be attracted to riding to nearby attractions. Whilst commuter cyclists are likely to be somewhat less concerned with the attractiveness of a route, the other user groups will factor in attractiveness as part of their consideration. Commuter cyclists are likely to place a higher value on utility – which is still part of the user experience.

There also needs to be thought given to the possible use of the route by pedestrians (for all the same purposes as cyclists) – they are likely to give a high weight to route attractiveness.

4.2 Cyclist Safety

Bicycle facilities must be safe and convenient if they are to be well used and popular. Any cycle route should be planned with safety as well as convenience in mind, as this will be a critical factor in the route’s performance.

The key reason Byron Shire Council is looking at a cycle link is to encourage cycling in particular and to provide a safe environment in which to do so – regardless of the user groups. Commuter cyclists may be more confident riding on a busy road. Council’s desire to explore a range of route options indicates that cyclists (of all abilities) are not comfortable riding on the existing road network. Most other groups who may not cycle as often are less likely to be both competent and confident about riding on a busy road. Inexperienced cyclists (adults and children) should be kept well away from fast flowing traffic, especially when their primary purpose for cycling is leisurely sightseeing.

4.3 Land Tenure and Potential Acquisitions

All routes are likely to require some land acquisitions – it is not entirely clear at this stage until potential routes are examined more closely. Figure 4.1 shows the existing land tenure along each route with further details provided below.

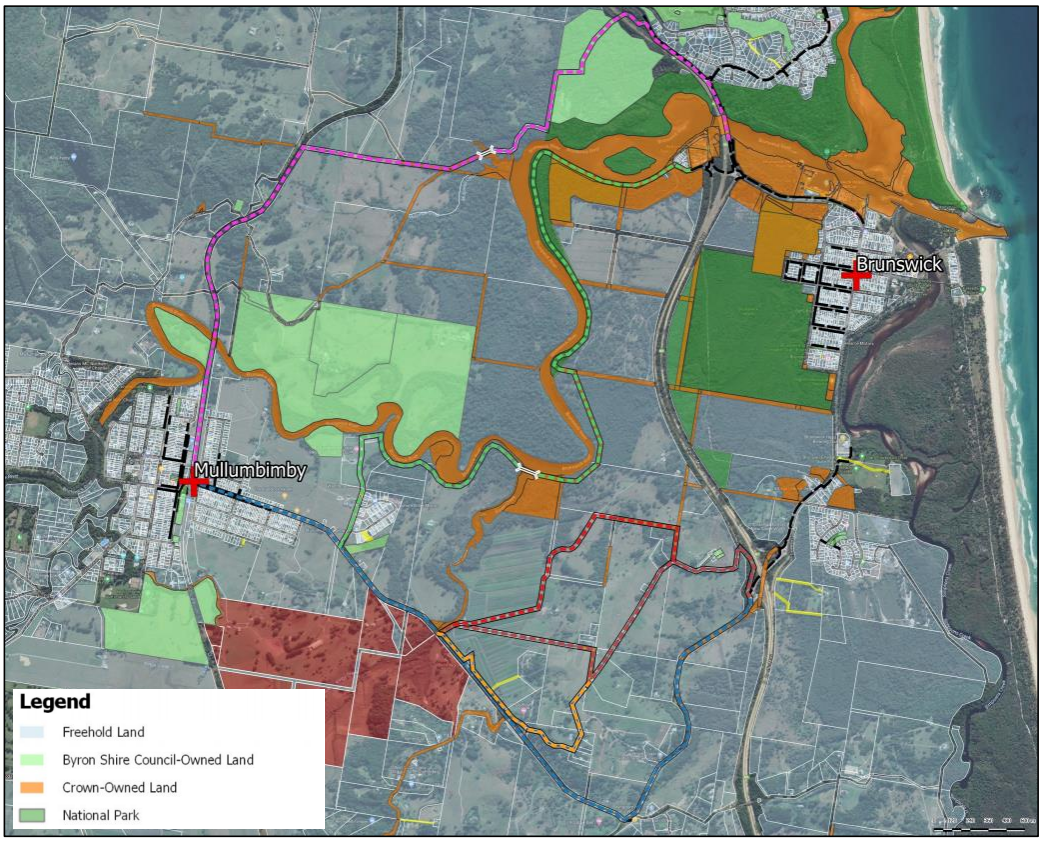


Figure 4.1 Land Tenure

4.3.1 Option A

The rail corridor and Synotts Lane are public land reserves. A former road reserve (now privately owned) runs from the eastern end of Synotts Lane partway along towards the western boundary of the sewage treatment plant. The sewage treatment plant is on Council-owned land while the adjoining land is national park.

4.3.2 Option B

The potential route along the river may be able to be kept within public land. There appears to be some road reserves which could be utilised as well as Crown land immediately adjoining the river although narrow bands of land may be required to supplement public land in places. This option runs through sensitive environmental areas along the river edge.

4.3.3 Option C

Minor land acquisitions may be required along road frontages where the current road reserve is not sufficient to construct a roadside trail.

4.3.4 Option D

The section from Hambly Road to Henderson Lane would require property acquisition and could follow the approximate alignment of an old road reserve. However, this original alignment represents a steep climb, and it would be a better option if a trail can be constructed using switchbacks to reduce the climb from Hambly Road to Henderson Lane. Land acquisition gives an opportunity – in the acquisition process – to seek a better "line of trail" rather than following the original road reserve. This has the potential to deliver a better trail outcome and possibly a better outcome for the landholder.

4.3.5 Option E

As with Option C, minor land acquisitions may be required along road frontages on Mullumbimby Road where the current road reserve is not sufficient to construct a roadside trail.

4.3.6 Option F

The section from Hambly Road to the western end of Bashforth Lane would require property acquisition and could follow in part the approximate alignment of Hambly Road and use existing farm access tracks. Whilst Hambly Road is a named constructed road, it is no longer in public ownership. The only publicly owned land for this route is at its eastern end where the named Bashforth Lane joins The Saddle Road (as noted above, Bashforth Lane in this location appears to be constructed only for property access).

4.4 Native Title

Much of the potential alignment of Option B (the river trail) is included in the recent native title determination for the Bundjalung People of Byron Bay (Arakwal). Mapping shows that, if the potential route is developed on Crown land, such land is included within the non-exclusive native title tenure. This means that while the native title holders have the right to use the land, they cannot do so to the exclusion of others. Advice from BSC is that this has financial implications for the Council. The alternative is to locate the river trail outside the land subject to this determination (i.e. away from Crown land) but this would mean it would need to be developed on private freehold land with some possible development on road reserves.

4.5 Impacts on Existing Land Uses

All options will have some impacts on existing land uses and adjoining landholders – these can be satisfactorily dealt with using a number of mitigation measures. Option A may mean using land which currently houses the Ocean Shores Sewage Treatment Plant. Byron Shire Council needs to ensure it is satisfied that a trail can be built on this land and any management concerns (notably but not only around secure access) can be addressed through the design process.

4.6 Bicycle Travel Times

A cycling travel time assessment was completed for each route considering distance, grades and intersection delays. The estimated travel time was based on:

- the total distance cycled at a speed of 20 km/h.[2]
- for sections of the route where the average gradient was 5%-10% the speed was slowed to 10 km/h.
- any sections with an average gradient of over 10% had a speed of 5km/h.
- a penalty of 20 seconds per intersection was applied based on the assumption that cyclists would slow down when approaching an intersection before speeding up again.

Table 4.1 shows the six route options with the maximum average gradient over the hill distance, the number of intersections crossed and the final estimated travel time. Detailed calculations and gradient profiles are included in Appendix C.

Table 4.1 Bicycle Travel Time Assessment

Option	Distance (km)	Max Avg Grade	Intersections	Estimated Travel Time
Option A	7.9	6.1% over 1.03 km	8	32 min
Option B	8.9	Entire route <5%	11	27 min
Option C	8.0	10% over 1.15 km	23	35 min
Option D	7.6	14% over 400 m	24	39 min
Option E	8.1	7.4% over 700 m	23	38 min
Option F	7.6	10% over 400 m	23	37 min

4.7 Strategic Planning Considerations (Connectivity)

An assessment of the strategic planning considerations for each route has been completed including existing and future/emerging populations/land uses, demographic information such as economic disadvantage of communities, and passive surveillance opportunities.

Note that future land use changes are proposed through several BSC planning documents including:

- Residential Strategy (BSC, 2020)
- Business and Industrial Lands Strategy (BSC, 2020)
- Brunswick Valley Sustainability Centre Management Plan (BSC, 2017)

Extracts of these BSC documents are included in Appendix D.

Option A has the highest population within a 500 m buffer, primarily due to it serving Ocean Shores. It also has the potential to serve the proposed Brunswick Valley Sustainability Centre (including future community and housing project). It passes close to currently unused Council land bounded by the rail corridor and Brunswick River ('leaf land'). The route is relatively isolated as it predominately

[2] We based the 20 km/h on Austroads guidance 'Cyclists typically travel at speeds between 20 km/h and 30 km/h'. We then made some educated assumptions on how much a rider may slow down based on gradient and then applied these consistently across the routes.

traverses a rural area along the disused rail corridor, however, passive surveillance would likely increase if further sections of the rail trail are delivered to the north and south.

Option B has the lowest population within its 500 m buffer but has potential to serve the existing and future Mullumbimby Industrial Estate and large residential investigation areas to the south of Mullumbimby. This option will also serve areas of relative economic disadvantage, providing a cheap travel choice for these residents. This route along the river has limited surveillance from surrounding areas.

Option C serves the second highest existing population (over 2,600 people) within 500 m of the route, but also has the potential to serve future residential populations in southern Mullumbimby, a 40 lot subdivision at McAuley's Lane and future residential areas at southern Brunswick Heads. It is also close to two potential industrial expansion areas at Mullumbimby Industrial Estate and Gulgan West. This route follows the existing major road network so has the greatest level of passive surveillance.

Options D, E and F are similar in terms of existing and future population catchments, but these areas are also the least disadvantaged communities in the area at present. Surveillance levels would be relatively low as the routes are away from the main roads, however, Option E would probably have greater surveillance as it follows an existing, formed road (The Saddle Road).

A summary of the population analysis is provided in Table 4.2, with supporting mapping found in Appendix E.

Table 4.2 Summary of Strategic Considerations

Route	Pop. Within 500m	Future Land Use Changes	SEIFA[3]	Passive Surveillance
Option A	2884 Highest due to proximity to Ocean Shores	Council owned "leaf land" (no plans on future use of this site). Brunswick Valley Sustainability Centre includes proposed 20 Ha Community and housing project area	Some disadvantaged communities	Low-Med Rail corridor and rural area, additional surveillance likely if rail trail developed further
Option B	2229 Lowest due to river/rural location	Mullumbimby industrial estate expansion (potential) Potential future road connection and residential expansion in southern Mullumbimby	Most disadvantaged communities	Lowest Along river/rural areas with limited escape routes
Option C	2634	Future large lot residential (approx. 40 dwellings) 256 infill and pipeline dwellings (Brunswick Heads south)	Least disadvantaged communities	Highest Follows existing major road network
Option D	2568	256 infill and pipeline dwellings (Brunswick Heads south)	Some disadvantaged communities	Low Rural land and existing/unformed roads
Option E	2595	256 infill and pipeline dwellings (Brunswick Heads south)	Least disadvantaged communities	Med Follows existing formed road
Option F	2569	256 infill and pipeline dwellings (Brunswick Heads south)	Least disadvantaged communities	Low Rural land and existing/unformed roads

[3] There are various Socio-Economic Indexes for Areas (SEIFA) from the 2016 Census. We used the Index of Relative Socio-economic Disadvantage (IRSD) in our analysis, which is a general socio-economic index that summarises a range of information about the economic and social conditions of people and households within an area. Unlike the other indexes, this index only measures relative disadvantage.

The numbers are Australia-wide, ranging from 188 (most disadvantaged) to 1186 (least disadvantaged). As you can see from the Byron numbers (scores), they are all fairly high numbers i.e. the residents are not very disadvantaged. The lowest score in the study area was Mullumbimby (871) and the highest was Ocean Shores (1013).

IRSD/SEIFA scores have had minimal impact on the connectivity criteria assessment score.

4.8 Timeframes For Delivery

The process for developing any of these route options will vary depending on the complexity of the issues that need to be considered. Key issues on delivery timeframes are likely to include:

- Regulatory approvals;
- Acquisition of land for the trail corridor including private lands, rail corridor, and crown land;
- Cost and availability of funding;
- Requirement for Environmental Impact Studies; and
- Difficulty of construction.

In summary, Options C, D, E and F can be delivered relatively quickly though the necessary works for Option C and to a lesser extent Option E may slow construction down. Options D and F have relatively limited major engineering works but require negotiations and possible resumptions, while Option C and E require very limited negotiations but significantly more major construction works. Option A will take more time (with the length of time primarily dependent on the timeline for closing the relevant section of the railway line) while Option B is likely to take the longest time given the complex approvals and negotiations needed to deliver the option.

Potential issues with delivery timeframes for each route are discussed in detail below.

4.8.1 Option A

The Coastal Management SEPP will trigger the need for environmental approvals for the eastern section of this corridor as the proposed bridge crossing falls within a designated Coastal Wetland and the potential trail route (eastern section) more generally passes through a Coastal Wetland Proximity Area.

There is one parcel of private land along the trail route and an easement or similar will need to be secured through this parcel. This may take time to negotiate. In addition, the rail corridor between Argyle Street and Synotts Lane will need to be closed by an act of Parliament and use rights conveyed to Byron Shire Council. Given the timeframes for other railway closures to facilitate trail development (Tumbarumba Rosewood and parts of the Northern Rivers line), this may cause a significant time delay.

There are no native title considerations so this is not an impediment to development to this route.

Construction of the trail presents some difficulties at the eastern end in particular as well as renovation work likely to be required on the railway bridge at Mullumbimby. This may contribute to a slower than desirable development of this trail.

4.8.2 Option B

It is likely that almost the entire route passes through areas classified either as Coastal Wetland or Coastal Wetland Proximity Area (the predominant classification). The route is likely to require significant clearing and approvals under Coastal SEPP and most likely require an EIS. This will contribute to a long approvals time for this option.

If the trail is developed on Crown land, there will be no need to secure additional private land for the trail (noting native title issues below).

If this trail option were to be developed on Crown land (the preferred option to securing a significant length of privately owned land), much of the potential alignment is included in the recent native title determination for the Bundjalung People of Byron Bay (Arakwal). Whilst it is included within the non-exclusive native title tenure, there will be the need to negotiate its use with the successful native title claimants (despite the fact that the determination does not allow them to enjoy the land to the exclusion of others). Council has advised that this determination will have financial implications to the use of the land; it is not known what these implications are likely to be but it is likely to involve significant time in negotiations.

Construction of the trail presents difficulties along much of its length including a new bridge over Kings Creek and likely significant clearing as well as challenges associated with building so close to a river. This will contribute to a slower than desirable development of this trail.

In summary, given the need for environmental approvals and native title associated negotiations, delivering on this route is likely to take the longest period of time of all options.

4.8.3 Option C

This option will be relatively easy to deliver in terms of approvals and construction timeframes. The upgrading of the intersection of Mullumbimby Road and Gulgan Road is likely to have some impact on the delivery timeframe. There are some difficult construction elements but no significant approval issues – other than for a separated bridge over Kings Creek. It is understood that Council has had some initial discussions with one of the adjoining landholders about securing some land to allow an alternative alignment near the intersection of Mullumbimby Road and Gulgan Road, so if this route was to proceed, this initial discussion would improve the timeframe for delivery.

4.8.4 Option D

This option is likely to be relatively simple to deliver, though negotiations with landholders between Hambly Road and Henderson Lane will take time as there has been no discussions to date and it is likely that land resumptions will be required though easements could be negotiated.

4.8.5 Option E

This option will be the easiest to deliver in terms of approvals and construction timeframes. There are some difficult construction elements but no significant approval issues – other than for a separated bridge over Kings Creek.

4.8.6 Option F

This option is likely to be relatively simple to deliver, though – as with Option D - negotiations with landholders between Hambly Road and Bashforth Lane will take time as there has been no discussions to date and it is likely that land resumptions will be required though easements could be negotiated. Given the greater length of private land to be utilised, it will take longer to deliver than Option D.

4.9 Costs of Construction

Undertaking a high level assessment at this early stage of the process means that costs cannot be anticipated with any sense of certainty. What is known in terms of major expenditure items is that:

- Option A will require the redecking and inclusion of handrails on the railway bridge over the Brunswick River (as a minimum treatment assuming the bridge is structurally sound) and the construction of a new bridge in the vicinity of the junction of the Brunswick River and Midjimbal Creek. The use of existing infrastructure such as Synotts Lane will reduce the need for new trail construction – although an upgrade of the road or construction of an off-road path may be appropriate.
- Option B will require the construction of a new bridge over Kings Creek. It is also not clear how much existing trail could be used as "base material" for the trail. There is currently a cleared envelope from Riverside Crescent in Brunswick Heads heading west along the river. This option will also have some significant challenges gaining the required approvals given it would run through a very sensitive environmental area. We have significant concerns about the possibility of securing these approvals and are likely to have significant time and cost implications including an Environmental Impact Study.
- Option C is expected to require some large retaining walls and earthworks along much of the route which will be a significant expense.
- Option D may be cheaper than Option C given that the more expensive sections of the existing road corridor are avoided though the need for a new bridge to cross Kings Creek will add to the cost of this option.
- Option E is expected to require some large retaining walls and earthworks along some of the route (though less than Option C) which will be quite expensive.
- Option F is similar to Option D, in that the more expensive sections of the existing road corridor are avoided though the need for a new bridge to cross Kings Creek will add to the cost of this option.

The capital costs for each option have been estimated using Council's concept design estimate as a baseline for comparative purposes only – these values should not be used for project budget estimates. The total project development costs include a 30% contingency and a 15% allowance for design, approvals, and other project costs.

Table 4.3 Comparative Cost Estimate

	Major Cost Items	Estimated Capital Cost (for comparison only)
Option A	Earthworks Pavement and Surfacing Bridges and Treatments Embellishments	$7.31m
Option B	Earthworks Pavement and Surfacing Acquisitions / Compensation Approvals / EIS Bridges / Trail on Structure Embellishments	$13.58m
Option C	Earthworks Pavement and Surfacing Retaining Walls Bridges and Treatments Roadworks Embellishments	$9.33m
Option D	Pavement and Surfacing Property Acquisitions Bridges and Treatments Embellishments	$8.50m
Option E	Pavement and Surfacing Property Acquisitions Bridges and Treatments Embellishments	$8.34m
Option F	Property Acquisitions Pavement and Surfacing Bridges and Treatments Embellishments	$12.32m

Note the above costs are based on preliminary investigations completed to date and are subject to potential variability as more detailed investigations are carried out. The estimate also includes assumptions about the final surfacing and bridge treatments which are the most significant components of the project.

4.10 Legal Access to Rail Corridor

In addition to the issue of using road reserves and other public land for each option, there is the issue of using the existing railway corridor land which will impact on Option A. Railway lines in NSW must be closed by an Act of Parliament before they can be used for any other purpose such as a trail or pathway. This has been a significant impediment until recently in progressing the development of trails on disused railway corridors. The process in NSW is progressing based on the experience of the pilot project – the Tumbarumba-Rosewood Rail Trail. The *Transport Administration Amendment (Closures of Railway Lines in Northern Rivers) Bill 2020* was passed by both Houses of Parliament in October 2020.

This is a critical step toward trail construction.

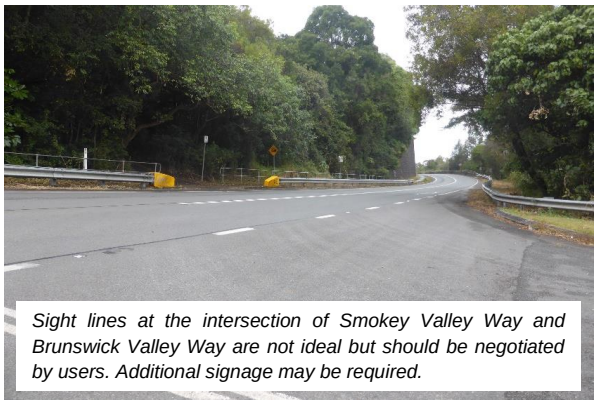
The bill is a simple bill with four (4) clauses as follows:

- specify the geographic extent of the closure;
- allows the rail infrastructure owner to sell or otherwise dispose of the land and remove the railway tracks and other works;
- specifies that the land remains in public ownership (by prescribing what entities the land can be sold or given to); and
- specifies that the land may be leased for recreation, tourism or community and related purposes only.

The Bill closely resembles the *Transport Administration Amendment (Closure of Railway Line Between Rosewood and Tumbarumba) Act 2017.* Any legislative attempt to close this section of railway line (from Mullumbimby to Synotts Lane) should be relatively easy to draft once a decision is made to proceed – but such a decision is needed to progress this option.

4.11 Existing Intersection Configurations

Option A brings users through the Ocean Shores sewage treatment plant onto the Smokey Valley Way. It is a short steep climb to the intersection of the Smokey Valley Way and the Brunswick Valley Way. Users would then cross over to the existing path which runs down the eastern side of the Brunswick Valley Way. The intersection provides limited sight lines; however, it is at the top of a climb and users are likely to be travelling quite slowly. Consequently sightlines are considered sufficient for safety.



Sight lines at the intersection of Smokey Valley Way and Brunswick Valley Way are not ideal but should be negotiated by users. Additional signage may be required.

Option C is affected by the proposed upgrade of the intersection of Mullumbimby Road and Gulgan Road that may include the installation of a roundabout. Whilst not critical in determining the desirability or otherwise of this route, allowances will need to be made in the design.

4.12 Aboriginal Cultural Heritage Sites

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) was completed for the project area to check whether any of the routes might be affected. The search returned a total of 35 different sites and objects which may affect Options C, D, E, and F as shown in Figure 4.2.

The details of the items returned through the extensive search are included in Appendix B.

Further investigation is required to confirm the details of these site/objects however there may be an opportunity for the project to help preserve and protect these important sites.

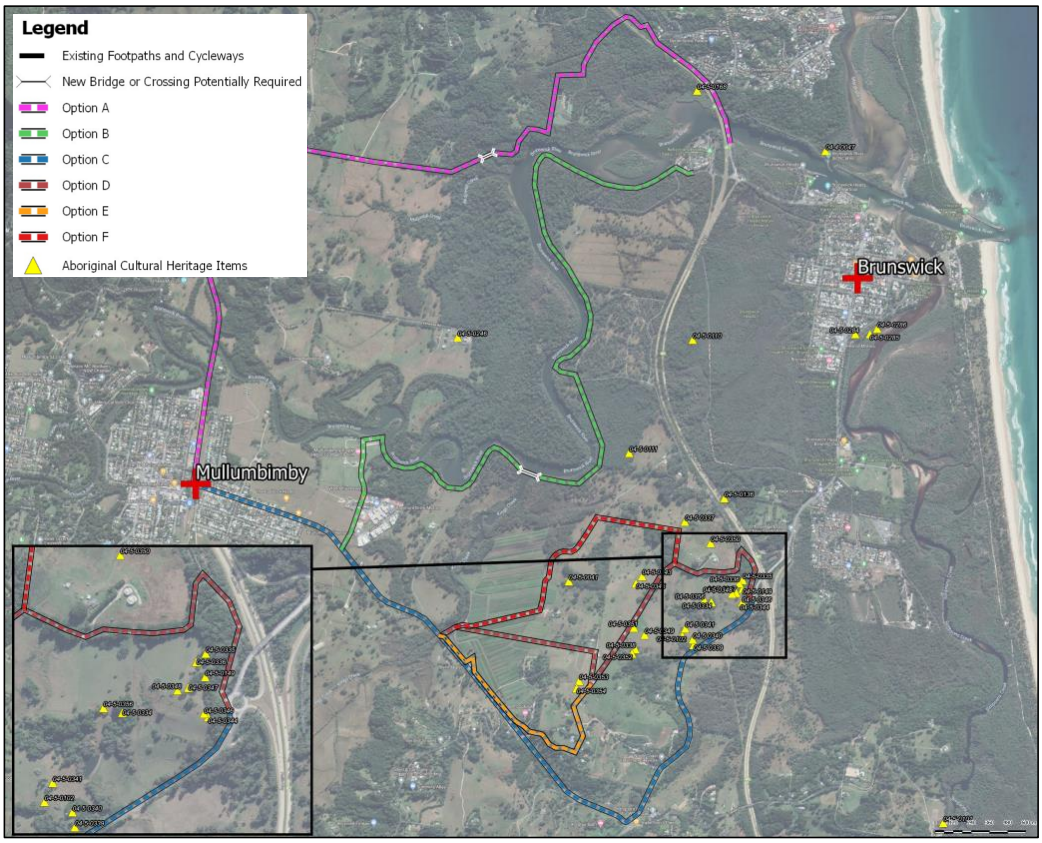


Figure 4.2 Aboriginal Heritage Locations

5. Route Options Analysis

5.1 Multi Criteria Analysis

A high level Multi Criteria Analysis (MCA) has been prepared which includes consideration of the key constraints and opportunities outlined above. The framework of the MCA includes the following:

- Six (6) route options as described above;
- A set of social, environmental and economic evaluation criteria selected for the project;
- A series of weightings that represent the relative importance of each of the assessment categories and criteria; and
- A score from 1 (low score) to 5 (high score) for each criterion.

The MCA process is not intended to be definitive but is a useful tool to differentiate between the options. The selected criteria and weightings have been developed by the project team in conjunction with Council officers however these are all highly subjective and may be altered to achieve an entirely different outcome.

5.2 Criteria Categories

Weighting against each category of social, environmental and economic considerations was determined based on their importance. It was decided to allocate even weighting against each of the nominated criteria (33% each). Following this, a “long list” of evaluation criteria was developed in each category before shortlisting to the preferred criteria below.

5.3 Evaluation Criteria

The initial “long list” of criteria considered in the MCA is presented in Table 5.1.

Table 5.1 Criteria Considerations – Long List

Long List of Criteria Considered	
Capital Cost	Impact on local residents
Road Safety	Constructability
Flooding	Difficulty of environmental approvals
Environment Impact	Visual amenity
Land Tenure and Native Title	Property Acquisition
Construction Impacts	Pedestrian / cyclist safety
Bridges and Waterway Crossings	Cultural Heritage
Usability / Usefulness to Community	Directness (length) of Route

5.4 Selected Key Criteria

The selected key criteria, categories, descriptions, and weightings are presented in Table 5.2.

Table 5.2 MCA Criteria and Weightings

Criteria	Category	Description	Weighting
1. User Experience	Social	The accessibility, utility, enjoyability, and attractiveness of the route for the intended users	5%
2. Cyclist Safety	Social	The extent to which the route is free from major safety issues (e.g. interaction with road users)	20%
3. Approvals Risk	Economic	Potential time and cost of approvals	15%
4. Ecological Impacts	Environmental	Extent of vegetation clearing required and potential conflicts with ecological values	20%
5. Construction Costs	Economic	Cost of delivering the route	20%
6. Delivery Timeframe	Social	Desirable length and travel speed	10%
7. Connectivity	Social	Population within 500 m and travel time	10%

5.5 Criteria Weightings and Scores

Each route was then given a score against each criteria from 1 (low or poor score) to 5 (high or positive score) and given a final ranking based on the weighted score as shown in Table 5.3.

Table 5.3 MCA Scoring and Results

Criteria	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Weighted Score**	**Rank**
Weighting	**5%**	**20%**	**15%**	**20%**	**20%**	**10%**	**10%**		
	Score								
Option A1	5	4	3	2	3	3	5	3.30	2
Option A2	5	4	3	2	2	3	3	2.90	5
Option B	5	5	1	1	1	1	4	2.30	7
Option C	1	1	5	3	2	3	3	2.60	6
Option D	3	3	5	4	3	4	3	3.60	1
Option E	2	2	5	3	3	5	3	3.25	3
Option F	4	3	3	4	2	4	2	3.05	4

The outcome of the MCA has Option D scoring the highest with 3.60 followed by Option A1 (3.30), Option E (3.05), Option F (3.05), Option A2 (2.90), Option C (2.60), then Option B (2.30). Note this is a comparative analysis only and does not reflect the overall value of the development of each route.

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6. Summary

This report has explored the possible route options for the proposed Mullum to Bruns Cycleway based on desktop and site investigations by the project team. We have reviewed Council's constraints mapping, conducted a walkthrough of accessible sections, reviewed public submissions, and prepared a multi criteria analysis of six (6) potential route options to assist Council with making a decision on a preferred alignment for the route.

A summary of our investigations and assessment of each option is provided below.

6.1 Option A – The Rail Trail

Option A uses the rail corridor leaving Mullumbimby and heading north across the Brunswick River until it intersects with Synotts Lane. The trail would then head east requiring the use of road reserves and one parcel of private property, a new water crossing near the Ocean Shores Sewage Treatment Plant and utilisation of existing roadside paths into Brunswick Heads from the north.

Whilst requiring a new bridge, renovation of the existing railway bridge and legislated closure of a portion of the railway line, it represents a good compromise between the user experience and challenges of delivery. It will have some environmental impact as clearing will be required along the old railway corridor and to create a link between the eastern end of Synotts Lane and the Sewage Treatment Plant.

The timing for development of this option depends on three key factors – approvals for construction at the eastern end between Synotts Lane, the Smokey Valley Way (required under the Coastal Management SEPP), and legislative closure of the railway corridor from Mullumbimby to Synotts Lane and negotiations over the use of private land on what was formerly Synotts Road.

It is worth noting that the rail corridor north from Brunswick Heads to Billinudgel is identified as a priority route in the Council's 10 year Bike Plan. The railway line north of Byron Shire – from Crabbes Creek to Murwillumbah – is now formally closed and construction on a rail trail will begin shortly. Using the rail corridor for part of the Mullum Bruns Cycle Way will possibly create some further momentum and open possible funding opportunities to further develop a rail trail north to the Shire boundary.

Construction of a trail adjacent to the railway formation (Option A2) would be difficult and costly given the route includes a bridge over Brunswick River and the 50 m long tunnel under Vallances Road. These issues are detailed in the report *Multi Use of Byron Shire Rail Corridor* (Arcadis, 2019).

6.2 Option B – The River Route

This route follows the Brunswick River. From the Mullumbimby Caravan Park to Riverside Crescent and then into Brunswick Heads on existing boardwalks and paths.

This is the most attractive option but has the lowest score in the MCA. The low score is due primarily to conflicts with native title, overall ecological impacts and permit approvals. The route will either require traversing land that has been subject to native title determination (or private land that would

need to be acquired) and will require significant clearing and approvals under Coastal SEPP and most likely require an EIS.

It is the most difficult option to deliver in terms of time, approvals and will most likely cost the most.

6.3 Option C – The Concept Option

This is the original route selected by Council travelling a alongside Mullumbimby Road and Gulgan Road into Brunswick Heads.

This scored the second lowest in the MCA. This will be the easiest to deliver in terms of approvals and construction timeframes but represents the least desirable outcomes from a user quality and safety perspective. There is also the need to consider the upgrading of the intersection of Mullumbimby Road and Gulgan Road.

6.4 Option D – The Concept Option Alternative

This is a variation of Option C using Hambly Road and The Saddle Road rather than much of Mullumbimby Road. This option scored the highest in the MCA. It offers improved user experience and safety over Option C but will require some land acquisition. Timeframes and approvals are similar to Option C.

6.5 Option E – The Saddle Road

This is a variation of Option C using The Saddle Road rather than much of Mullumbimby Road. It offers improved user experience and safety over Option C but will require some land acquisition. Timeframes and approvals are similar to Option C.

6.6 Option F – The Farm Road Route

This is a variation of Option C using Hambly Road and private property before returning to the Saddle Road. It offers improved user experience and safety over Option C but will require significant land acquisition. Timeframes and approvals are similar to Option C.

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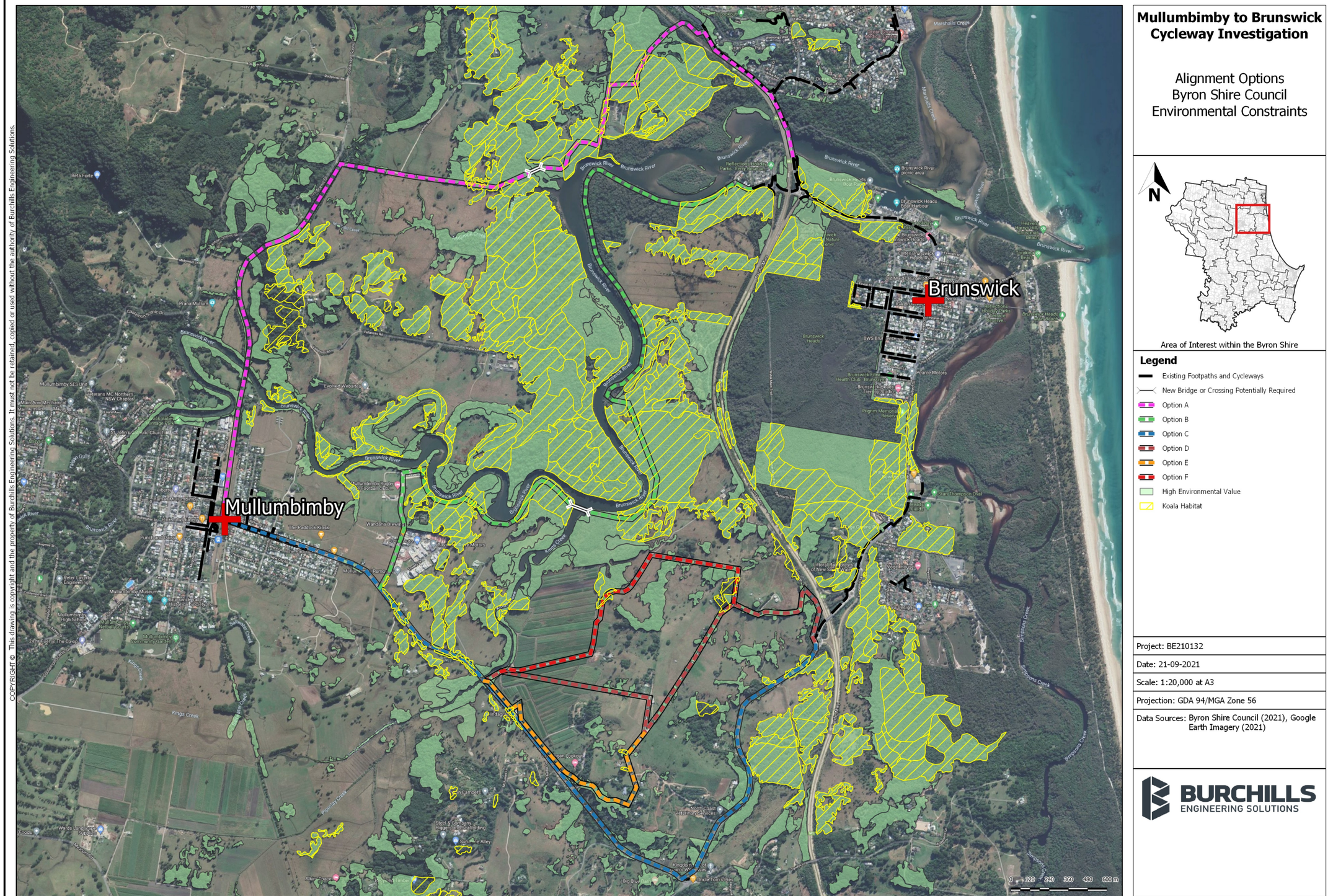
Appendix A – Route Options Constraint Mapping



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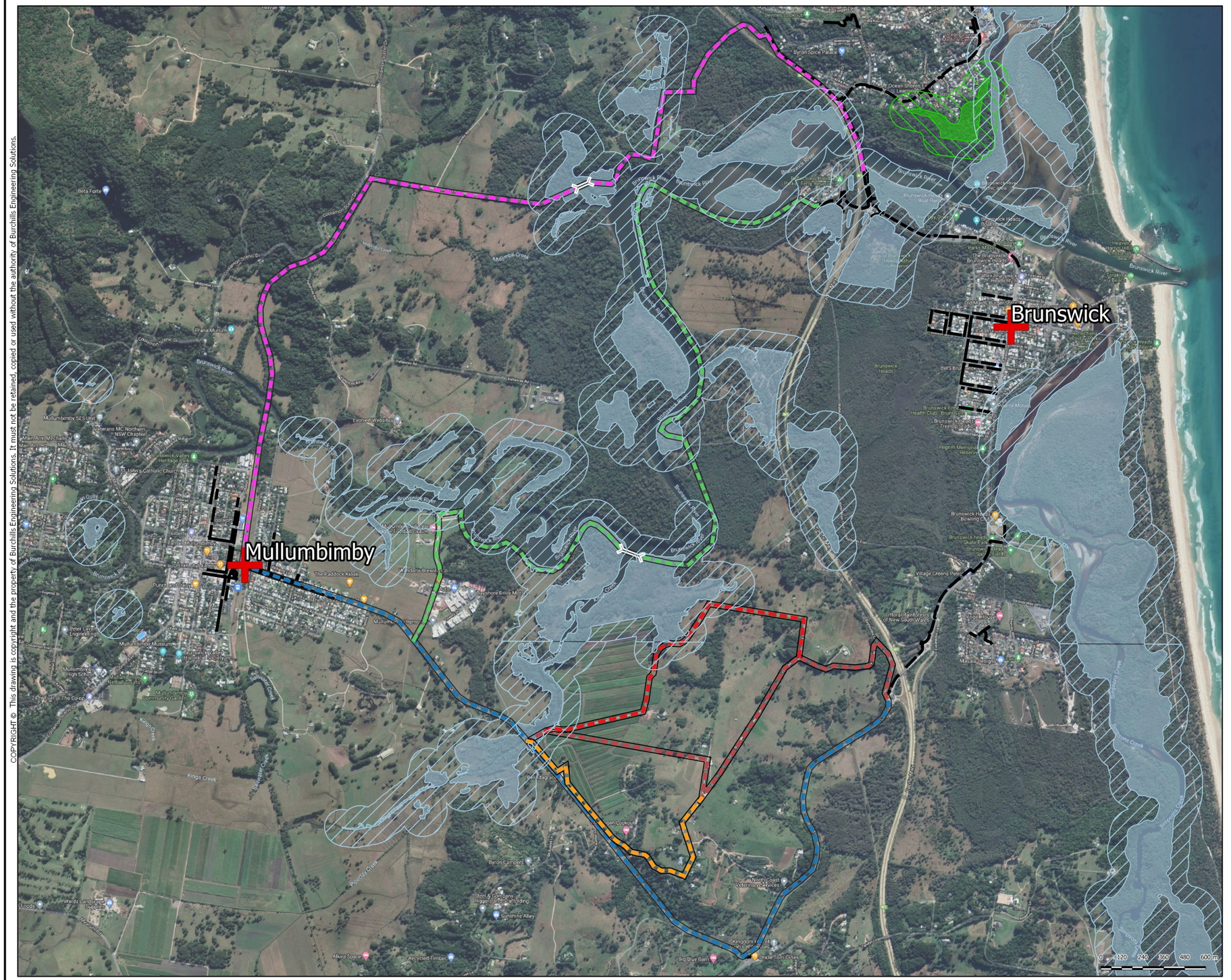

Mullumbimby to Brunswick Cycleway Investigation

Alignment Options
Coastal Management SEPP

Area of Interest within the Byron Shire

Legend

- Existing Footpaths and Cycleways
- New Bridge or Crossing Potentially Required
- Option A
- Option B
- Option C
- Option D
- Option E
- Option F
- Coastal Wetland
- Coastal Wetland Proximity Area
- Littoral Rainforest
- Littoral Rainforest Proximity Area

Project:	BE210132
Date:	21-09-2021
Scale:	1:20,000 at A3
Projection:	GDA 94/MGA Zone 56
Data Sources:	Byron Shire Council (2021), Google Earth Imagery (2021)

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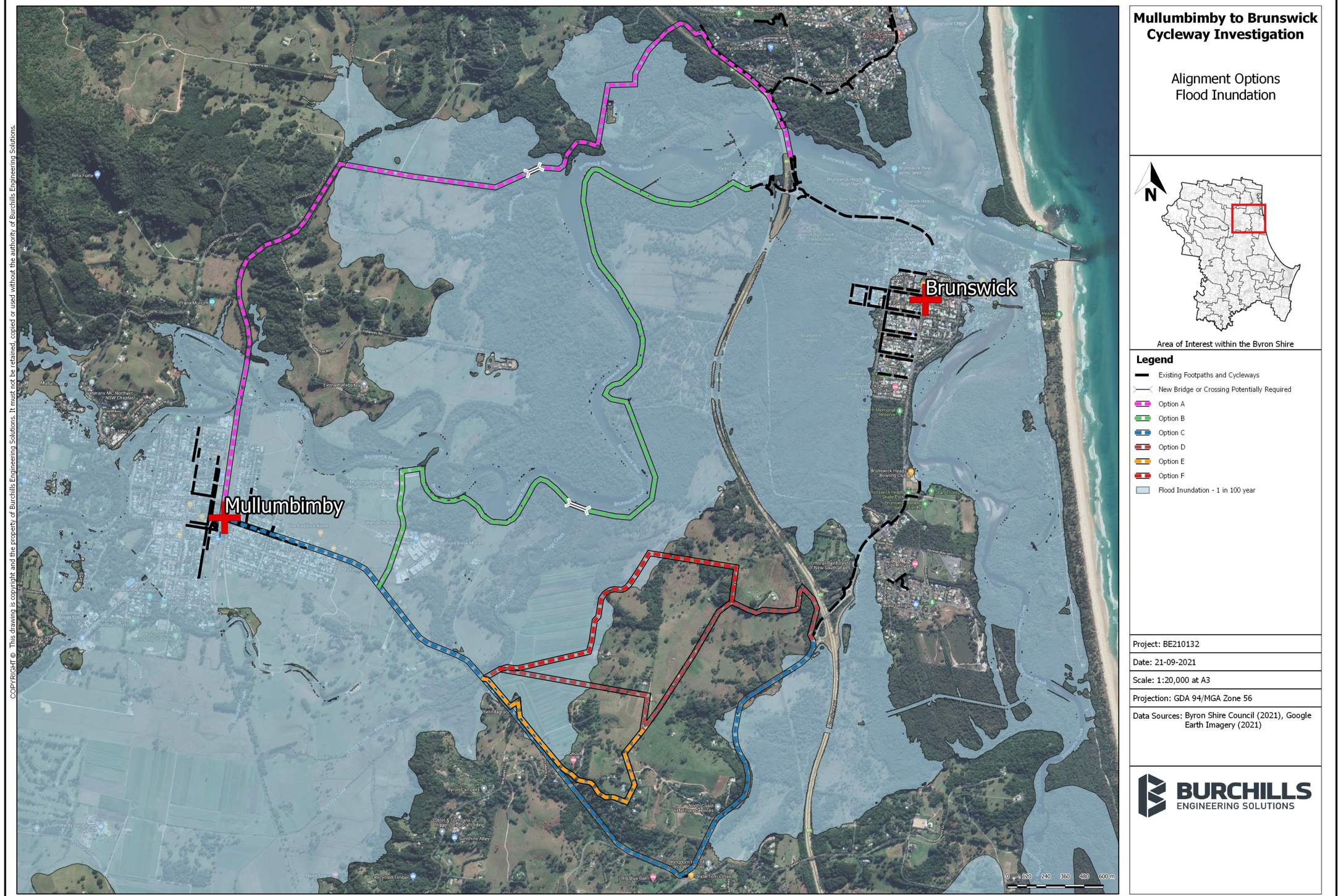

Mullumbimby to Brunswick Cycleway Investigation

Alignment Options
Flood Inundation

N

Area of Interest within the Byron Shire

Legend

- Existing Footpaths and Cycleways
- New Bridge or Crossing Potentially Required
- Option A
- Option B
- Option C
- Option D
- Option E
- Option F
- Flood Inundation - 1 in 100 year

Project:	BE210132
Date:	21-09-2021
Scale:	1:20,000 at A3
Projection:	GDA 94/MGA Zone 56
Data Sources:	Byron Shire Council (2021), Google Earth Imagery (2021)

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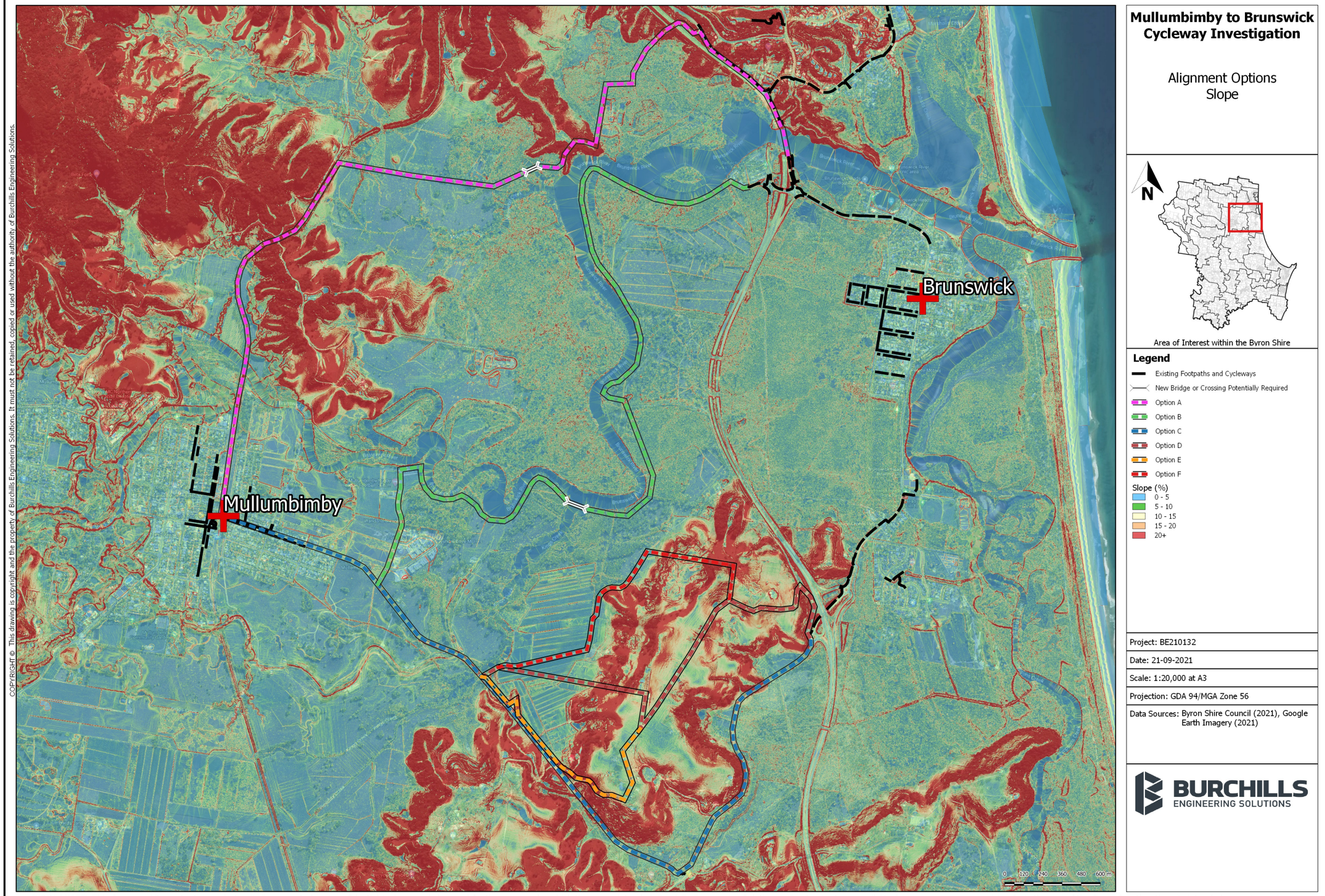

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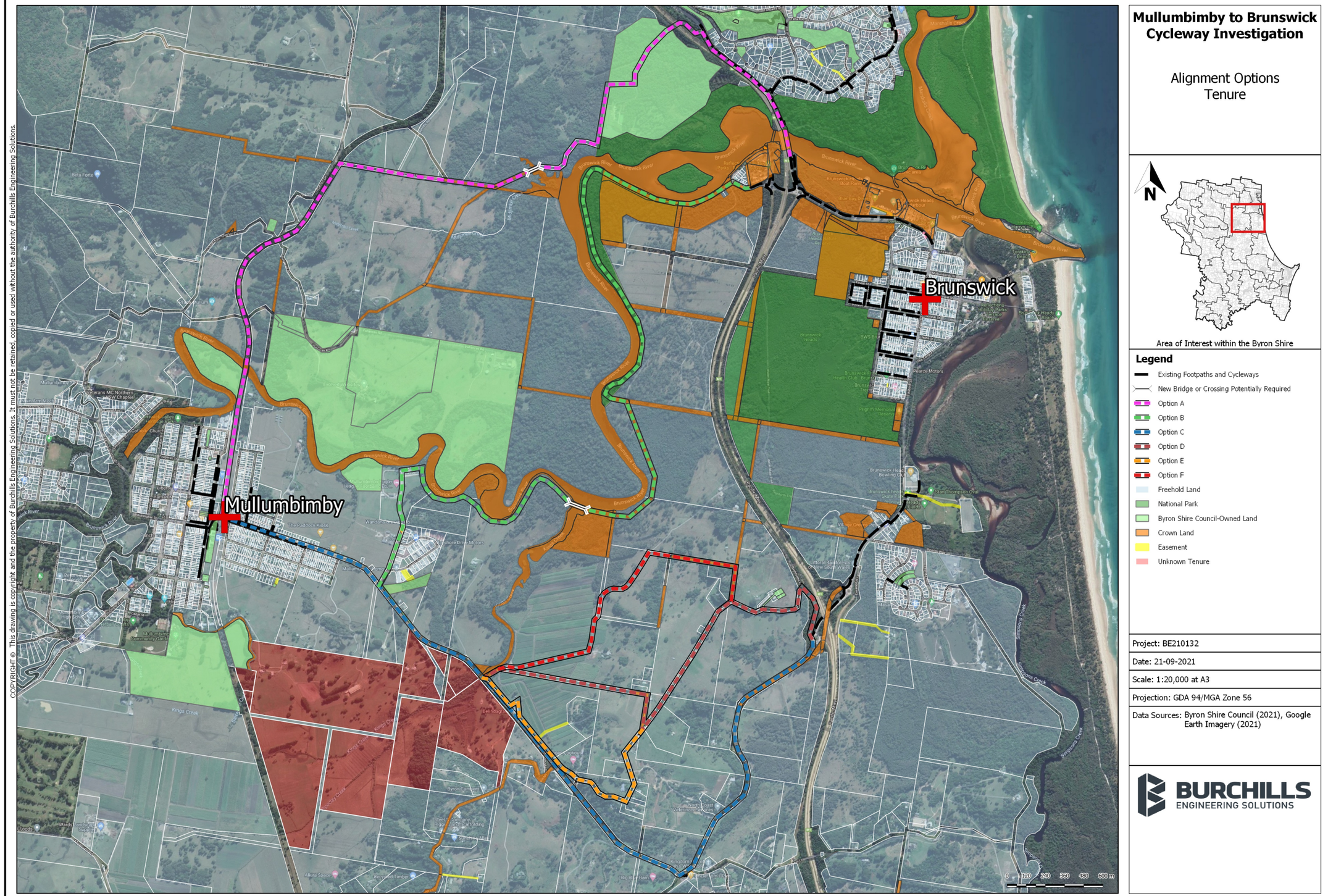

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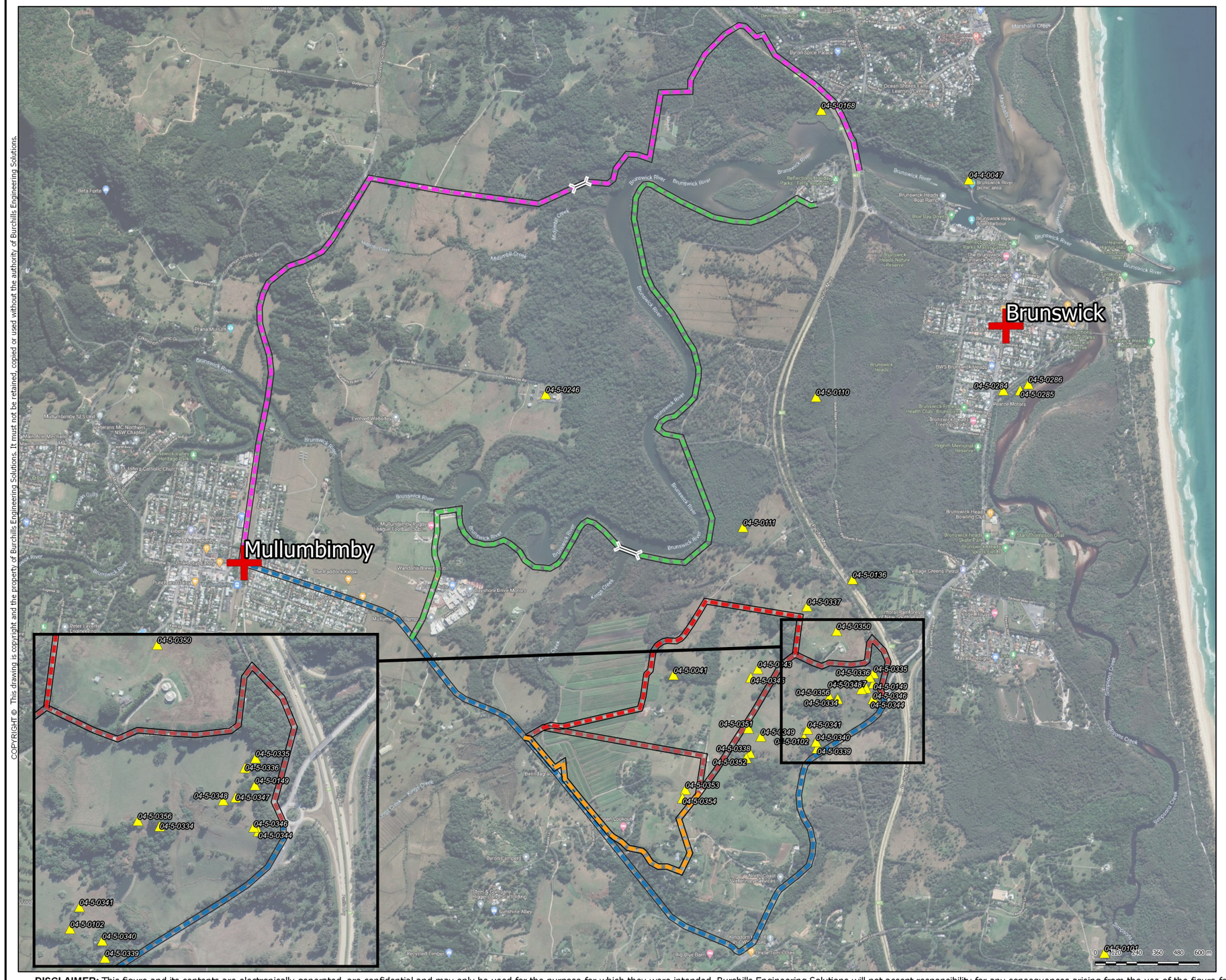

Mullumbimby to Brunswick Cycleway Investigation

Alignment Options
Aboriginal Heritage

Area of Interest within the Byron Shire

Legend

- Existing Footpaths and Cycleways
- New Bridge or Crossing Potentially Required
- Option A
- Option B
- Option C
- Option D
- Option E
- Option F
- Aboriginal Cultural Heritage Items

Notes: This plan is to be read in conjunction with the AHIMS Web Services Extensive Search undertaken for the site (PO Number BE210132; appended to the report).

Project: BE210132
Date: 21-09-2021
Scale: 1:20,000 at A3
Projection: GDA 94/MGA Zone 56
Data Sources: Byron Shire Council (2021), Google Earth Imagery (2021), New South Wales Government AHIMS Web Services (2021)

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Appendix B – AHIMS Extensive Search Report

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : BE210132

Client Service ID : 611431

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
04-5-0149	TL 1	AGD	56	552750	6840550	Open site	Valid	Shell : -, Artefact : -	Midden	102407
	Contact	**Recorders**	Phil Hughes					**Permits**		
04-4-0047	Brunswick 1	AGD	56	553300	6843450	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	**Recorders**	Ms.Jacqueline Collins					**Permits**		
04-4-0081	RTA Ridge 1	AGD	56	552630	6841150	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Kim Lomax					**Permits**	687	
04-5-0102	Byron Urban Areas 1;Mullumbimby;	AGD	56	552351	6840240	Open site	Valid	Artefact : -	Open Camp Site	97692,102407
	Contact	**Recorders**	Ms.Jacqueline Collins					**Permits**		
04-5-0110	Midden;	AGD	56	552420	6842200	Open site	Valid	Shell : -, Artefact : -	Midden	102407
	Contact	**Recorders**	M Wheeler					**Permits**		
04-5-0136	RTA Ridge 1;	AGD	56	552630	6841150	Open site	Valid	Artefact : -	Open Camp Site	102407
	Contact	**Recorders**	Kim Lomax					**Permits**		
04-5-0041	Mullumbimby;	AGD	56	551600	6840600	Open site	Valid	Stone Arrangement : -	Stone Arrangement	102407
	Contact	**Recorders**	Department of Lands - South Region - Wollongong					**Permits**		
04-5-0111	Mound;	AGD	56	552000	6841450	Open site	Valid	Earth Mound : -, Hearth : -	Mound (Oven)	
	Contact	**Recorders**	M Wheeler					**Permits**		
04-5-0168	Brunswick River: Brunswick Heads Bypass	AGD	56	552450	6843850	Open site	Valid	Hearth : -, Shell : -, Artefact : -		102407,104473
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists (MDCA),Allan Goodwin,Mr.Ron Heron					**Permits**		
04-5-0101	Byron Urban Areas 2;Brunswick Heads;	AGD	56	554080	6839000	Open site	Valid	Shell : -, Artefact : -	Midden	2229,97692,102407
	Contact	**Recorders**	Ms.Jacqueline Collins					**Permits**		
04-5-0246	Brunswick Valley STP Site	GDA	56	550970	6842404	Open site	Valid	Potential Archaeological Deposit (PAD) : -		102407
	Contact Arakwal Elders Corporation	**Recorders**	Department oF Environment & Climate Change (Coffs Harbour)					**Permits**	3102	
04-5-0284	Terrace Holiday Park Midden Site.1	GDA	56	553603	6842426	Open site	Valid	Shell : -, Aboriginal Resource and Gathering : -		
	Contact Mr.Des Williams	**Recorders**	Mr.Ashley Moran					**Permits**		
04-5-0285	Terrace Holiday Park Midden Site.2	GDA	56	553700	6842426	Open site	Valid	Aboriginal Resource and Gathering : -		
	Contact Mr.Des Williams	**Recorders**	Mr.Ashley Moran					**Permits**		
04-5-0286	Terrace Holiday Park Midden Site.3	GDA	56	553748	6842462	Open site	Valid	Aboriginal Resource and Gathering : -		
	Contact	**Recorders**	Mr.Ashley Moran					**Permits**		
04-5-0334	Saddle Road 19	GDA	56	552650	6840650	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Everick Heritage Pty Ltd,Miss.Pauline Fowler					**Permits**		

Report generated by AHIMS Web Service on 06/08/2021 for Caroline Kelly for the following area at Search using shape-file BE210132_Extent with a buffer of 0 meters. Additional Info : Due Diligence. Number of Aboriginal sites and Aboriginal objects found is 35

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : BE210132

Client Service ID : 611431

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
04-5-0335	Saddle Road 17	GDA	56	552857	6840797	Open site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Miss.Pauline Fowler					Permits		
04-5-0336	Saddle Road 18	GDA	56	552834	6840776	Open site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Miss.Pauline Fowler					Permits		
04-5-0337	Saddle Road 16	GDA	56	552474	6841183	Open site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Miss.Pauline Fowler					Permits		
04-5-0338	Saddle Road 15	GDA	56	552146	6840339	Open site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Miss.Pauline Fowler					Permits		
04-5-0339	Saddle Road 14	GDA	56	552532	6840366	Open site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Miss.Pauline Fowler					Permits		
04-5-0340	Saddle Road 13	GDA	56	552526	6840403	Open site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Miss.Pauline Fowler					Permits		
04-5-0341	Saddle Road 12	GDA	56	552477	6840476	Open site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Miss.Pauline Fowler					Permits		
04-5-0343	Saddle Road 11	GDA	56	552191	6840823	Closed site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Tim Hill					Permits		
04-5-0344	Saddle Road 8	GDA	56	552863	6840639	Closed site	Valid	Shell : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Tim Hill					Permits		
04-5-0345	Saddle Road 10	GDA	56	552150	6840773	Closed site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Tim Hill					Permits		
04-5-0346	Saddle Road 9	GDA	56	552853	6840648	Closed site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Tim Hill					Permits		
04-5-0347	Saddle Road 7	GDA	56	552814	6840712	Closed site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Tim Hill					Permits		
04-5-0348	Saddle Road 6	GDA	56	552787	6840706	Closed site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Tim Hill					Permits		
04-5-0349	Saddle Road 4	GDA	56	552208	6840434	Closed site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Tim Hill					Permits		
04-5-0350	Saddle Road 5	GDA	56	552645	6841042	Closed site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Tim Hill					Permits		
04-5-0351	Saddle Road 3	GDA	56	552137	6840481	Closed site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Tim Hill					Permits		
04-5-0352	Saddle Road 2	GDA	56	552124	6840310	Open site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Tim Hill					Permits		
04-5-0353	Saddle Road 01B	GDA	56	551774	6840129	Closed site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Tim Hill					Permits		

Report generated by AHIMS Web Service on 06/08/2021 for Caroline Kelly for the following area at Search using shape-file BE210132_Extent with a buffer of 0 meters. Additional Info : Due Diligence. Number of Aboriginal sites and Aboriginal objects found is 35

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : BE210132

Client Service ID : 611431

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
04-5-0354	Saddle Road 01A	GDA	56	551757	6840079	Closed site	Valid	Artefact : -		
	Contact	**Recorders**	Everick Heritage Pty Ltd,Mr.Tim Hill					**Permits**		
04-5-0356	Saddle Road 20	GDA	56	552603	6840662	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Everick Heritage Pty Ltd,Miss.Pauline Fowler					**Permits**		

**** Site Status**

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 06/08/2021 for Caroline Kelly for the following area at Search using shape-file BE210132_Extent with a buffer of 0 meters. Additional Info : Due Diligence. Number of Aboriginal sites and Aboriginal objects found is 35

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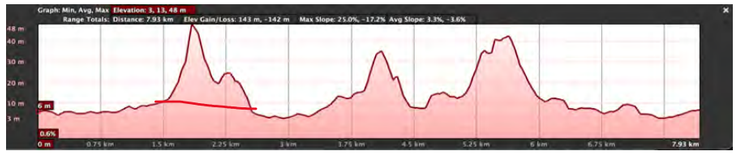
Appendix C – Cycle Travel Time Calculations (ZTP)

Route A

Start	Finish	Avg Grad	Speed	Distance	Time		
0	3.6	0	20	3.6	10.8	mins	
3.6	4.5	5.5	10	0.9	5.4	mins	Hill 1
4.5	5.03	0	20	0.53	1.59	mins	
5.03	6.06	6.1	10	1.03	6.18	mins	Hill 2
6.06	7.92	0	20	1.86	5.58	mins	
				7.92	29.55		
					2.664	+ time penalty	
					32.214		

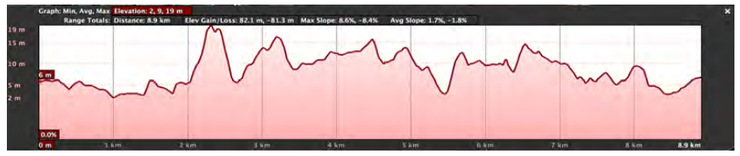


* Red line above indicates existing rail tunnel

** If an alternative route was to avoid the rail tunnel an average slope of 12% (max at 25%) would need to be considered at Vallances Road.

Route B

Start	Finish	Avg Grad	Speed	Distance	Time		
0	8.9	0	20	8.9	26.7	mins	
				8.9	0		
					3.6663	+ time penalty	
					26.7		



Route C

Start	Finish	Avg Grad	Speed	Distance	Time		
0	2.53	0	20	2.53	7.59	mins	
2.53	3.68	5 (max 10)	10	1.15	6.9	mins	Hill 1
3.68	8.07	0	20	4.39	13.17	mins	
				8.07	27.66		
					7.59	+ time penalty	
					35.25		

Route D

Start	Finish	Avg Grad	Speed	Distance	Time		
0	2.6	0	20	2.6	7.8	mins	
2.6	3.01	14	5	0.41	4.92	mins	Hill 1
3.01	4.45	0	20	1.44	4.32	mins	
4.45	5	-11	5	0.55	6.6	mins	Hill 2
5	7.55	0	20	2.55	7.65	mins	
				7.55	31.29		
					7.92	+ time penalty	
					39.21		

Route E

Start	Finish	Avg Grad	Speed	Distance	Time		
0	2.63	0	20	2.63	7.89	mins	
2.63	3.33	7.4	10	0.7	4.2	mins	Hill 1
3.33	4.98	0	20	1.65	4.95	mins	
4.98	6.31	-5	10	1.33	7.98	mins	Hill 2
6.31	8.09	0	20	1.78	5.34	mins	
				8.09	30.36		
					7.59	+ time penalty	
					37.95		

Route F

Start	Finish	Avg Grad	Speed	Distance	Time		
0	3.47	0	20	3.47	10.41	mins	
3.47	3.94	10	5	0.47	5.64	mins	Hill 1
3.94	4.45	0	20	0.51	1.53	mins	
4.45	5.34	-5	10	0.89	5.34	mins	Hill 2
5.34	7.55	0	20	2.21	6.63	mins	
				7.55	29.55		
					7.59	+ time penalty	
					37.14		

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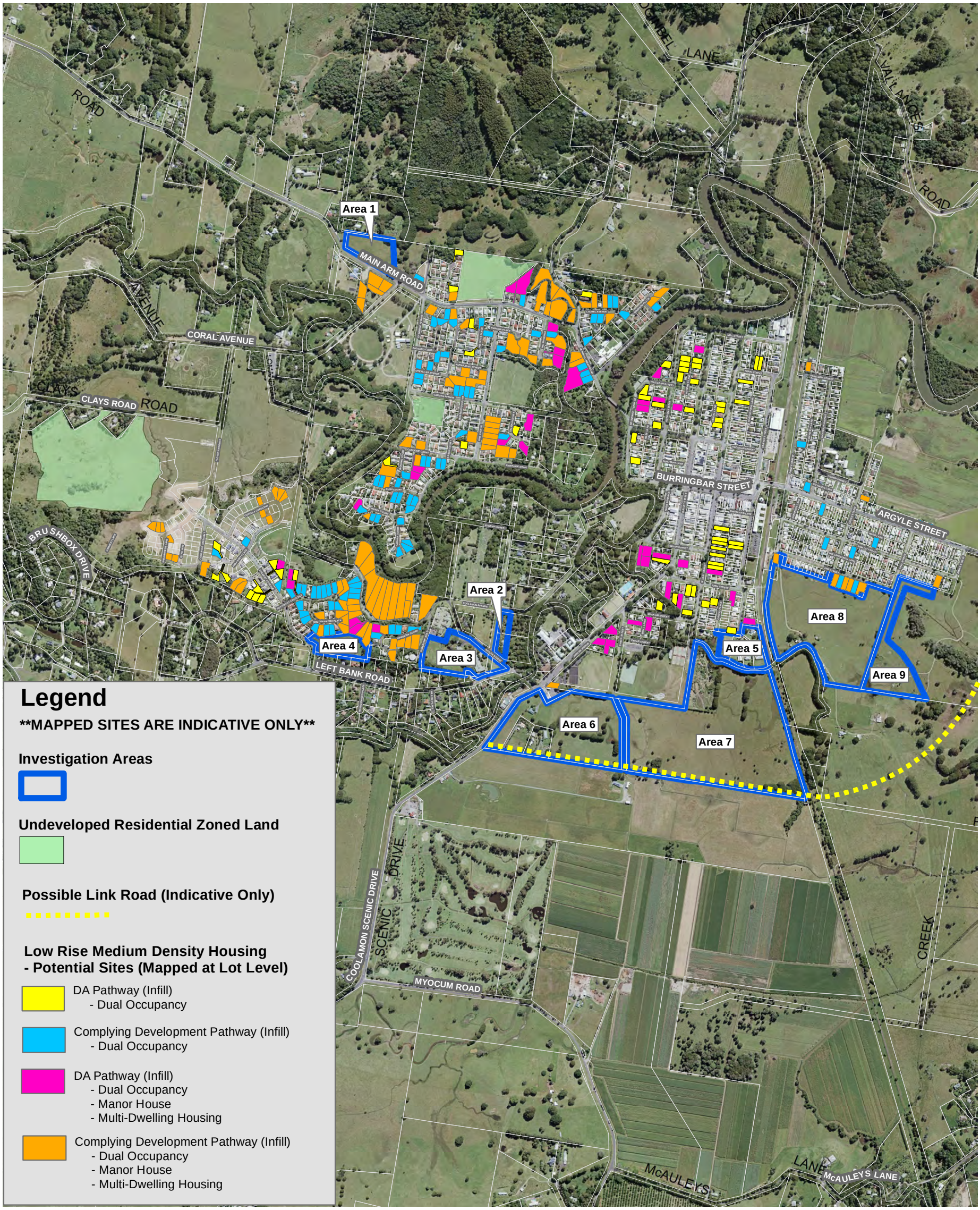
Appendix D – Extracts from BSC Planning Documents

Map 1: Mullumbimby Potential Housing Supply

NOTE:
The information provided on this map is indicative only and should not be used as a basis for investment or other private decision making purposes about land purchase or land use.



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Note : The information shown on this map is a copyright of the Byron Shire Council and the NSW Department of Lands.

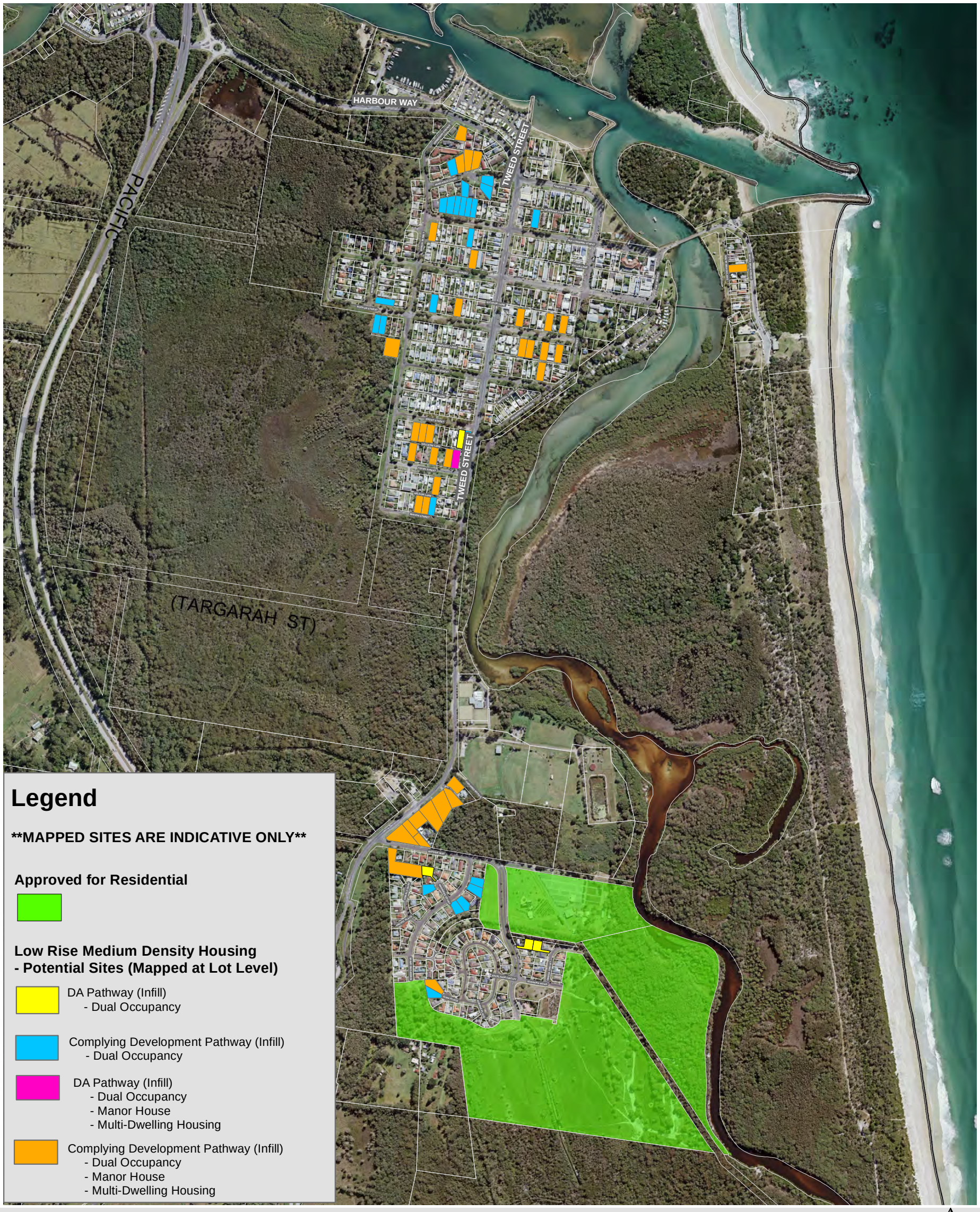
0 650 1,300 Metres

1:13,318 @ A3 size

Date: 16/11/2020

Map 3: Brunswick Heads Potential Housing Supply

NOTE:
The information provided on this map is indicative only and should not be used as a basis for investment or other private decision making purposes about land purchase or land use.



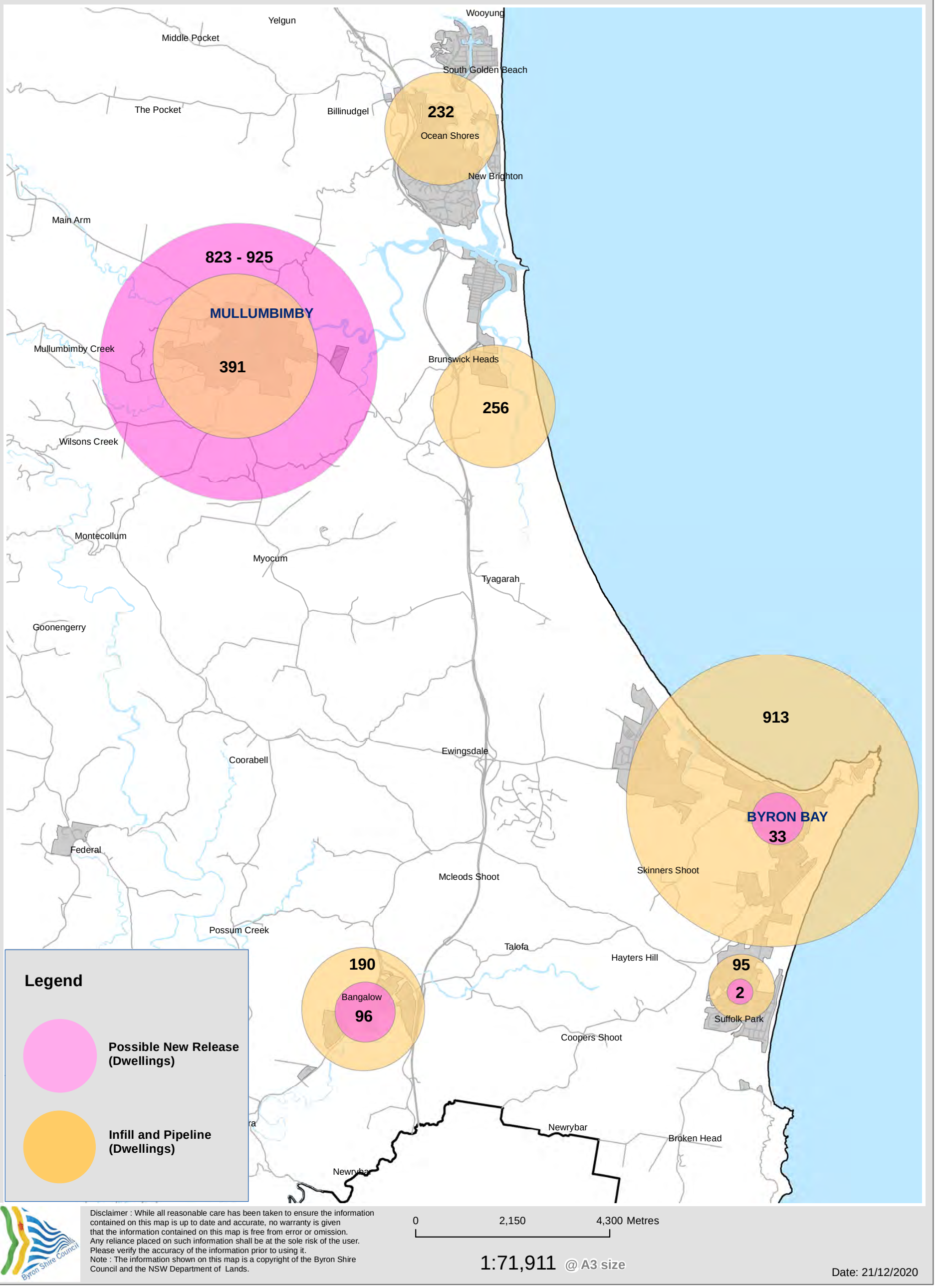
Disclaimer : While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no warranty is given that the information contained on this map is free from error or omission. Any reliance placed on such information shall be at the sole risk of the user. Please verify the accuracy of the information prior to using it. Note : The information shown on this map is a copyright of the Byron Shire Council and the NSW Department of Lands.

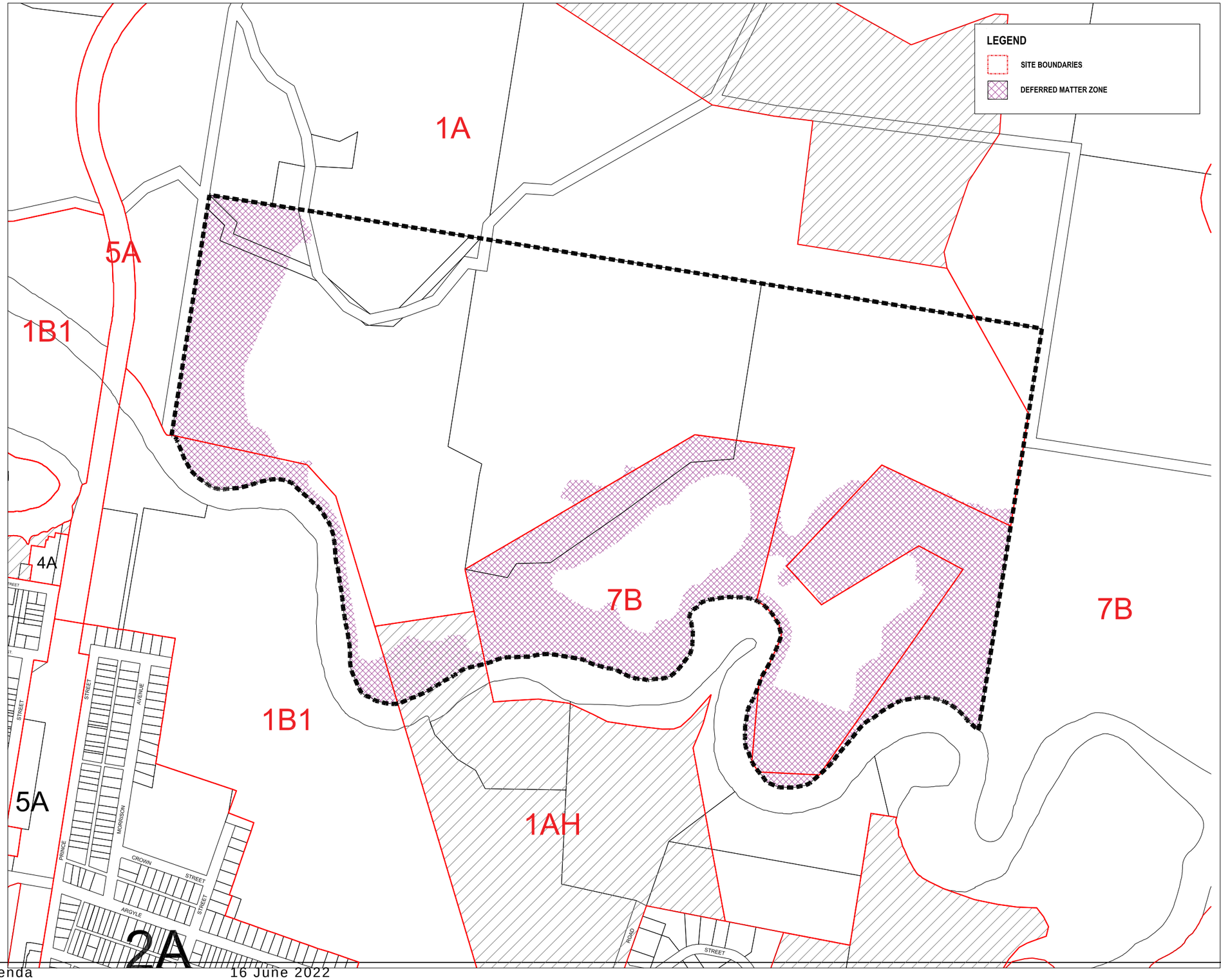
0 475 950 Metres

1:9,448 @ A3 size

Date: 12/11/2020

Map 6: Urban Housing Supply Distribution





PLANIT CONSULTING

PROJECT TITLE
VALLANCES ROAD, MULLUMBIMBY

DRAWING TITLE
LEP 88 - LEP 2014 DEFERRED MATTER ZONE

BASE ISSUED BY
GOV MAPS

SCALE
NTS

DESIGN
ZP

DRAWN
ZACP

DATE
26/07/2017

CHECKED
CT

DRAW NO
A102

SHEET NO
02

NO	DATE	REVISION	BY
-	-	-	-

NORTH POINT

N

Level 1 2247 Gold Coast Hwy
Nobby Beach
PO Box 206 QLD 4218

Telephone: 07 5526 1500
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Area 2: Mullumbimby Industrial Estate expansion

Area Number	**2.**
Description	Part of Lot 67 DP 1226493
Image of investigation area	
Potential developable land[1.](ha)	2.4 ha
Preferred role	Industrial urban service land (IN1)
Strengths/ advantages	• adjacent existing industrial area • good proximity to existing workforce • on existing public transport route • flat cleared site links with the proposed new on-road cycle lane on Mullumbimby Road between Manns Road and Gulgan North Pacific Highway interchange
Key issues and further investigations	• flooding • important farmland classification - requiring detailed assessment of agricultural capability and impact on surrounding land as part of any planning proposal consistent with *Environmental Planning and Assessment Act 1979* Section 9.1 Direction 5.3: Farmland of State & Regional Significance on the NSW Far North Coast • traffic flow implications for Manns Road and Mullumbimby Road and relationship to possible southern local connector • gateway to Mullumbimby town landscaping to enhance visual amenity • investigations to ensure that any proposed development is consistent with relevant State and regional planning provisions this may include the management of areas of high environmental value, flooding and heritage/cultural significance.
Anticipated delivery timeframe	Short term

Area 4: Gulgan West

Area Number	**4.**
Description	Part of Lot 26 DP830652 Located to the west of the Pacific Highway off the southern Gulgan Road interchange
Image of investigation area	
Potential developable land[1.] (ha)	10 ha
Preferred role	Industrial land (IN1) with agricultural ancillary development (i.e. food packaging, food production etc.)
Strengths/ advantages	• direct north and south-bound ingress and egress to Pacific Highway • on existing public transport route • disused rail corridor to the west that links to areas with an existing workforce • relatively flat and cleared area
Key issues and further investigations	• flooding and stormwater drainage • important farmland classification - requiring detailed assessment of agricultural capability and impact on surrounding land as part of any planning proposal consistent with *Environmental Planning and Assessment Act 1979* Section 9.1 Direction 5.3: Farmland of State & Regional Significance on the NSW Far North Coast • Aboriginal cultural heritage sensitivities • biodiversity and ecological sensitivities including prime koala habitat (verification by qualified and experienced ecologist) • land containing HEV vegetation to be excluded and designated as

	Environmental Zone • distance from existing water and sewerage infrastructure and connection to existing infrastructure • bushfire prone • traffic impacts and safe access point to Gulgan Road • long term capacity to link with the proposed new on-road cycle lane on Mullumbimby Road between Manns Road and Gulgan North Pacific Highway interchange • landscaping to enhance visual amenity as it pertains to view lines from Gulgan Road and Pacific Highway
Anticipated delivery timeframe	Medium to long term

Area 5: Gulgan North

Area Number	**5.**
Description	Part of Lot 2 DP 1159910 66 The Saddle Road, Brunswick Heads
Image of investigation area	

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Appendix E – Population Analysis Mapping (ZTP)

Figure 1: Existing population counts

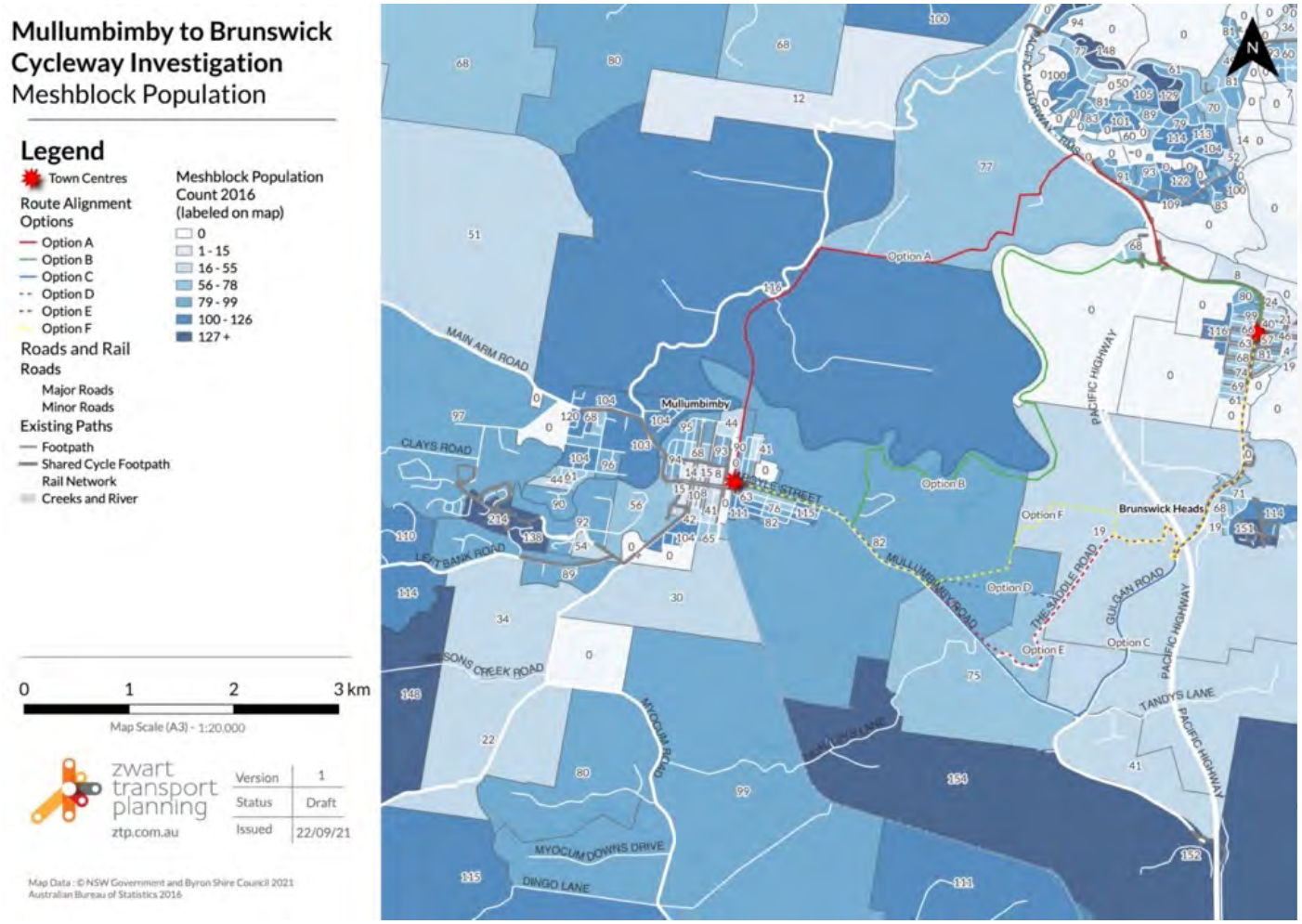


Figure 2: Population density

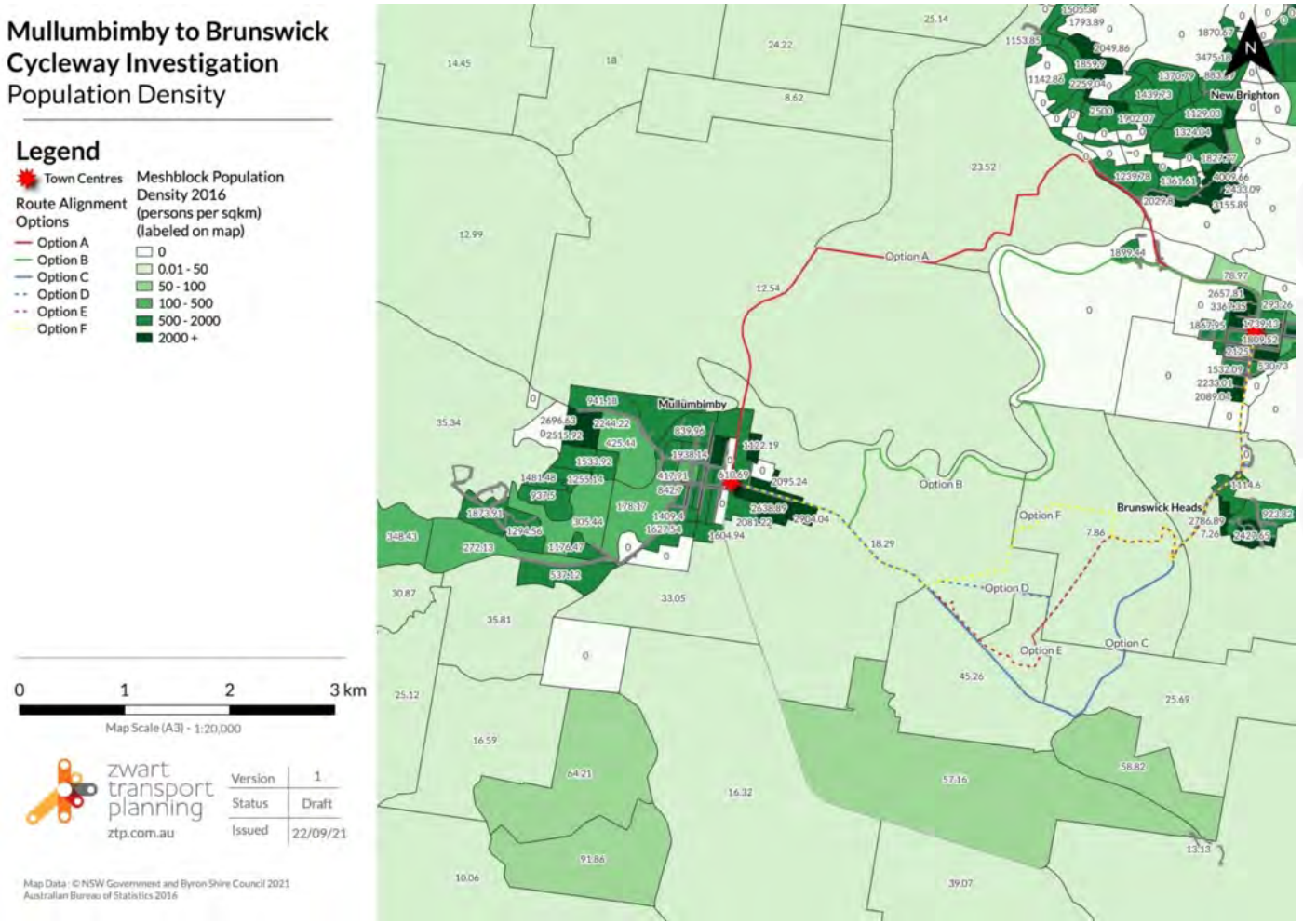


Figure 3: Future land use changes

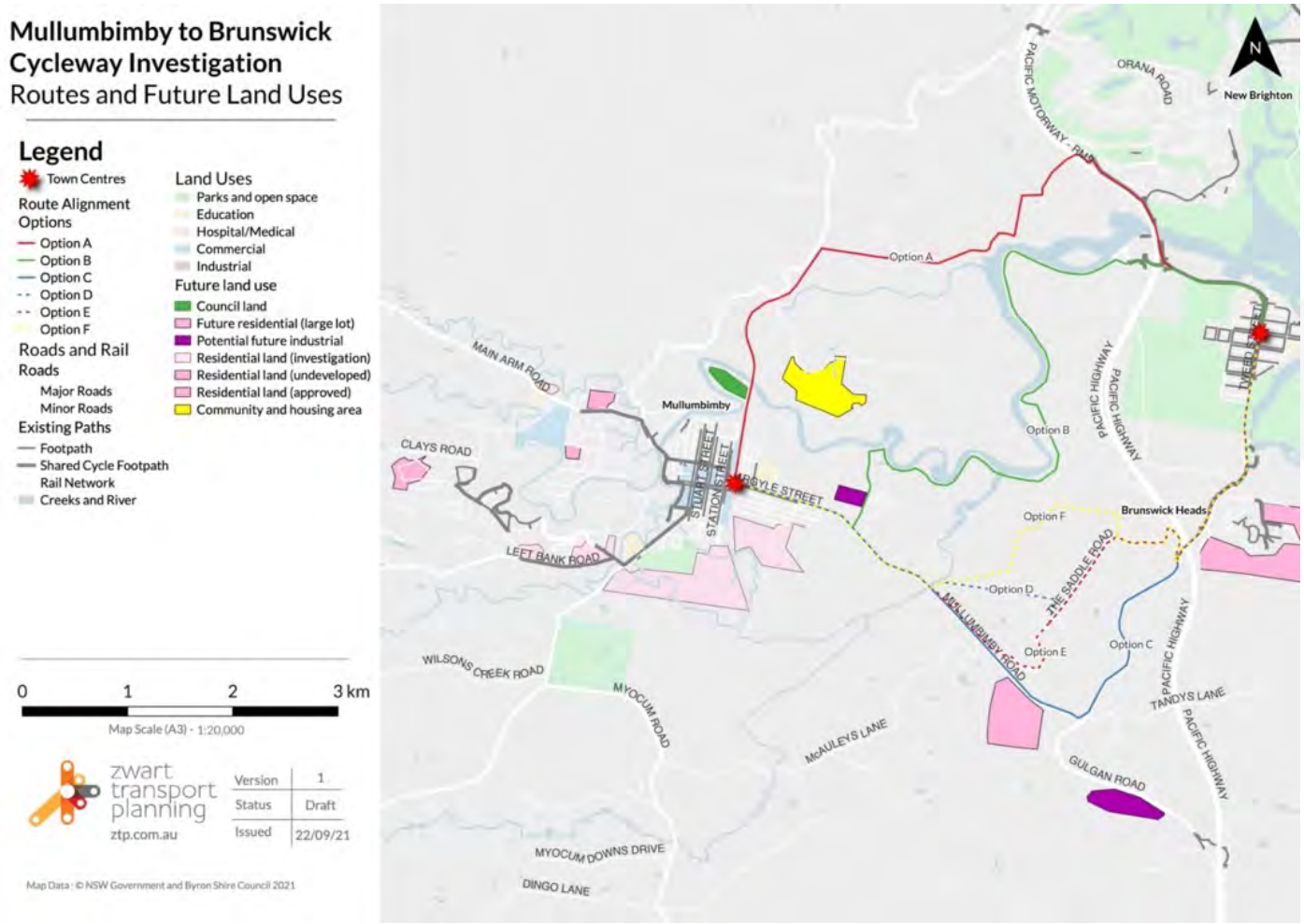
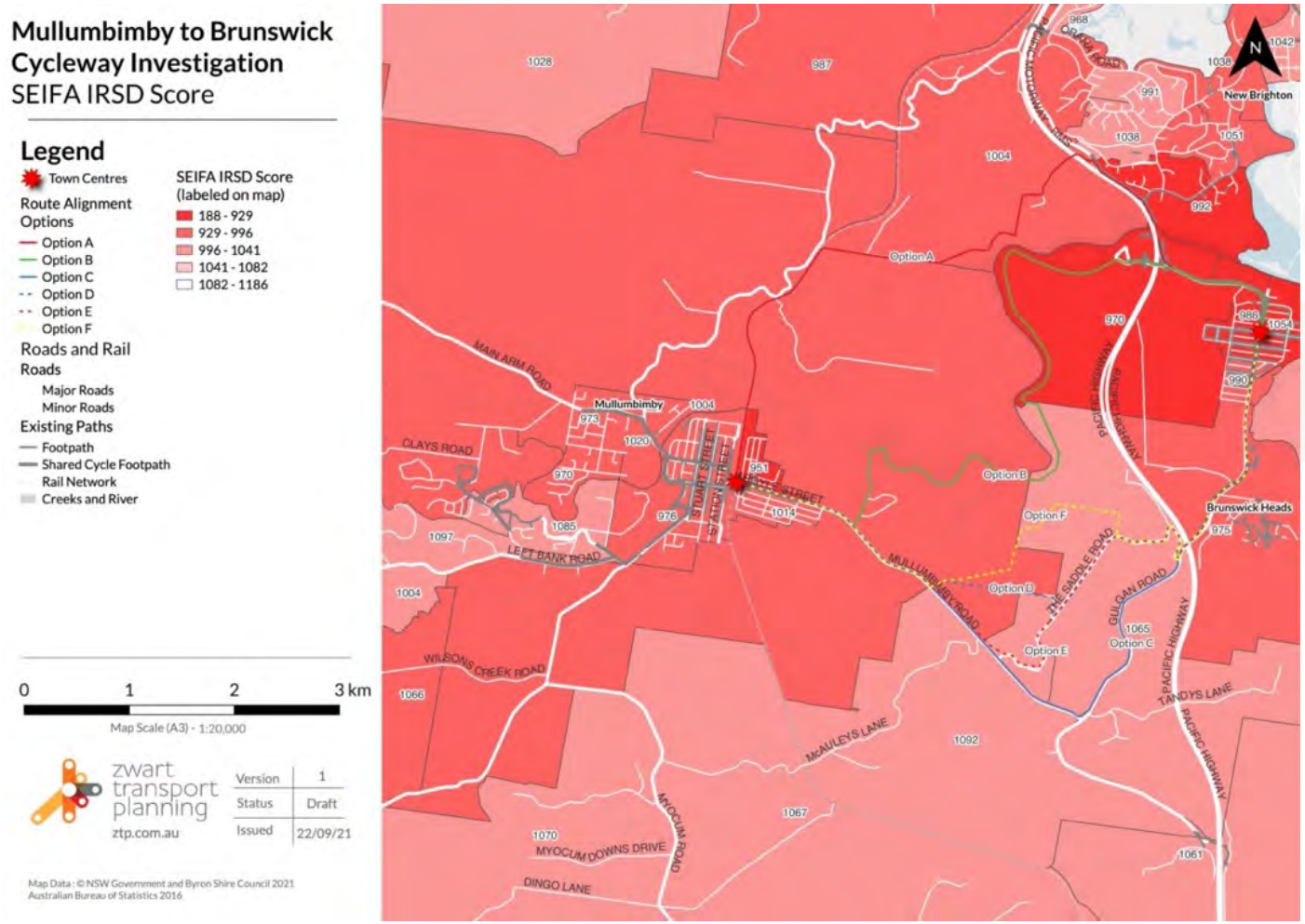


Figure 4: Socio-economic disadvantage



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Report No. 3.3 Myocum Quarry DA Compliance and Options Report

Directorate: Infrastructure Services

Report Author: Nikki Bourke, Project Officer

File No: I2022/656

Summary:

This report presents the findings and recommendations of the “DA Compliance Assessment and Options Assessment for Myocum Quarry” Report by Consultants GHD, and informs the Infrastructure Advisory Committee of actions being undertaken as resolved by the Executive Team of Council.

RECOMMENDATION:

That the Infrastructure Advisory Committee note the contents of this report and the actions being progressed as resolved by the Executive Team.

Attachments:

1 24.2021.23.1 Myocum Quarry DA - FINAL final draft 12554185-REP-1_DA Compliance and Options Assessment for Myocum Quarry, E2021/155252 , page 87⇩
2 2212554185 Rev A Drawings Myocum Quarry Survey simplified GHD 2022, E2022/22942 , page 171⇩
3 24.2021.23.1 Myocum Quarry DA - Comments from Chris Larkin SEE Manager RE: Myocum Quarry DA review, E2022/10438 , page 187⇩

Report

A Development Application (DA 10.2001.496.2) for the Myocum Quarry (Lot1/DP591441) was approved in 2008 to amend extraction amounts and approve the rehabilitation plan in accordance with an Environmental Impact Statement (2001) Supplementary Report (2002) and Statement of Environmental Effects (2007) prepared by GHD.

It was a committee recommendation (4.5.1) of the former Water, Waste and Sewer Steering Committee (WWSC): *That WWSC receive further information on the status and obligations of rehabilitation on Council's quarry and other quarries.*

GHD consulting were engaged in June 2021 to undertake two studies:

- Aerial survey and mass variance assessment - an aerial survey to determine terrain and cut/fill variances with the DA's rehabilitation plan was undertaken in 2016. For currency GHD and surveyor HELImetrex were engaged to update the survey, terrain model and assessment of variances with the DA's rehabilitation plan.

- DA Compliance Assessment and Options Assessment – to ascertain the status of the remediation and rehabilitation of the Myocum Quarry in accordance with DA conditions to determine compliance. An options assessment was requested to propose short, medium and long-term options for the site and to estimate the cost of rectification options. The study also investigates other areas of the quarry to determine if quality material exists for extraction and to determine approval requirements to further extract to maximise the potential of the site.

Key issues

Aerial Survey and Mass Balance Assessment:

It was found that the Myocum Quarry does not currently match the required final rehabilitated landform specified by the DA conditions. There are both areas of overextraction (ie. areas needing fill to achieve the DA final landform/control line) and underextraction (areas needing to be cut to achieve the DA final landform/control line). This can be viewed in the survey figures in Attachment 2 of this report (and alternatively Appendix A of the Attachment 1 report provides a different presentation). (The cross section figures are the easiest to interpret.)

A stakeholder request was made to simplify the figures in the Attachment 1 report to aid the interpretation of the current landform compliance and this was attempted in Attachment 2. The "depth range levels" figure was simplified to 2 colours in Attachment 2 where:-

- Yellow shades indicates where fill is required to achieve DA levels. Less fill required = light shades, more fill required = dark shades. This will be difficult if not impossible to achieve in many places due to the sheer landform currently existing in these areas.

- Blue shades indicate areas where cuts can be performed (and material won) to achieve the DA levels.

DA Compliance and Options Assessment for Myocum Quarry:

The report noted areas of non-compliance relating to the following categories:-

1. Progressive rehabilitation – 5 specific areas of non-compliance relating to rehabilitation.

2. Monitoring and assessment requirements – the environmental performance of the site is being tracked and managed where required, however an Overall Quarry Monitoring Plan is required to alleviate a number of the minor issues that occur on site and potentially alleviate some of the more significant non-compliance issues associated with the operation of the quarry.

If no action is taken, Council may be subject to action from the following regulatory bodies:

- *"Byron Shire Council:*

  – *BSC may issue stop work notices or potentially prosecute the operator (proponent) for breaching conditions of Consent of DA 10.2001.496.2 in accordance with the Environmental Planning and Assessment Act 1979 particularly in relation to:*

    - *Condition 1 – the Rehabilitation Plan provided in the 2001 EIS indicated that the quarry will be extracted to a maximum depth of 0 metres AHD. However, there has been extraction below this level.*

    - *Condition 8 – no revegetation has taken place as detailed in this condition.*

    - *Condition 28 – the site has not been progressively rehabilitated as detailed in this condition.*

  [It is to be noted that Council is unlikely to take enforcement action against itself]

- *NSW Resources Regulator:*

  – *The NSW Resources Regulator is responsible for Work, Health and Safety issues in relation to the quarry. As quarrying has occurred outside of the extent approved under DA 10.2001.496.2, the quarry may be deemed unsafe and as such work, health and safety measures may need to be addressed prior to any further quarrying at the site.*

  – *The Inspector of Mines responsible for the quarry stated that the eastern high wall required rehabilitation to make safe. Other safety issues may also exist.*

- *NSW Environment Protection Agency:*

  – *The NSW EPA may prosecute Council in accordance with the Protection of the Environment Operations Act 1997 for breaches against EPL 12600 for the Myocum Quarry.*

- *Water NSW (through Natural Resource Access Regulator):*

– *Should the groundwater be intercepted and contaminated, without an aquifer interference licence from Water NSW, the Natural Resource Access Regulator may take action in accordance with Water Management Act 2000.*

– *Investigators are authorised under the Water Management Act 2000 to gather evidence. NRAR's authorised officers can enter a person's private property (other than a residence) without a search warrant and undertake activities on a property such as inspect and test equipment, take samples and examine records."*

Options

Options for short, medium and long term rectification of compliance at the Myocum Quarry were assessed with the final recommendation being:

"Based on the findings of the compliance and options assessment, and consideration of the risks associated with the 'do nothing' option, GHD recommends that the best course of action in the short term would be to seek development consent for a modified quarry proposal, which would involve modification to the existing development consent to legitimise the areas which have been over excavated whilst still pursuing the material that was envisaged to be extracted under the original approval (as modified).

Having reviewed the previous approval documentation it is recommended that the best course of action in the short term is to prepare a Section 4.55(2) modification to the original development consent for the quarry to enable extraction of the remaining resource, ongoing stockpiling, crushing, grinding and separating at the site, resolution of a revised rehabilitation strategy for the site given the over extraction at the site. This exercise may also rationalise the sediment basins on the site to be able to maximise the use of the site for identified long term options, if BSC chooses.

An SEE would also outline the proposed modifications for which approval is to be sought and assess the likely environmental impacts of the modifications. Consideration would be given to flora and fauna, visual amenity, air quality, water management, noise and vibration, Aboriginal cultural heritage, traffic and access, hazards and risks, geotechnical constraints, rehabilitation and revegetation. These matters would be considered relying on predominantly existing available desktop information."

The cost estimate for implementing the above development consent modification recommendation is $20-60,000 (ex GST).

Next steps

The Executive Team resolved to adopt the consultant's recommendation to seek to obtain a modified quarry development consent.

The project team will now progress this action commencing with a Development Advisory Panel (DAP) meeting with the SEE Directorate prior to proceeding with the preparation of documents to support a modified DA submission.

Strategic Considerations

Community Strategic Plan and Operational Plan

There are no specific Operational Plan Activities for the Myocum Quarry, however several Delivery Program Actions relate to the operation of the quarry, neighbouring land uses, remaining resource availability for road networks, environmental outcomes and statutory outcomes including:

CSP Objective	CSP Strategy	DP Action	Code	OP Activity
Community Objective 1: We have infrastructure, transport and services which meet our expectations	1.1: Provide a road network which is safe, accessible and maintained to an acceptable level of service	1.1.4: Develop road network new works program in line with Community Solutions Panel values/principles (SP)		
Community Objective 1: We have infrastructure, transport and services which meet our expectations	1.1: Provide a road network which is safe, accessible and maintained to an acceptable level of service	1.1.6: Provide stormwater infrastructure to manage flood mitigation, social and environmental outcomes		
Community Objective 1: We have infrastructure, transport and services which meet our expectations	1.2: Provide essential services and reliable infrastructure which meet an acceptable community standard	1.2.1: Deliver infrastructure maintenance services in line with Community Solutions Panel values (SP)		
Community Objective 1: We have infrastructure, transport and services which meet our expectations	1.4: Provide a regular and acceptable waste and recycling service	1.4.4: Ensure facilities and services meet statutory requirements		

5 Recent Resolutions

Not applicable

Legal/Statutory/Policy Considerations

It is considered that the Myocum Quarry currently contains a high level of regulatory risk, and potentially high levels of financial, reputational, environmental and workplace health and safety risk operating the quarry in its current state and under the current DA.

Refer to the consequences of no action in the 'Key Issues' section above.

Financial Considerations

To implement the remediation of Lot 12 Bayshore Drive Byron Bay, in excess of $900,000 was internally borrowed from the Quarry Reserve. It is anticipated that with the foreshadowed sale of part of Lot 12 these funds will be returned to the reserve to facilitate any necessary remediation of the Quarry.

Consultation and Engagement

IS staff referred the "DA Compliance Assessment and Options Assessment for Myocum Quarry" to the SEE department for their review and comment. The initial response from Manager Sustainable Development, SEE (Chris Larkin) is provided in Attachment 3.

Internal stakeholders have been consulted within the Works and Resource Recovery divisions of the IS directorate.

DA Compliance and Options Assessment for Myocum Quarry

Byron Shire Council

21 December 2021

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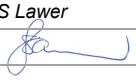
Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S3	Draft	C Harris	S Lawer	*S Lawer*	S Lawer	*S Lawer*	Sep 21
S3	Final Draft	C Harris	S Lawer	*S Lawer*	S Lawer	*S Lawer*	Nov 21
S3	Final	C Harris	S Lawer	*S Lawer*	S Lawer	*S Lawer*	Nov 21
S3	Final	C Harris	S Lawer		S Lawer		Dec 21

→ The Power of Commitment

Contents

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Appendices

1. Introduction

Byron Shire Council (BSC) has engaged GHD to prepare an aerial survey of the Myocum Quarry (Lot 1 DP 591441) to determine compliance with the final landform approved under Development Consent No. 10.2001.496.2 approved on 22 May 2008 and to identify any non-compliances with the DA conditions and options for rectification. The findings aim to identify a planning approval strategy for the future use of the quarry.

1.1 Scope

The scope of work involved the following:

1.1.1 Survey

The survey of the quarry was undertaken by HELImetrex and involved aerial (drone) survey of Myocum Quarry

- Bathymetric survey of water bodies (boat-based)
- Post processing to model terrain/ground levels
- Determine mass (cut/fill) diagrams and requirements to meet the rehabilitation plan for DA – present in ISOPAC colour coded format
- Produce plans and cross-sections

  Survey is contained in Appendix A and shows difference between approved and current extraction limits.

1.1.2 Planning

A compliance and options assessment involving the following:

- Site visit to the quarry and a desktop review of relevant documents
- Identification of non-compliances with the DA conditions and options for rectification.
- Establish a strategy to deal with any areas of non-conformance
- Undertake an investigation into other areas of the quarry to determine if quality material exists
- Determine approval requirements to extract other areas where possible to maximize the potential of the site
- An estimate of costs (rough order of magnitude) for the various rectification options be included in the options assessment.

1.2 Purpose of this report

The purpose of this report is to outline the findings of the above scope and to identify a planning approval strategy for the future use of the quarry.

1.3 Scope and limitations

This report: has been prepared by GHD for Byron Shire Council and may only be used and relied on by Byron Shire Council for the purpose agreed between GHD and Byron Shire Council as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Byron Shire Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Byron Shire Council, which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. The site

2.1 Locality

Myocum Quarry is located on Lot 1 DP 591441, Myocum Road, Myocum, NSW within the Byron Shire Local Government Area. The site is 5 km north-west of Byron Bay. The site is shown in Figure 2.1. Surrounding land uses include:

– Byron Resource Recovery Centre (BRRC) adjoins the eastern boundary, on Lot 1 DP 1052900.
– Adjoining the northern boundary on Lot 4 DP 1052900 and Lot 17 DP 1178892is the commercial Leela Quarry, which has been acquired by Council. No further quarrying or landfilling activities are proposed for the Leela Quarry. Size of pit is 250,000 m3 or 4.046 ha.
– A farm adjoins the western and southern boundaries, on Lot 15 DP 1178892, this is owned by Council.
– Between the quarry and Myocum Road is a farm, on Lot 5 DP 748290.
– Council purchased Lot 15 and Lot 16 which surround the quarry to provide and additional buffer, in preparation for a possible putrescible landfill.

Council owns several properties around the quarry as buffers (refer Figure 2.2). These consist of:

– Three properties currently managed by Resource Recovery operations. This includes the farmland on Dingo Lane, which is a proposed solar farm site, and is currently used for agistment, and
– Three residential houses, one which is accessed via Dingo Lane and two which are accessed from The Manse Rd.

The locality is rural, with farmland and rural residential land. Farmland consists of small crops and some grazing (cattle and horses).

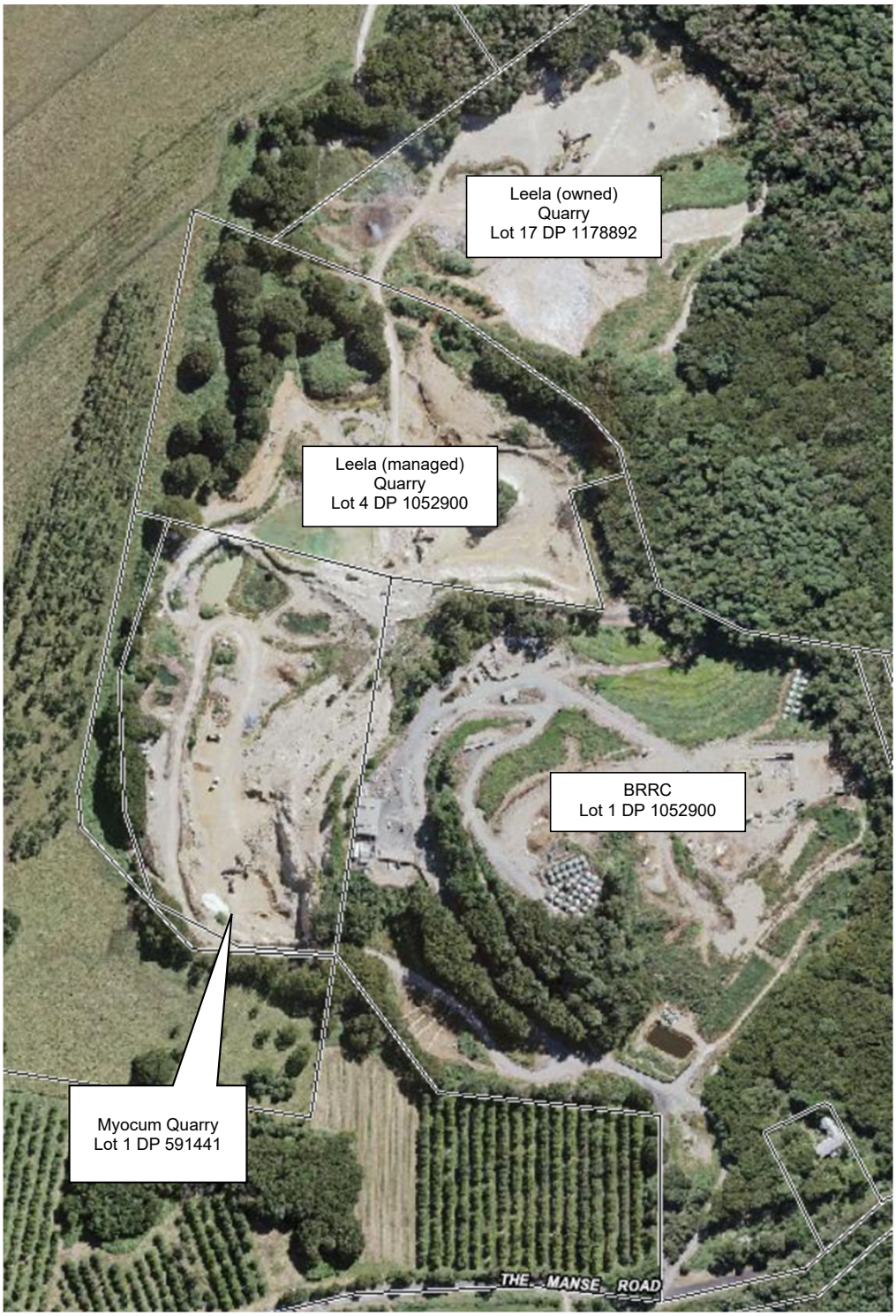


Figure 2.1 The site and lot boundaries

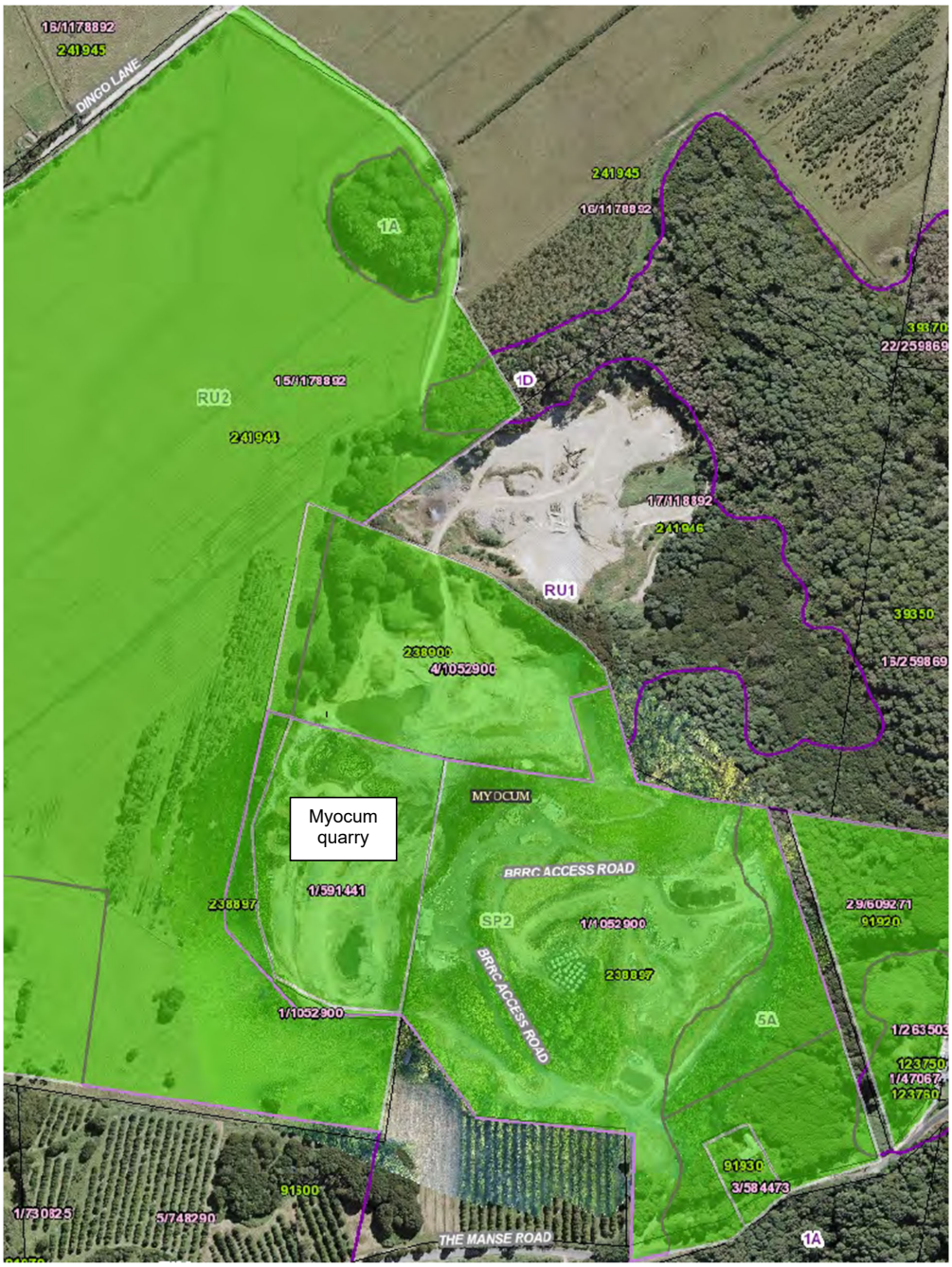


Figure 2.2 Council-owned land surrounding the quarry

A number of residences are within close proximity of the quarry. Residences R1 to R5 (inclusive) are identified in an extract from the 2018 Compliance Noise Monitoring Report for the BRRC and Myocum Quarry, which is attached in Appendix B. Residences R1, R3 and R4 are owned by BSC, while the other residences are privately owned. Residences R1 and R5 are two storey dwelling houses while the other dwellings are single storey.

Leela Quarry (privately operated) is located to the north. Vegetation provides a visual screen from the BRRC to residences R1, R2, R3 and R5.

2.2 Location of monitoring points

The map in Appendix B shows noise monitoring locations. In addition to these points, monitoring points are identified in 3 Environmental Protection Licences (EPLs). These EPLs are for:

– EPL 12600 for Myocum Quarry
– EPL 13127 for BRRC
– EPL 6057 for Myocum Landfill

Note that the references to landfill gas monitoring are not relevant to Myocum Quarry.

EPL 12600 – Myocum Quarry monitoring points

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Wet weather discharge	Wet weather discharge	Discharge from last sediment pond on boundary of quarry. Easting: 549798; Northing: 6837365

EPL 13127 – BRRC monitoring points

Air

EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
6	Landfill gas monitoring		All buildings and other enclosed structures within 250 metres of waste filled areas and leachate storage at the premises.
7	Landfill gas monitoring		All waste filled areas with intermediate or final capping in place.
8	Noise level monitoring		Noise Monitoring Point N1 identified in Appendix A of Part E of the "Myocum Landfill Remediation Plan - Landfill Environmental Management Plan" revised 15 May 2008.
9	Noise level monitoring		Noise Monitoring Point N2 identified in Appendix A of Part E of the "Myocum Landfill Remediation Plan - Landfill Environmental Management Plan" revised 15 May 2008.
10	Noise level monitoring		Noise Monitoring Point N3 identified in Appendix A of Part E of the "Myocum Landfill Remediation Plan - Landfill Environmental Management Plan" revised 15 May 2008.
11	Noise level monitoring		Noise Monitoring Point N4 identified in Appendix A of Part E of the "Myocum Landfill Remediation Plan - Landfill Environmental Management Plan" revised 15 May 2008.
12	Noise level monitoring		Noise Monitoring Point N5 identified in Appendix A of Part E of the "Myocum Landfill Remediation Plan - Landfill Environmental Management Plan" revised 15 May 2008.

EPL 6057 – Myocum Landfill monitoring points

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Air

EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
14	Landfill gas monitoring.		Gas monitoring point MW01 identified in Appendix A of Part E of LEMP, revised 15 May 2008
15	Landfill gas monitoring.		Gas monitoring point MW02 identified in Appendix A of Part E of LEMP, revised 15 May 2008.
16	Landfill gas monitoring.		Gas monitoring point MW03, identified in Appendix A of Part E of LEMP, revised 15 May 2008.
17	Landfill gas monitoring.		Gas monitoring point MW04 identified in Appendix A of Part E of LEMP, revised 15 May 2008.
18	Landfill gas monitoring.		Gas monitoring point MW05 identified in Appendix A of Part E of LEMP, revised 15 May 2008.
19	Landfill gas monitoring.		All buildings and sheds at the premises.
20	Noise level monitoring		Monitoring point N1 indicated in Appendix A of Part E of LEMP, revised 15 May 2008.
21	Noise level monitoring.		Noise monitoring point N2 identified in Appendix A of Part E of LEMP, revised 15 May 2008.
22	Noise level monitoring.		Noise monitoring point N3 identified in Appendix A of Part E of LEMP, revised 15 May 2008.
27	Noise level monitoring.		Noise monitoring point N4 identified in Appendix A of Part E of the LEMP, revised 15 May 2008.
28	Noise level monitoring.		Noise monitoring point N5 identified in Appendix A of Part E of the LEMP, revised 15 May 2008.

3. Site history

A timeline of documents and events for the quarry is shown in Table 3.1.

Table 3.1 Timeline for quarry

Date	Document/event
1970's	Myocum Quarry has been used for obtaining road base materials since the 1970's
August 2001	Environmental Impact Statement for continued use of quarry (GHD, August 2001) EIS Either this EIS or the supplementary EIS report was accompanied by a rehabilitation plan. It was superseded by a rehabilitation plan approved on 22 May 2008.
July 2002	EIS Supplementary Report (GHD, July 2002)
2004	DA 10.2001.496.1 approved
2007	Study of Myocum Quarry by Allan Watson & Associates.
November 2007	Statement of Environmental Effects by GHD. The use of Myocum Quarry for landfill was identified by Allan Watson & Associates (2007), confirmed in Council's Waste Disposal Strategy (2009) and endorsed in the Waste Management Strategy (2012-2015)
May 2008	DA 10.2001.496.2 approved 22 May 2008.
2009	BSC Waste Disposal Strategy
December 2012	Environment Protection Licence 12600 for Myocum Quarry (December 2012)
2012	BSC Waste Management Strategy (2012-2015)
2012	A more detailed and subsequent assessment of regional waste management options prepared by Hyder (2012) on behalf of North East Waste found that Myocum Quarry was not the most cost effective option for waste disposal, considering the significant amount of funds required to obtain approvals, construct the landfill cells, along with ongoing operational aspects and compliance with closure requirements. The use of Myocum Quarry as a landfill facility was the most expensive disposal option and required additional work to gain development approval with no guarantee of consent.
2014	An EIS (Cardno 2014) was completed and submitted for approval in September 2014. The EPA subsequently reviewed the EIS and requested additional information to be provided for assessment to obtain development approval. Changes to the EIS were claimed to cost up to $250,000 and approval not guaranteed. The option of expanding the landfill into the Myocum Quarry was discarded by BSC and a commitment made to invest capital into resource recovery infrastructure.
November 2014	GHD was engaged by BSC to conduct noise monitoring to address any increased noise levels resulting from the introduction of a crusher on-site at Myocum Quarry. A noise monitoring report was issued in November 2014.
2016	BSC engaged GHD in 2016 to prepare an aerial survey of the Myocum Quarry (Lot 1 DP591441) and to determine a mass balance to achieve the rehabilitation plan as specified by the Development Application (DA) for the site.
3 March 2016	BSC Water, Waste & Sewer advisory committee meeting - Item 5.5 Review of Council's Waste Disposal Strategy 2009 – this document is titled *Review of Byron Shire Council Waste Disposal Options (December 2015) by Tim Fitzroy & Associates.* Moved: That Council endorse the development of a revised 'Waste Disposal Strategy', utilising the recommended short, medium and long term options presented.
August 2017	Council adopted Byron Resource Recovery Master Plan (Iolar, August 2017) The plan noted the potential expansion of the current resource recovery into the Myocum Quarry as a viable option.
September 2017	Compliance Noise Monitoring Byron Resource Recovery Centre (September 2017)
February 2018	Resource Recovery Centre – Myocum Quarry Planning Pathway Report (February 2018)
August 2018	Pollution Incident Response Management Plan – Byron Resource Recovery Centre & Myocum Landfill (August 2018)

Date	Document/event
August 2018	Compliance Noise Monitoring Byron Resource Recovery Centre & Myocum Quarry
5 November 2018	Byron Waste Management and Resource Recovery Strategy Draft Technical Report (Arcadis, 5 November 2018) In 2018 BSC engaged Arcadis to prepare a 10-year Integrated Waste Management and Resource Recovery Strategy. Arcadis has assessed available historical data on waste received at BRRC for financial years 2012-13 to 2017-18. The draft report noted the potential expansion of the current resource recovery centre into the Myocum Quarry as a viable option.
February 2019	Towards Zero - Byron Shire's Integrated Waste & Resource Recovery Strategy 2019-2029. One of the actions of the strategy is to investigate and progress the conversion of Myocum Quarry (at closure) into a resource recovery facility for composting and C&D waste recovery.

4. Relevant documents

4.1 DA 10.2001.496.1 (2004)

The 2001 EIS envisaged the quarry floor being excavated to a maximum depth of 0 metres AHD on the northern section of the quarry rising progressively on a slope gradient in the order of 3-10 percent towards the southern extremity of the excavation.

The quarry was proposed to be excavated in stages with the quantity of material being extracted dependent on demand. Benches would be constructed around the perimeter of the quarry which would assist in providing a safe working environment as well as provide a platform for future rehabilitation and revegetation. Each bench was to be approximately 5 metres wide with the vertical distance between benches of approximately 7 metres.

Upon completing each stage (which was to comprise the excavation of 50 lineal metres of bench), overburden and topsoil material was to be deposited on each bench area to assist in future rehabilitation. Upon reinstatement of overburden material, no further excavation was to occur within this specific bench area. Excavation of material was then to progress to achieve the next desired bench level and profile, until such time as the desired final quarry profiles were obtained.

The floor of the quarry was to be progressively excavated. The floor of the quarry would grade slightly to the north so as to provide for surface runoff to be directed to a sedimentation pond existing in the lowest point of the quarry floor which would have a water surface level at approximately 0 metres AHD.

This pond would be serviced by an electric pump which would be controlled by an automatic float valve whereby upon the water level reaching a certain height the pump would be activated and stormwater would be pumped from the pond to the existing secondary sedimentation pond situated on elevated ground outside of the quarry pit in the western section of the site adjoining the existing machinery compound.

Clean stormwater would then be discharged from this sedimentation pond through a controlled spillway into the existing overland drainage channel situated on adjoining property to the west for eventual discharge into the drainage system associated with Simpsons Creek to the north.

Subsequent changes to the approval were made as discussed below.

4.2 DA 10.2001.496.2 (22 May 2008)

The modification involved the extraction of additional resource material via reducing the height of the rock curtain along the northern boundary from 30 m Reduced Level (RL) at the eastern end to 10 m RL, thus making it the same height as the western end of the rock curtain. The rock curtain separates the Myocum and Leela quarries and yielded approximately 4-5,000 m^3 of material (for the BSC Quarry). DA modifications also included:

– The extraction of material from the Western Wall, yielding approximately 10-12,000 m^3 of material;
– The extraction of material from the quarry floor to make it 1 m RL at the southern end and 0.0 m RL at the northern end adjacent to the sediment ponds. This extraction will yield approximately 10,000 m^3 of material; and
– The relocation of the access road into the quarry to facilitate the safe and efficient operation of the site as quarrying progresses.
– The shaded areas in Figure 1 (Appendix C) illustrate the proposed additional extraction areas within the quarry site.

The ultimate aim of the minor expansion was to maximise the use of the quarry's resources through the extraction of an additional 24-27,000 m^3 of material for Council to utilise in road works and other projects across the Shire, thus prolonging its life by up to 2 years at approved extraction rates. The minor expansion works will also create a safer work environment for the Myocum quarry's employees and facilitate the more thorough rehabilitation of the site.

Council subsequently approved the modifications to the quarrying operation. Minor changes were made to the conditions of Development Consent 10.2001.496.1.

The lowering of the northern rock curtain was to negate the need for a geotechnical assessment (to assess its stability) and the imminent rehabilitation of the eastern quarry face will negate the need for a restriction to be placed over the landfill site as the rehabilitation will include shaping that will ensure its stability.

With the exception of Condition No. 7, the quarry was to continue to operate in accordance with the conditions stipulated in Development Consent 10.2001.496.1. In this regard:

– The quarry will operate between the hours of 7.00am – 6.00pm Monday to Friday and 7.00am to 12 midday Saturday with no operation on Sunday or public holidays;
– No additional blasting will be required over and above that already permitted by the existing operation;
– Extraction of material from the quarry will not exceed 30,000 tonnes per annum;
– Appropriate noise attenuation measures will be maintained;
– The quarry will be progressively rehabilitated as extraction progresses; and
– All licences and approvals in relation to water quality, noise and air quality will be maintained and updated as appropriate.

4.3 Environment Protection Licence 12600 for Myocum Quarry (December 2012)

An Environment Protection Licence has been granted for the quarry 20 December 2012. The License applies to Lot 1 DP 591441 and covers crushing, grinding or separating (> 30,000 T processed), and extractive activities (0-30,0000 T extracted, processed and stored). Conditions and compliance with them are discussed in Section 5 and Appendix D.

4.4 Noise Monitoring Report (November 2014)

GHD was engaged by BSC to conduct noise monitoring to address any increased noise levels resulting from the introduction of a crusher on-site at Myocum Quarry. A noise monitoring report was issued in November 2014. The report assesses noise levels against the operational noise limits specified in the EPL for the quarry.

Attended noise measurements were taken over three days to quantify any impact the crushing plant had on the acoustic environment; The first day the crushing plant was not on site; The second day the crushing plant was operating on site; The third day the crushing plant was on site but was not operating.

The results show that shows that the quarry exceeded their EPL noise criterion at the nearest residential receiver on each occasion attended monitoring was undertaken. The crushing plant was operating on site on only one of the three days attended monitoring was conducted. On this day (16/10/2014), the crushing plant was estimated to be contributing less than the existing overall off-site noise levels generated from the quarry.

4.5 Review of Byron Shire Council Waste Disposal Options (2015)

Tim Fitzroy and Associates (TFA) were engaged in June 2015 to undertake a strategic review of BSC's Waste Disposal Strategy 2009. The review included:

– Research on the strategic context since adoption of the current waste disposal strategy. This includes but was not limited to the current position of the Myocum Transfer Station/Closed Landfill, Hyder reports, Morrison Low reports, Transport and Disposal contract, NSW and QLD Waste Levy positions, GM's Regional Initiative, and emerging trends;
– A review / addendum to the current waste disposal strategy;
– A review and assessment of the available options to BSC going forward including:
    - Continuing to pursue approval for a putrescible waste landfill,
    - Change to a non putrescible waste landfill eg C&D waste,
    - Change to a resource recovery area, and/or

- Abandon future use of this quarry area and move to restoration;

– Consideration of the benefits, costs, risks and timing for the options; and

– Conclusions and recommendations.

Of the four options mentioned above, the use of Myocum Quarry as a landfill facility was found to be the most expensive disposal option. Furthermore, it would require additional work to gain development consent with no guarantee of approval.

4.6 Council meeting 3 March 2016

BSC Water, Waste & Sewer advisory committee meeting - Item 5.5 Review of BSC's Waste Disposal Strategy 2009 – this document is titled *Review of Byron Shire Council Waste Disposal Options (December 2015) by Tim Fitzroy & Associates.*

Moved: That Council endorse the development of a revised 'Waste Disposal Strategy', utilising the recommended short, medium and long term options presented in the TFA report.

With regard to the medium to long term options, the report stated that savings of up to $19 Million over 15 years will be realised by following the recommended strategic approach to utilise regional landfills as opposed to pursuing the Myocum Quarry Landfill option.

4.7 Byron Resource Recovery Centre Master Plan – Draft (August 2017)

The draft Master Plan Past recognised the past planning for Myocum Quarry and acknowledges use of the quarry for a future landfill. BSC has since ruled this option out. Consequently, this area has been considered for the future extension of the resource recovery and recycling operations as well as Alternate Waste Technologies (AWT) initiatives.

Under the draft Master Plan, all areas of the existing BRRC site will be utilised as each proposed stage is completed. At the completion of the proposed Master Plan, the Myocum Quarry will be the only area available for the development of an AWT.

The draft Master Plan recognised that the land available in the quarry site will enable BSC to respond to and move towards the use of AWTs if viable opportunities become available. Further, opportunities for the recycling of construction and demolition wastes, and the expansion of organics processing, can be considered.

4.8 Resource Recovery Centre – Myocum Quarry Planning Pathway Report (February 2019)

Over the past twelve years BSC has undertaken a number of waste disposal options assessments.

In 2016 BSC considered a number of short, medium and long-term waste management options.

Amongst the short-term options under consideration was the utilisation of the Myocum Quarry site (Lot 1 DP591441) for resource recovery infrastructure development and operations. The use of the quarry for resource recovery uses is also discussed in the following strategies:

– *Byron Waste Management and Resource Recovery Strategy Draft Technical Report* (Arcadis, 5 November 2018) notes the possible use of the quarry for resource recovery purposes.

– *Draft Byron Resource Recovery Centre Master Plan* (Iolar, August 2017) notes the possible use of the quarry for resource recovery purposes.

– BSC's adopted waste management strategy is *Towards Zero - Byron Shire's Integrated Waste & Resource Recovery Strategy 2019-2029*. One of the actions of the strategy is to investigate and progress the conversion of Myocum quarry (at closure) into a resource recovery facility for composting and C&D waste recovery.

– The use of Myocum Quarry for landfill was identified by confirmed in BSC's Waste Disposal Strategy (2009) and endorsed in the Waste Management Strategy (2012-2015).

The quarry site had been flagged for development of a new landfill until BSC decided to abandon those plans and focus on reducing waste to landfill. The quarry site is now available as a possible location for future waste processing and recovery plant and equipment, including potential AWT (alternative waste treatment) technology.

The report states that BSC would like to pursue the option of establishing a Resource Recovery Centre (RRC) within the void of the Myocum Quarry (MQ).

4.9 Towards Zero - Byron Shire's Integrated Waste & Resource Recovery Strategy 2019-2029

Towards Zero - Byron Shire's Integrated Waste & Resource Recovery Strategy 2019-2029 is BSC's current waste strategy. One of the actions of the strategy is to investigate and progress the conversion of Myocum quarry (at closure) into a resource recovery facility for composting, and construction and demolition waste recovery.

The use of the quarry for a resource recovery facility could could encompass some of the activities that are already occuring on site, such as concrete crushing and storage, and add other activities such as recycling of bricks. EPA regulations apply to these activites and these would need to be adhered to.

5. Compliance assessment

5.1 Legislative framework

Extractive industries such as the quarry are a permissible use within the SP2 zone with prior consent of BSC under *Byron Local Environmental Plan 2014*. Pursuant to the provisions of the *Environmental Planning and Assessment Act 1979* and the *Environmental Planning and Assessment Regulations 2000,* an EIS was prepared to facilitate the planning approval of the quarry. The EIS was prepared as part of the development application for the continued use of the quarry and the quarry now operates under the DA consent granted in June 2004 and as modified in 2006. The operation must comply with the conditions outlined in the Development Consent.

Environmental management (i.e. preventing pollution) is managed under the *Protection of Environment Operations Act 1997* (POEO Act). The POEO Act is the key piece of environment protection legislation administered by the Environmental Protection Authority (EPA). The EPA is the major pollution law enforcement body in NSW. It also allows the EPA to issue licences for certain activities known as scheduled activities.

Scheduled activities are usually activities that meet certain criteria generally relating to the size or intensity of the activity or the sensitivity of the receiving environment. For extractive industries the criteria are set at 30,000 cubic meters per year (m^3/a). For crushing, grinding or separating works the criteria are set at 30,000 t/a or 150 tonnes per day (t/d),

Myocum Quarry now operates under EPL 12600.

5.2 Operational compliance

The Development Consent was granted subject to 28 specific conditions and consent terms that meet the EPA and the Department of Land and Water Conservation (now Department of Planning, Industry and Environment) conditions of integrated development.

Appendix D contains a detailed assessment against each consent condition. This was undertaken to determine the current operational compliance. As part of this assessment a review of management and safeguards outlined for the operation of the quarry in the Environmental Impact Statement (GHD 2001) and the Supplementary Report (GHD 2002) was also undertaken. A summary of the main issues identified during this assessment are outlined below.

The EIS and supplementary report provide broad commitments and management obligations for the quarry. The main area of concern with regards to the current operation of the quarry pertains to the quantities of material extracted and/or processed at the site, the requirement for progressive rehabilitation, the management of erosion and sedimentation at the site and requirements for undertaking, reporting and monitoring at the site.

Levels of extraction and crushing on the site may be above the thresholds outlined for obtaining a licence with the DEC. There has been no rehabilitation undertaken at the site. Some of the required monitoring and assessment (noise, traffic and geotechnical assessments) and water monitoring conducted in relation to the quarry operations is either limited and/or not well documented.

These issues are further discussed below:

5.2.1 Extraction

Condition 13 of the DA consent indicates that extraction of material from the quarry must not exceed 30,000 t/a. In addition, the quarry would become a scheduled premises / activity under the POEO Act if extraction exceeds 30,000 m^3/a or if crushing exceeds 30,000 t/a or 150 t/d.

Data on extraction rates between 11/06/2004 and 30/06/2021, provided by BSC for the purpose of this review, have shown that extraction and crushing at the site has not exceeded the respective 30,000 t/a threshold.

The Rehabilitation Plan provided in the EIS indicated that the quarry will be extracted to a maximum depth of 0 metres AHD. However, there has been extraction below this level and this needs to be recorded. In addition to this, extraction has occurred outside of the property boundary in the north-east corner. The DA consent is only

applicable for the area within Lot 1 DP 591441. It is understood that this extraction was undertaken prior to the DA consent being granted however BSC should outline this and ensure that all relevant agencies are aware that this has occurred. Treatment of this area should be included in future rehabilitation plans.

The 2021 survey of the site (included in Appendix A) shows that a balance of cut to fill of only 57m^3 exists across the quarry in line with the approval Development Consent 10.2001.496.2. A review of the survey reveals that generally the northern and eastern faces of the quarry have been over excavated, whilst the western and southern areas of the quarry contain material still available for extraction. Depths of resource between 0.5m and 10.5m still exist in the western portion of the site, available for extraction.

5.2.2 Storage and processing of building waste

The quarry site also stockpiles construction equipment, waste concrete and soils. Concrete is crushed by a contractor with a mobile crusher. The resulting crushed concrete is then disposed of at the landfill or used as road base. The mobile crusher, used to crush the concrete waste, operates at the site on a temporary basis (campaign crushing), is on site for less than six months a year.At present Environment Protection Licence 12600 for Myocum Quarry does not allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

As such the threshold for resource recovery before it needs to be licensed under the POEO Act is 1,000 tonnes or 1,000m^3 at any time or 6,000 t/ annum. Thus as long as the quantity of concrete and soils stored on site does not exceed 1,000 tonnes or 1,000m^3 at any time or 6,000 t/ annum it does not require a licence under the POEO Act and EPA conditions L4.1 and L4.2 will be meet.

The 2007 SEE for the expansion of Myocum Quarry assessed impacts associated with crushing, stockpiling however Development Consent No. 10.2001.496.2 does not include approval for storage and processing of building waste. Development consent and modifications to the EPL would be required for this activity.

5.2.3 Progressive rehabilitation

A requirement of the DA consent was for progressive rehabilitation to take place at the site. A rehabilitation plan was developed as part of the EIS, however implementation of this plan has been minimal at this stage. The rehabilitation plan and the conditions of consent required supplementary planting on the northern, western and southern boundaries, this has not been undertaken. The plan also required the stabilisation and vegetation of benches to maintain visual amenity on the site and minimise the exposed surface which are subject to potential erosion. Benching as required for the rehabilitation plan has not been undertaken and the face shows erosion rills etc. A geotechnical assessment to determine suitable benching and slopes will be required (refer Section 5.2.8).

The intent of progressive rehabilitation is to provide a stable landform that maintains the visual amenity of the surrounding area and minimising the area subject to erosion, and to reinstate habitat for local flora and fauna.

BSC previously considered expanding the adjacent landfill into the quarry void. This plan has been abandoned due to the cost involved, and the current plan is to rehabilitate the site after extraction is complete.

To date, rehabilitation has been minimal as extraction from any one area has not been complete (i.e. resource has not been sterilised) therefore activities may still occur.

The rehabilitation is non compliant. Due to the over extraction in the eastern face of the quarry and the limited benching as a result, the approved rehabilitation plan would need to be abandoned and efforts made to stabilise the banks and minimise erosion as well as improve visual amenity. Consideration for the long-term use of the quarry should be considered in undertaking developing a revised rehabilitation plan prior to approval.

5.2.4 Erosion and sediment control

A sediment and erosion control plan was developed as part of the EIS and supplementary report. This plan outlines the position of drains and the location of ponds to prevent sediments leaving the site. In addition the plan outlines that progressive rehabilitation will be undertaken to minimise areas of potential erosion and outlines techniques that will be used to prevent contamination of clean runoff and dust suppression.The erosion and sediment control plan clearly states that as the extraction is progressive the plan will be developed to reflect that

progress. Therefore the location of drains and sedimentation ponds is expected to vary slightly as extraction progresses. Thus, while the sedimentation ponds and drains at the site do not reflect the exact nature of the diagrams that accompany the Sedimentation and Erosion Control Plan in the EIS and the supplementary report, it is considered that these have evolved with extraction and the existing system is providing a mechanism to minimise sediments leaving the site.

However the lack of progressive rehabilitation results in a large portion of the site being exposed to potential erosion and erosion rills on the eastern face are evident. The management of erosion and sediments on site is therefore considered to be below compliance. In addition, the over excavation and lack of benching at the site, in line with the rehabilitation plan creates an ongoing safety risk .

5.2.5 Physical hazards and risk

As noted above, sediment and erosion control measures are considered to be below compliance and a large portion of the site is exposed to potential erosion. Erosion rills are evident on the eastern face of the quarry. The risk of erosion on the site poses a safety hazard to workers, and erosion on the entrance road may be hazardous to traffic. It is recommended that further geotechnical investigations be undertaken to ascertain the level of risk at the site.

5.2.6 Surface water

There are conflicting criteria for achieving compliance with the water monitoring criteria. Condition 14 c of the DA requires the pH of discharge water to be within 0.5 of the receiving water. BSC however, have indicated that the receiving water is not always tested therefore this condition cannot be met. In addition the condition set by the EPA L2 requires the pH to be between 6.5 – 8.5 which has the potential to conflict with Condition 14c if the receiving water's pH is below 6 or above 9. Results viewed on monitoring for pH did not fall within this range.

In addition the water in the sediment retention ponds is used by the BRRC facility for dust suppression and in case of fire.

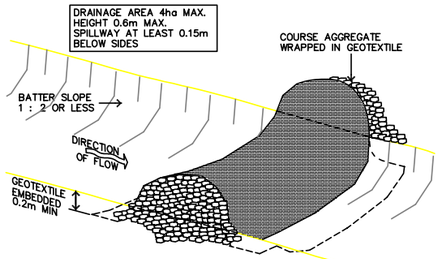
Surface water monitoring for Myocum landfill

Surface and groundwater monitoring has been undertaken quarterly for Myocum landfill during the years 2009-2021. None of the surface water monitoring sites are located within the quarry.

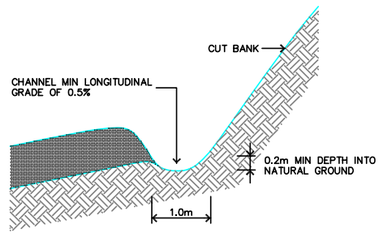
Sediment pond monitoring 2016

Monitoring was undertaken in 2016 for 2 sediment ponds in Myocum Quarry, measuring TSS, turbidity and pH (refer Figure 5.1,

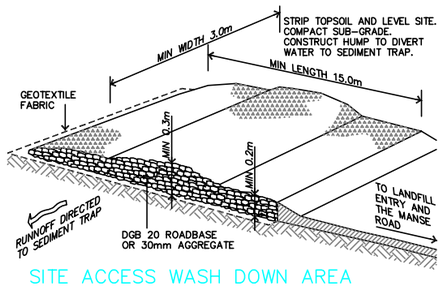
Table 5.1, Figure 5.2 & Figure 5.3). The Environment Protection Licence conditions for the quarry set a 100 percentile limit criterion of 50 mg/L for TSS for wet weather discharges from the final sediment basin. However, the EPL does not specify a minimum design rainfall event for this criterion. The criterion of 50 mg/L will not be met in excessive rainfall events resulting in non-compliance.



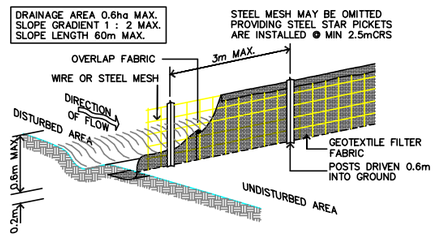
ROCK CHECK DAM



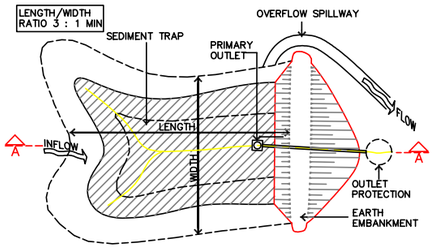
EMBANKMENT DIVERSION DRAIN



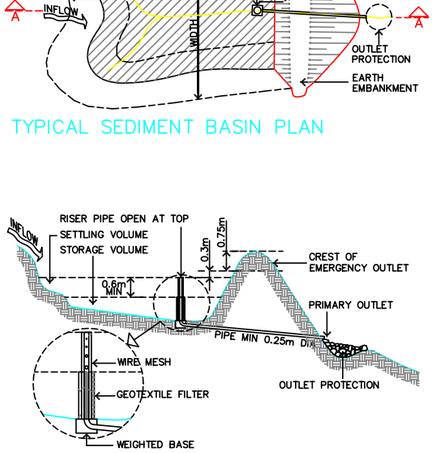
SITE ACCESS WASH DOWN AREA



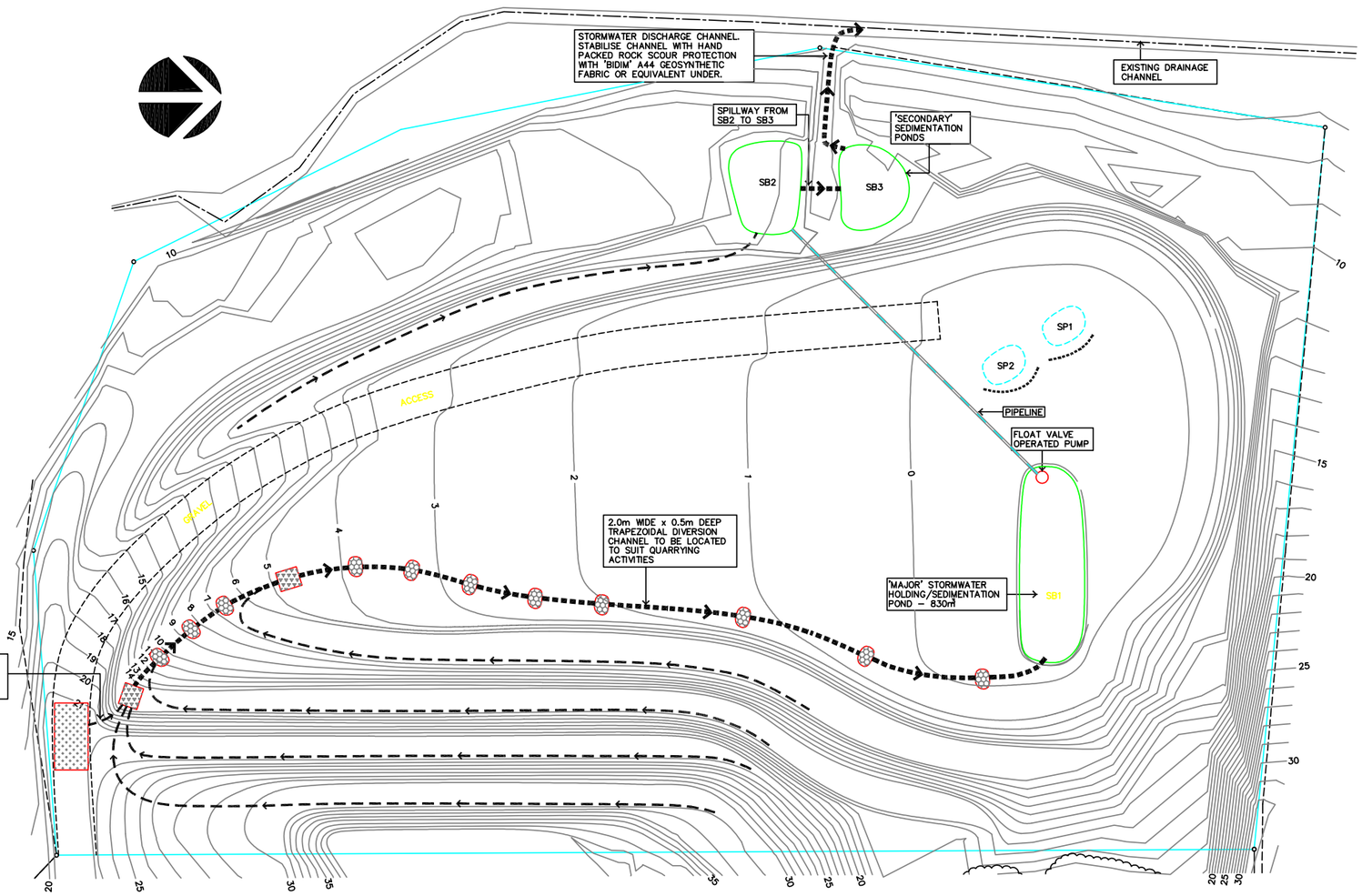
SEDIMENT FENCE



TYPICAL SEDIMENT BASIN PLAN



SEDIMENT BASIN SECTION A.A



LEGEND

- STABILISED SITE ACCESS AND WASH DOWN AREA
- SB2 — SEDIMENTATION BASIN/POND
- ROCK CHECK DAM
- SEDIMENT FILTER FENCE
- DIVERSION CHANNEL
- ENERGY DISSIPATOR POND MIN 5.0m LONG x 2.5m WIDE x 1.0m DEEP
- SP2 — CRUSHED AND SCREENED GRAVEL STOCKPILES

No.	REVISION – REVISE ON CAD DO NOT AMEND BY HAND	ENGINEER APPROVED	DATE	M/FILM

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DRAWN: PAYNTER | ENGINEER DESIGN | DATE: JULY 2001 | ENGINEER CHECK | DRAFT CHECK | SURVEYOR | APPROVED | DATUM: A.H.D. | F.B. No.

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED

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GHD MANAGEMENT ENGINEERING ENVIRONMENT

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SCALE (1 : 500 for A1 Size Plot)

CLIENT AND JOB: BYRON SHIRE COUNCIL — MYOCUM QUARRY — LOT 1 DP 591441 THE MANSE ROAD MYOCUM

TITLE: PROPOSED QUARRY — EROSION & WATER MANAGEMENT STRATEGY

SIZE: A1 | JOB No.: 22 10354 | SHEET No.: 03 OF 03 | REV | COUNCIL APPROVED No.

Table 5.1 Sediment pond monitoring results

Site	EPL ID	Date	Turbidity (NTU)	TSS (mg/L)	pH
Sediment pond 1	1	19/07/2016	16	9.7	6.2
	1	5/08/2016	202	245	6.1
	1	30/08/2016	21	11	7.1
	1	13/09/2016	4.7	3	7.1
Sediment pond 2	1	19/07/2016	15	8.7	6.2
	1	5/08/2016	412	218	6
	1	30/08/2016	498	156	7.1
	1	13/09/2016	7.5	5	6.7

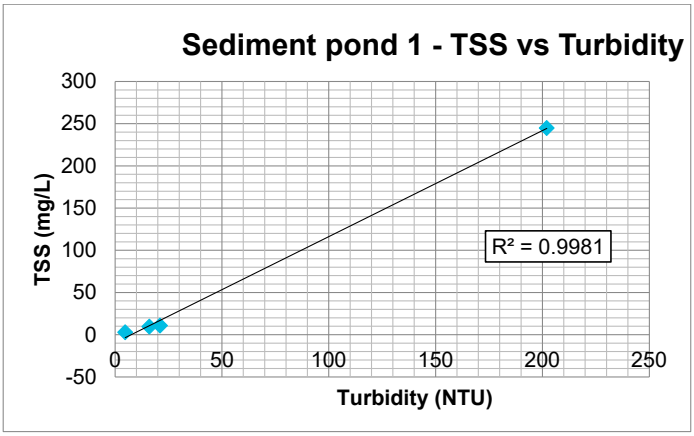


Figure 5.2 Sediment pond 1 - TSS vs Turbidity

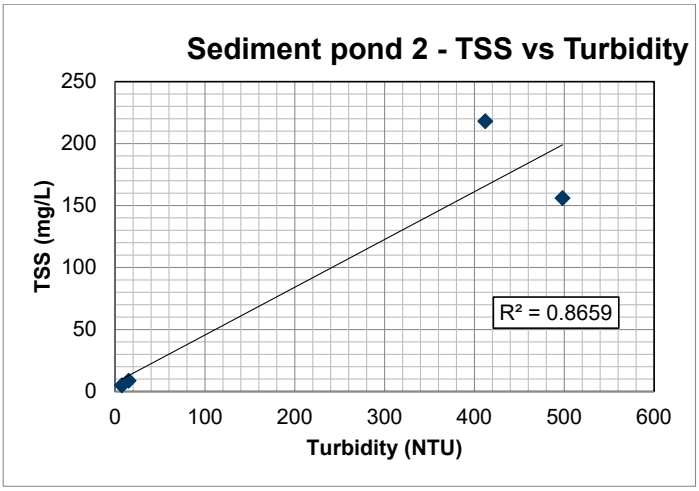


Figure 5.3 Sediment pond 2 - TSS vs Turbidity

Sediment dam monitoring 2016-2020

Monitoring was undertaken for 2 sediment dams in the quarry beween 2016-2019. The results for sediment dam 1 are shown in Table 5.2, Figure 5.2 & Figure 5.3. Results for sediment dam 2 are shown in Figure 5.5 Myocum Quarry Sediment Dam 1 (top pond) - Total Suspended Solids, pH & Turbidity samples

Table 5.3, Figure 5.6 & Figure 5.7.

Table 5.2 Sediment dam 1 monitoring 2016-2020

Sample Date	LIMS No.	Description	pH	Turbidity (NTU)	Total Suspended Solids	Threshold
13/07/2016	162590	EPL 12600 Surface Water Grab Sample	6.2	16	9.7	50
5/08/2016	162902	EPL 12600 Surface Water Grab Sample	6.1	202	245	50
30/08/2016	163167	EPL 12600 Surface Water Grab Sample	7.1	21	11	50
13/09/2016	163353	EPL 12600 Surface Water Grab Sample	7.1	4.7	3	50
28/09/2016		EPL 12600 Surface Water Grab Sample				50
10/10/2016	163558	EPL 12600 Surface Water Grab Sample	7.1	24	11.5	50
14/12/2016	164656	EPL 12600 Surface Water Grab Sample	7.3	27	22	50
10/01/2017	170115	EPL 12600 Surface Water Grab Sample	6.8	8.8	4.3	50
18/01/2017	170239	EPL 12600 Surface Water Grab Sample	7.2	8.4	5.6	50
28/03/2017	171170	EPL 12600 Surface Water Grab Sample	6.3	81	39	50
24/07/2017	171879	EPL 12600 Surface Water Grab Sample	6.8	2.3	1	50
18/10/2017	172734	EPL 12600 Surface Water Grab Sample	6.9	20	12	50
6/12/2017	174421	EPL 12600 Surface Water Grab Sample	7	4.3	4.5	50
19/03/2018	181086	EPL 12600 Surface Water Grab Sample	7.4	26	61	50

Sample Date	LIMS No.	Description	pH	Turbidity (NTU)	Total Suspended Solids	Threshold
19/04/2018	181410	EPL 12600 Surface Water Grab Sample	6.4	5.7	5.5	50
15/05/2018	181772	EPL 12600 Surface Water Grab Sample	7	9.2	6.7	50
26/06/2018	182213	EPL 12600 Surface Water Grab Sample	6.4	16	11	50
20/09/2018	183293	EPL 12600 Surface Water Grab Sample	6.7	3.8	1	50
8/11/2018	183790	EPL 12600 Surface Water Grab Sample	6.7	5.3	23	50
20/12/2018	184324	EPL 12600 Surface Water Grab Sample	6.6	15	56	50
14/02/2019	190558	EPL 12600 Surface Water Grab Sample	6.5	6.5	8.7	50
25/03/2019	191002	EPL 12600 Surface Water Grab Sample	6.5	10	6.5	50
23/05/2019	191718	EPL 12600 Surface Water Grab Sample	6.7	10	12	50
2/07/2019	192146	EPL 12600 Surface Water Grab Sample	6.5	25	45	50
8/08/2019	192588	EPL 12600 Surface Water Grab Sample	6.2	1.4	5.2	50
17/10/2019	193473	EPL 12600 Surface Water Grab Sample				50
21/10/2019	193492	EPL 12600 Surface Water Grab Sample				50
20/01/2020		EPL 12600 Surface Water Grab Sample				50
20/01/2020		EPL 12600 Surface Water Grab Sample				50

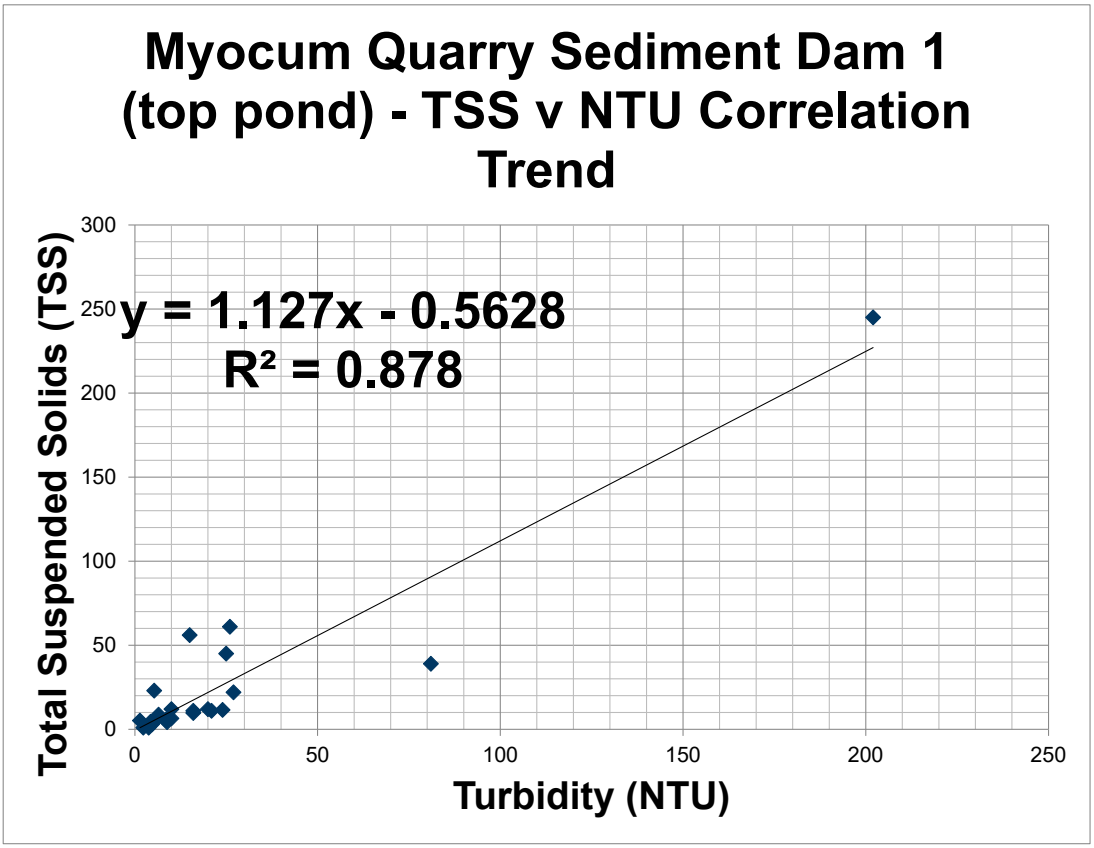


Figure 5.4 Myocum Quarry Sediment Dam 1 (top pond) - TSS v NTU Correlation Trend

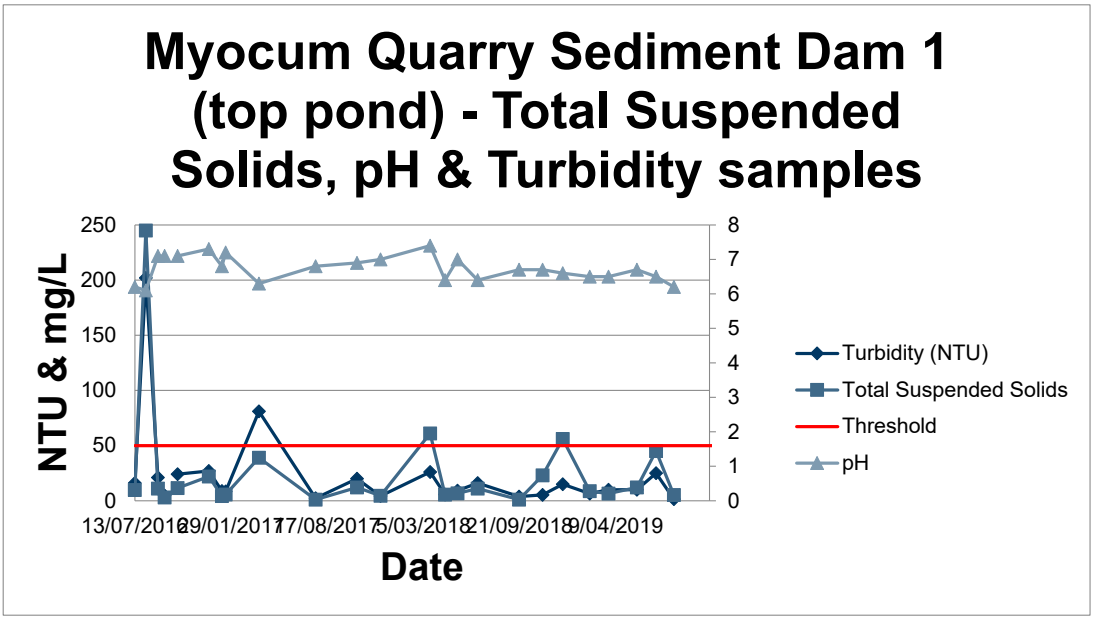


Figure 5.5 Myocum Quarry Sediment Dam 1 (top pond) - Total Suspended Solids, pH & Turbidity samples

Table 5.3 Sediment dam 2 monitoring 2016-2020

Sample Date	LIMS No.	Description	pH	Turbidity (NTU)	Total Suspended Solids	Threshold
13/07/2016	162590	EPL 12600 Surface Water Grab Sample	6.2	15	8.7	50
5/08/2016	162902	EPL 12600 Surface Water Grab Sample	6	412	218	50
30/08/2016	163167	EPL 12600 Surface Water Grab Sample	7.1	498	156	50
13/09/2016	163353	EPL 12600 Surface Water Grab Sample	6.7	7.5	5	50
28/09/2016		EPL 12600 Surface Water Grab Sample				50
10/10/2016	163558	EPL 12600 Surface Water Grab Sample	6.7	8	5	50
14/12/2016	164656	EPL 12600 Surface Water Grab Sample	6.8	25	20	50
10/01/2017	170115	EPL 12600 Surface Water Grab Sample	6.5	8.1	5.3	50
18/01/2017	170239	EPL 12600 Surface Water Grab Sample	6.8	19	12	50
28/03/2017	171170	EPL 12600 Surface Water Grab Sample	6.5	57	24	50
24/07/2017	171879	EPL 12600 Surface Water Grab Sample	6.4	6.6	3	50
18/10/2017	172734	EPL 12600 Surface Water Grab Sample	6.6	18	9.2	50
6/12/2017	174421	EPL 12600 Surface Water Grab Sample	7	15	10	50
19/03/2018	181086	EPL 12600 Surface Water Grab Sample	8.8	44	41	50
19/04/2018	181410	EPL 12600 Surface Water Grab Sample	6.5	5	3.8	50
15/05/2018	181772	EPL 12600 Surface Water Grab Sample	6.6	19	12	50
26/06/2018	182213	EPL 12600 Surface Water Grab Sample	6.5	3.1	1.4	50
20/09/2018	183293	EPL 12600 Surface Water Grab Sample	6.3	4.5	1	50

Sample Date	LIMS No.	Description	pH	Turbidity (NTU)	Total Suspended Solids	Threshold
8/11/2018	183790	EPL 12600 Surface Water Grab Sample	6.8	4.9	8.5	50
20/12/2018	184324	EPL 12600 Surface Water Grab Sample	6.6	5.2	19	50
14/02/2019	190558	EPL 12600 Surface Water Grab Sample	6.2	4.4	5.7	50
25/03/2019	191002	EPL 12600 Surface Water Grab Sample	6.8	26	32	50
23/05/2019	191718	EPL 12600 Surface Water Grab Sample	6.3	3.2	9	50
2/07/2019	192146	EPL 12600 Surface Water Grab Sample	6.6	25	17	50
8/08/2019	192588	EPL 12600 Surface Water Grab Sample	6.2	3.8	5.6	50
17/10/2019	193473	EPL 12600 Surface Water Grab Sample				50
21/10/2019	193492	EPL 12600 Surface Water Grab Sample				50
20/01/2020		EPL 12600 Surface Water Grab Sample				50
20/01/2020		EPL 12600 Surface Water Grab Sample				50

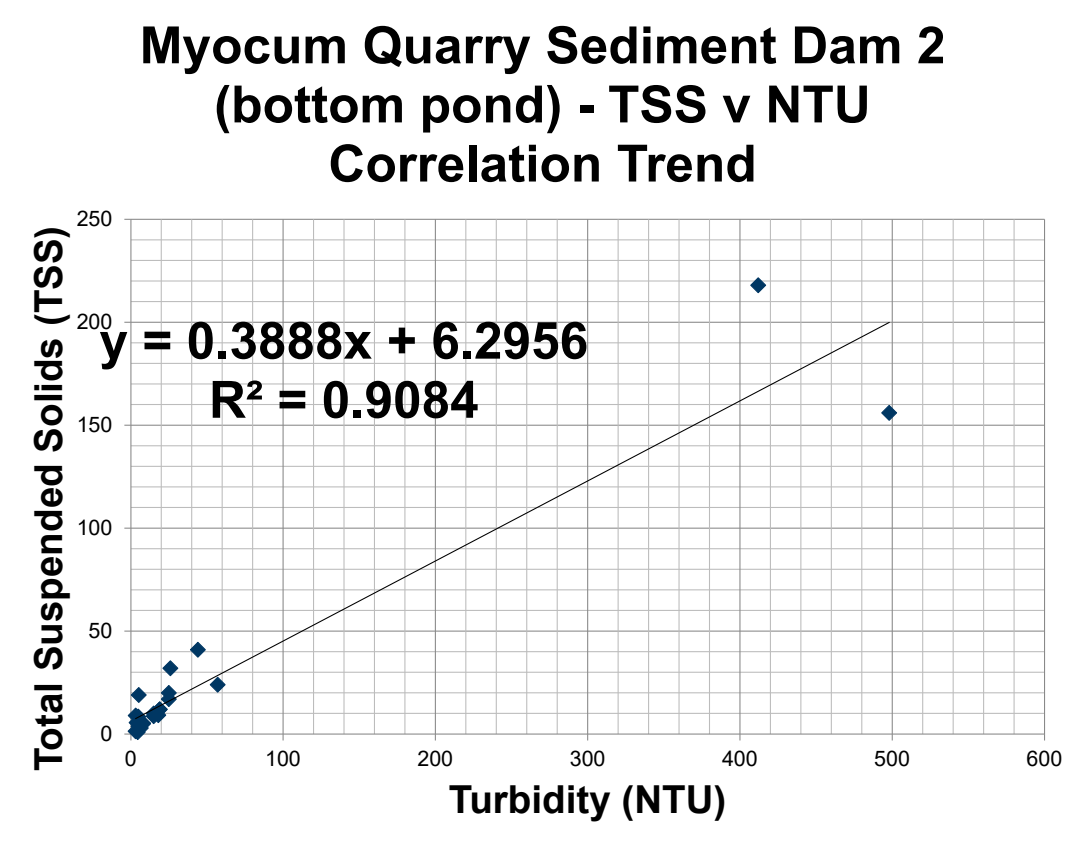


Figure 5.6 Myocum Quarry Sediment Dam 2 (bottom pond) - TSS v NTU Correlation Trend

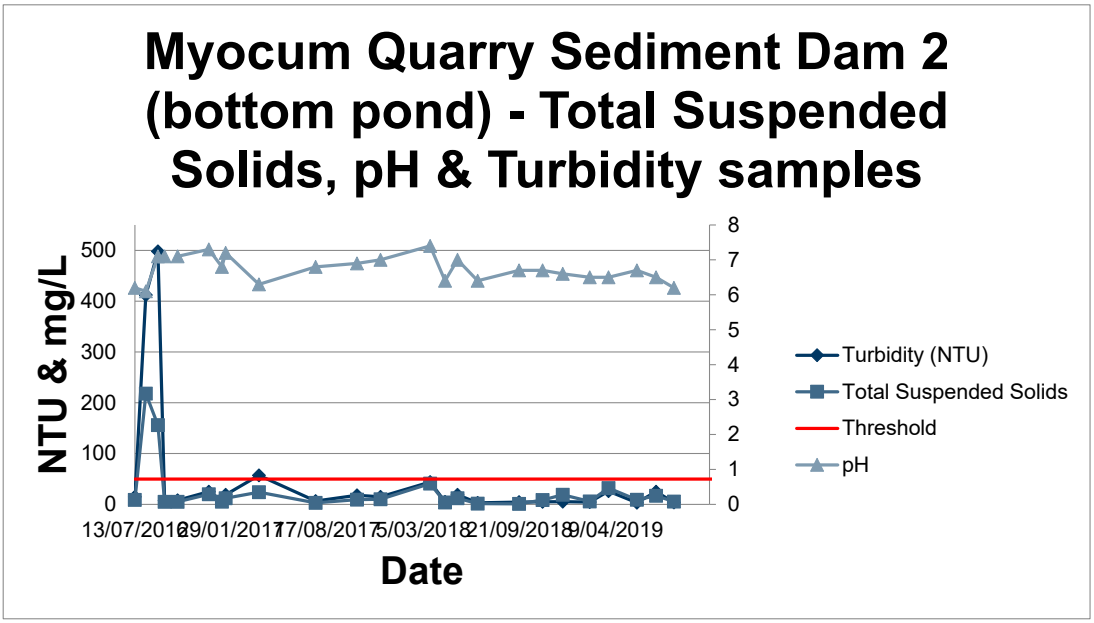


Figure 5.7 Myocum Quarry Sediment Dam 2 (bottom pond) - Total Suspended Solids, pH & Turbidity samples

5.2.7 Groundwater

Groundwater monitoring for Myocum landfill

Surface and groundwater monitoring has been undertaken quarterly for Myocum landfill during the years 2009-2021. Groundwater monitoring site MW03 (also known as EPA 03) is within the quarry as shown in Figure 5.8. The monitoring site has two names as it is point 3 in EPL 6057 for the landfill.

For the September 2020 – August 2021 monitoring period, the following contaminant exceedences were recorded:

– Alkalinity levels were exceeded over the entire reporting period at monitoring bore MW03.
– Chrloride values exceeded the trigger level at monitoring bore EPA 03.

It is not known if these exceedences were caused by the landfill or the quarry.

Results of groundwater monitoring undertaken at MW03 between 2013-2021 are attached in Appendix E.

As other groundwater monitoring bores are monitored for the landfill the practicalities for BSC to undertake monitoring of MW03 at the same time are plausible however the DA conditions for the quarry specify that the bore needs to be monitored as part of the quarry operations. While this does not necessarily mean that monitoring of the bore needs to be undertaken twice (i.e. for both operations) each quarter, it does mean that the monitoring procedures and results need to be included in monitoring and management plans for the quarry and needs to be assessed with regard to the impacts the quarry is having on the groundwater to be compliant with the DA consent.

Figure 5.8 Location of groundwater monitoring site MW03/EPA03

Source: Myocum Landfill 2021 Annual Water Contamination Report, Byron Shire Council

5.2.8 Geotechnical

It is noted that DA condition 7 which required a geotechnical assessment and slope stability monitoring to be undertaken to determine the appropriate slope and a safety buffer was deleted as part of the modified proposal. Given the over extraction on the eastern and northern slope, it is considered that a slope stability assessment should still be undertaken to ensure future operations within the quarry can continue.

5.2.9 Noise

The EPA condition L4.2 requires the production of a noise monitoring is to be undertaken. Evidence of monitoring is required as part of the Overall Quarry Monitoring Plan.

A BSC staff member states that in the past neighbours of the quarry have reported noise and dust impacts to the EPA.

5.2.10 Traffic

Condition 12 of the DA requires traffic flow monitoring to be undertaken on an annual basis to determine if the access road, Manse Road and/or Myocum Road requires widening. Discussion with BSC indicate that traffic counts are undertaken by Council on an annual basis as a shire wide program and traffic flows may not be undertaken on Manse Road every 12 months. It is not known whether traffic flow at the quarry is measured.

5.2.11 Drilling and blasting

A contractor is responsible for undertaking all monitoring associated with the drill and blast operations at the site. There should be consistency in reporting such that trends can be assessed.

5.2.12 Monitoring

There are several monitoring requirements associated with the quarry as outlined in the EIS, the EPL, the supplementary report and in the consent conditions. These include surface water monitoring, groundwater monitoring as well as noise and traffic monitoring.

EPL annual returns

EPL 12600 for Myocum Quarry requires the preparation of annual returns, which document non-compliances that were reported to the EPA in relation to the EPL. Data on extraction rates between 11/06/2004 and 30/06/2021, provided by BSC for the purpose of this review, have shown that extraction and crushing at the site has not exceeded the respective 30,000 t/a threshold.

Monitoring that is currently being undertaken

Discussions with BSC staff indicate that some monitoring (particularly surface water monitoring) is being undertaken (some documentation of surface water monitoring results was viewed). However the procedures for this monitoring have not been prepared and some issues with regards to water monitoring need clarification.

Water monitoring

Groundwater monitoring was undertaken quarterly at one monitoring point in the quarry between 2009-2021.

Surface water monitoring was undertaken for the 2 sediment basins in the quarry between 2016-2020.

Details are in Section 5.2.6 and 5.2.7 of this report.

Myocum Quarry - Erosion & Water Management Strategy

A plan dated July 2001 shows an Erosion & Water Management Strategy for the quarry. The plan was prepared by GHD.

Myocum Quarry - Review of Soil and Water Management Plan

A review of a Soil and Water Management Plan for Myocum Quarry was prepared by Tim Fitzroy & Associates in October 2015. The Soil and Water Management Plan was prepared as part of the 2001 EIS for the quarry, which was approved as part of 10.2001.496.1 and later 10.2001.496.2.

The review states that there is no formal management system currently operating in regard to the sediment basins. This could potentially result in the discharges from the final sediment basin exceeding the Environment Protection Licence conditions. Currently this is still true, since 2015 no operating procedure has been adopted for the sediment basins.

The review makes the following recommendations for a Soil and Water Managmenet Plan for the quarry:

- *Adopt a formal operating protocol for the sediment basin system*
- *Develop of a standard operating procedure (SOP) to assist operational staff in managing the sediment basin system on a daily basis*
- *Amend the Environment Protection Licence conditions by specifying a measurable limit to the design rainfall event, beyond which discharge criteria do not need to be met*

Appendix A of the review contains a suggested SOP for the quarry.

Monitoring plan

In general monitoring that is undertaken on site is not documented and consistency with procedures is therefore not guaranteed. A clear monitoring plan and a defined monitoring program that outlines monitoring procedures and schedules needs to be developed.

5.2.13 Overall monitoring plan

One requirement of the DA conditions was the development of an overall Quarry Monitoring Plan. For appropriate management of the quarry an overall plan of management covering all aspects of the quarrying operations from the present until the site is completely excavated and rehabilitated is required.

A review of a Soil and Water Management Plan for Myocum Quarry was prepared by Tim Fitzroy & Associates in October 2015. The Soil and Water Management Plan was prepared as part of the 2001 EIS for the quarry, which was approved as part of 10.2001.496.1 and later 10.2001.496.2. The SWMP included a standard operating procedure (SOP) for the quarry. Any future operations at the site should be compliant with this SOP.

5.3 Non-compliance Issues

There are several issues which have been categorised as being non-compliant based on the assessment in Appendix C. However, five items are considered to be definite non compliance issues that require immediate consideration and action.

These being:

5.3.1 Progressive rehabilitation

Five conditions (1, 8,10, 28 and EPA A1) of the DA consent refer to the requirement for progressive rehabilitation of the quarry. Rehabilitation has not been undertaken on the site. The commitment to progressive rehabilitation has also been identified in the EIS and the Supplementary Report as mitigation measures for erosion and sediment control safe-guards, visual amenity safe-guards and air quality safeguards. Therefore without progressive rehabilitation occurring on site these safeguards are not being met. The lack of progressive rehabilitation on site is therefore considered to be an issue of non-compliance. As a potential long-term use of the site is for the landfill to use the quarry void, a revised rehabilitation plan that meets a number of requirements may therefore need to be developed. These requirements would include minimising exposed slopes, stabilising slopes, and improving the visual amenity of the site. In addition, a revised rehabilitation plan should be developed to minimise the potential use of resources in rehabilitation areas that will be re-worked to achieve a sustainable outcome. Consultation with relevant agencies in developing a suitable revised rehabilitation plan would be needed.

5.3.2 Monitoring/ assessment requirements

Failure to undertake monitoring and or assessments outlined in the DA conditions or the EIS and Supplementary Report constitutes a non-compliance. There are three specific areas where this applies.

Monitoring of groundwater bore MW03 is undertaken as part of the landfill monitoring program. The DA conditions for the quarry specify that the bore needs to be monitored as part of the quarry operations. This means that the monitoring procedures and results need to be included in monitoring and management plan for the quarry and need to be assessed with regard to the impacts the quarry is having on the groundwater to be compliant with the DA consent.

The EPA condition L4.2 requires the production of a noise monitoring is to be undertaken. Evidence of monitoring is required as part of the Overall Quarry Monitoring Plan.

Currently, monitoring of surface water and groundwater is being undertaken by the resource recovery team every quarter at a minimum. While the site is not under an Overall Quarry Monitoring Plan, the environmental performance of the site is being tracked and managed where required.

5.3.3 Requirement for an overall quarry monitoring plan

Several conditions that are not considered to be completely non-compliant but are considered to be below compliance relate to the lack of an overall monitoring plan. Several DA conditions relate to monitoring. Limited documentation was reviewed with regards to monitoring on site, however, discussion with Council staff indicates that some monitoring is undertaken. Documentation of procedures, the monitoring regime, the monitoring results and how the results are interpreted, is limited and therefore consistency of monitoring is not reliable.

An overall Monitoring and Management Plan for the site has the potential to alleviate a number of the minor issues that occur on site and also has the potential to alleviate some of the more significant non-compliant issues associated with the operation of the quarry. A system where all relevant data including extraction rates, crushing and haulage rates as well as monitoring results for surface water, groundwater and blasting would provide an overall management tool for the site.

5.3.4 Non-compliance regulatory consequences

If no action is taken, Council may be subject to action from regulatory bodies.

Byron Shire Council

BSC may issue stop work notices or potentially prosecute the operator (proponent) for breaching conditions of Consent of DA 10.2001.496.2 in acoordance with the Environmental Planning and Assessment Act 1979 particularly in relation to:

– Condition 1 – the Rehabilitation Plan provided in the 2001 EIS indicated that the quarry will be extracted to a maximum depth of 0 metres AHD. However, there has been extraction below this level.
– Condition 8 – no revegetation has taken place as detailed in this condition.
– Condition 28 – the site has not been progressively rehabilitated as detailed in this condition.

NSW Resources Regulator

The NSW Resources Regulator is responsible for Work, Health and Safety issues in relation to the quarry. As quarrying has occurred outside of the extent approved under DA 10.2001.496.2, the quarry may be deemed unsafe and as such work, health and safety measures may need to be addressed prior to any further quarrying at the site.

The Inspector of Mines responsible for the quarry stated that the eastern high wall required rehabilitation to make safe. Other safety issues may also exist.

NSW Environment Protection Agency

The NSW EPA may prosecute Council in accordance with the Protection of the Environment Operations Act 1997 for breaches against EPL 12600 for the Myocum Quarry.

Water NSW (through Natural Resource Access Regulator)

Should the groundwater be intercepted and contaminated, without a aquifer interference licence from Water NSW, the Natural Resource Access Regulator may take action in accordance with Water Management Act 2000. Investigators are authorised under the Water Management Act 2000 to gather evidence. NRAR's authorised officers can enter a person's private property (other than a residence) without a search warrant and undertake activities on a property such as inspect and test equipment, take samples and examine records.

6. Options assessment

Based on the findings of the compliance assessment, there are a number of short, medium and long term options available to BSC in relation to the approval and ongoing operation of the quarry or use for an alternative purpose. An estimate of material available, value and likely costs to achieve planning approval under each scenario have been provided:

6.1 Short term options

6.1.1 Do nothing option

If no action is taken, BSC may be subject to action from regulatory bodies as detailed in Section 5.3.4.

6.1.2 Alternate extraction strategy

Should BSC seek to maximise the resource within the quarry and develop an alternate excavation strategy to that originally approved, a new DA would be required to investigate the potential impacts associated with the alternate extraction strategy. This may include extraction from areas within the quarry previously not considered for extraction (ie. western portion of the site currently used for office and sediment ponds), higher extraction rate over and above that approved, alternate access arrangements.

Should BSC decide to embark on a new DA for the quarry an assessment would be required to determine whether the new DA would constitute designated development and require the preparation of an Environmental Impact Statement (EIS). Pursuant to Item 19 under Schedule 3 of the Environmental Planning and Assessment Regulation 2000 (EP& A Regulation), extractive industries that extract more than 30,000 cubic metres are deemed designated development.

Clause 35, Part 2 of Schedule 3 of the EP&&A Regulation provides for alterations and additions is not considered designated development, if, in the opinion of the consent authority, the alterations or additions do not significantly increase the environmental impacts of the total development (that is the development together with the additions or alterations) compared with the existing or approved development. Clause 35 outlined below

> *35 Is there a significant increase in the environmental impacts of the total development?*
>
> *Development involving alterations or additions to development (whether existing or approved) is not designated development if, in the opinion of the consent authority, the alterations or additions do not significantly increase the environmental impacts of the total development (that is the development together with the additions or alterations) compared with the existing or approved development.*
>
> *Note.*
>
> *Development referred to in this clause is not designated development for the purposes of section 4.10 of the Act. This means that section 8.8 of the Act (Appeal by an objector) will not extend to any such development even if it is State significant development.*

Clause 36, Part 2 of Schedule 3 of the EP&&A Regulation sets out the matters for consideration that the consent authority is to consider in determining whether the alterations and additions are designated development or not.

> *36 Factors to be taken into consideration*
>
> *In forming its opinion as to whether or not development is designated development, a consent authority is to consider—*
>
> *(a) the impact of the existing development having regard to factors including—*
>
> *(i) previous environmental management performance, including compliance with the conditions of any consents, licences, leases or authorisations by a public authority and compliance with any relevant codes of practice, and*
>
> *(ii) rehabilitation or restoration of any disturbed land, and*

(iii) the number and nature of all past changes and their cumulative effects, and

(b) the likely impact of the proposed alterations or additions having regard to factors including—

(i) the scale, character or nature of the proposal in relation to the development, and

(ii) the existing vegetation, air, noise and water quality, scenic character and special features of the land on which the development is or is to be carried out and the surrounding locality, and

(iii) the degree to which the potential environmental impacts can be predicted with adequate certainty, and

(iv) the capacity of the receiving environment to accommodate changes in environmental impacts, and

(c) any proposals—

(i) to mitigate the environmental impacts and manage any residual risk, and

(ii) to facilitate compliance with relevant standards, codes of practice or guidelines published by the Department or other public authorities.

Whilst the quarry has not been operated consistently with the original approval as modified, it's past environmental performance has generally been undertaken in accordance with its EPL.

Given that potential environmental impacts cannot be predicted with adequate certainty and the limited knowledge of the receiving environment to accommodate changes in environmental impacts, it would be our recommendation that the alterations and additions are likely to be regarded as designated development.

It is however BSC's responsibility to determine whether the alterations or additions do not significantly increase the environmental impacts at the site via a proper and professional assessment of the proposal.

Any application is likely to be also integrated development and would require referral to other government agencies including EPA and WaterNSW.

Whilst any decision to increase extraction at the site will need to be based on a resource assessment, consideration would need to be given to groundwater and surface water impacts, potential for additional visual impact and traffic impacts.

On 4 August 2017, GHD recovered a sample of silt, clay sand and gravel from the existing north eastern edge of the Myocum Quarry. BSC advised GHD that the Myocum Quarry material is normally used for DGB20 and DGS40 pavement materials conforming to the Northern Rivers Local Government Development Construction Specification for Flexible Pavements (C242), GHD compared the test results to the DGB20 and DGS40 specifications from C242.

In comparison to the unbound base material specification for DGB20:

- The material is close to conforming to the grading specification, and very close to the NGB20-2c specification.
- The Atterberg limits are conforming for plastic limit and plasticity index, but the liquid limit is slightly above the specification range.
- The maximum dry compressive strength (MDCS) is conforming, as is the wet / dry strength variation, however the wet strength is lower than the specifications requirements.
- The ABC ratios are non conforming compared to the specification. This is expected given the product has only been sampled raw and not a blended product, and pre treatment has increased the amount of fines in the sample.

In comparison to the unbound sub base material property specification for DGS40:

- The grading is finer that the specification (non conforming), but we expect quarrying from an uncut face and not undertaking pre treatment would allow conformity,
- The ABC ratios are closer to the DGS40 specification, but still sit outside the specification, likely due to the pre-treatment (T102) process.
- The Atterberg limits are conforming for plastic limit and plasticity index, but the liquid limit is slightly above the specification range.

– The maximum dry compressive strength (MDCS) is conforming, as is the wet / dry strength variation, however the wet strength is lower than the specifications requirement of 50 kN.

Based on the strength criteria for the unbound base and subbase material specification, it is unlikely that the material sampled could be quarried to conform to the DGB20 or DGS40 specification. However, considering the nature of the sample location (quarry windrow), it is considered that a professionally quarried product from Myocum would be of a higher quality, and hence, likely to conform with a crushed rock subbase (CSS20 or CSS40) product. Such CSS products are generally used in pavements with low traffic loads.

Otherwise, blending with higher strength gravel won from deeper within the quarry where high strength rock is present would allow this material to be used as a DGS and possibly a DGB product.

Material specifications which the Myocum sample does conform with comprise:

– Select material for ARTC rail formation (> CBR 8)
– Upper Zone of Formation material for RMS projects (refer to RMS QA specification R44, excerpt attached). These are particularly in demand with the recent and current highway projects.
– Unsealed road wearing course for rural and unsealed roads. (refer to ARRB Unsealed Roads Manual, March 2009, excerpt attached) materials that conform to this specification are particularly difficult to find and are of considerable use and value when found.

In addition, the material is considered to be suitable for use as a road base product for farm tracks as the Myocum materials have a reputation for compacting easily, and working to form an interlocked pavement wearing course.

Current value of DGB20 specification premium road base is approximately $25 - $27/ tonne. Assuming a conversion of 2 tonne/ m^3 and the further extraction of up to 100,000m^3 from either the western and southern areas of the quarry or below 0m AHD could be worth between $5,000,000 and $5,400,000 depending upon resource quality and excluding operating costs.

Estimated Planning/ Approval Costs: $70- 110,000 plus GST.

6.1.3 New modification application

An alternative to seeking development consent for a modified quarry proposal, would be to seek approval for a modification to the existing development consent to legitimise the areas which have been over excavated whilst still pursuing the material that was envisaged to be extracted under the original approval (as modified).

Having reviewed the previous approval documentation it is recommended that the best course of action is to prepare a Section 4.55(2) modification to the original development consent for the quarry to enable extraction of the remaining resource, ongoing stockpiling, crushing, grinding and separating at the site, resolution of a revised rehabilitation strategy for the site given the over extraction at the site. This exercise may also rationalise the sediment basins on the site to be able to maximise the use of the site for identified long term options, if BSC chooses.

The SEE would also outline the proposed modifications for which approval is to be sought and assess the likely environmental impacts of the modifications. Consideration would be given to flora and fauna, visual amenity, air quality, water management, noise and vibration, Aboriginal cultural heritage, traffic and access, hazards and risks, geotechnical constraints, rehabilitation and revegetation. These matters would be considered relying on predominantly existing available desktop information.

Current value of DGB20 specification premium road base is approximately $25 - $27/ tonne. Assuming a conversion of 2 tonne/ m^3 and the further extraction of up to 30,000m^3 from either the western and southern areas of the quarry or below 0m AHD could be worth between $1,500,000 and $1,620,000 depending upon resource quality and excluding operating costs.

Estimated Planning/ Approval Costs: $20- 60,000 plus GST

6.1.4 Satisfy existing approval

Should BSC seek to maintain the original approval without modification, restoration works would be required, where possible, to satisfy the existing approval. This option would require rehabilitation of areas which have been

over excavated and attempts made to implement the approved rehabilitation plan at the site. Given that it would be difficult (without significant costs) to reinstate the benches originally envisaged along the eastern boundary of the site, it would require slope stabilisation of the existing steep faces at the quarry and abandoning any further resource at the site.

An estimate of $140,000 is estimated to carry out modest rehabilitation works within the quarry. These works would include use of existing topsoil material within the quarry for reshaping and revegetation works, planting of native species, weed control and watering overing a 12 month period.

Estimated Planning/ Approval Costs: $20,000 plus GST

6.2 Medium term options

6.2.1 Quarry expansion

Should BSC seek to adopt a new modification DA or satisfy the existing approval in the short term, an opportunity will remain to maximise the resource within the quarry including extraction from areas within the quarry previously not considered for extraction (ie. western portion of the site currently used for office and sediment ponds). This option may also involve revising access arrangements for the quarry such that material is exported either via Dingo Lane or an alternate access to ensure maximum extraction of the resource.Similar to the short term options BSC may also choose to employ a contractor to manage the quarry rather than use BSC staff/ resources.

Should BSC decide to embark on a new DA for the quarry in the medium term, an assessment would be required to determine whether the new DA would constitute designated development and require the preparation of an Environmental Impact Statement (EIS).

6.2.2 Interim use of quarry for alternative use

BSC may choose to use the quarry in the interim for an alternative purpose. Options available to BSC could include:

– Sustainable/green roads recycling (Works Department)
– Material recovery from municipal waste/resource recovery (Resource Recovery Department)
– Combined operation to include both of the above (this would likely need an organisational structure change to operate a combined Works/ Resource Recovery facility, or establishment of a specialist operational unit)

TFA acknowledged in their report in 2015 that baseline and technical information gathered during the preparation of the EIS for the proposed Myocum Quarry Landfill Project (Cardno 2014) ought to provide a sound basis for an assessment of site selection for such options.

Should BSC decide to embark on this option in the medium term, an assessment would be required to determine whether the new DA would constitute designated development and require the preparation of an Environmental Impact Statement (EIS). Pursuant to Item 19 under Schedule 3 of the Environmental Planning and Assessment Regulation 2000 (EP& A Regulation), extractive industries that extract more than 30,000 cubic metres are deemed designated development. Amendment to EPL 12600 would also be required to facilitate resource recovery.

6.3 Long term options

6.3.1 A note on lease arrangements

Lot 4 DP 1052900 is located directly north of Myocum Quarry. It is currently under a lease that will expire in 2024. After this time, there is the opportunity to make use of this lot in addition to Myocum Quarry.

– Lot 1 DP 591441, Myocum Quarry, is 4.02 ha in size
– Lot 4 DP 1052900, Leela Quarry, is 5.34 ha in size
– The total size of the 2 lots is 9.36 ha

BSC may choose to operate the site itself or use contractors to operate the site.

6.3.2 Use of the quarry for landfilling (putrescible waste)

There has been extensive research undertaken to determine the feasibility of using the exhausted quarry as a possible landfill in the long term. The Myocum Quarry landfill option has previously been the subject of an EIS (Cardno 2014) completed and submitted to the EPA in September 2014 for consideration. The EPA has since responded in February 2015 requesting further information and outlining a number of items that require further attention or additional information before further assessment can be undertaken by the EPA. It is noted that development approval is not guaranteed. The majority of the requests from EPA will require significant work to address.

Any decision to use the quarry as a landfill would need to made upon consideration of a number of issues which will influence any feasibility and cost/benefit analysis of developing the quarry for landfill:

1. Determination of the extent of proposed final extraction limits
2. Determination of acceptable side-slope conditions through undertaking a geotechnical investigation. This would provide information on the quantity of material that might be extracted from the quarry, the landfill lining method and the subsequent volume of created landfill void
3. A materials balance should be undertaken for both the quarry materials and the landfill construction materials requirements. This materials balance would incorporate estimates of road-base and clay overburden available from the quarry
4. Economic analysis of materials balance. This would include assessment of alternative clay, fill and restoration soils requirements for the landfill southern extension and the landfill within the Myocum void. Assessment of the price of alternative landfill disposal void space would also be incorporated.

TFA were engaged in June 2015 to undertake a strategic review. The review included:

- Research on the strategic context since adoption of the current waste disposal strategy. This includes but was not limited to the current position of the Myocum Transfer Station/Closed Landfill, Hyder reports, Morrison Low reports, Transport and Disposal contract, NSW and QLD Waste Levy positions, GM's Regional Initiative, and emerging trends;
- A review / addendum to the current waste disposal strategy;
- A review and assessment of the available options to BSC going forward including:
  - Continuing to pursue approval for a putrescible waste landfill,
  - Change to a non putrescible waste landfill eg C&D waste,
  - Change to a resource recovery area, and/or
  - Abandon future use of this quarry area and move to restoration;
- Consideration of the benefits, costs, risks and timing for the options; and
- Conclusions and recommendations.

The recommendations of the strategic review were:

- Short Term Actions
  - Continue to transport waste to South East Queensland
  - BSC investigate the use of alternative site/s for a purpose built Transfer Station Resource Recovery Centre in conjunction with waste disposal option.
  - BSC to develop a waste disposal plan choosing a preferred medium to long term disposal option being either regional option utilising a single or a combination of existing Northern Rivers Council landfills, a sub-regional option or Myocum Quarry Landfill option:
    - Initiate discussions with individual Councils and/or collectively through North East Waste to discuss the potential of reaching an agreement (MOU) to accept residual waste from Byron Shire Council; or
    - Initiate discussions with Ballina and Richmond Valley Council to establish a sub- regional landfill facility in the medium term to be located at Bora Ridge; or
    - Continue with EIS and EPA approvals for Myocum Quarry Landfill (MQL).

- Medium Term Actions
  - Subject to BSC's preferred option above:
    - Initiate environmental studies, investigations and approvals process for Bora Ridge Site and utilise one or a combination of Northern Rivers Local council landfill facilities for waste disposal; or
    - Construct and utilise MQL site for waste disposal
  - Establish resource recovery and transfer station at preferred location
- Long term Actions
  - Utilise waste disposal facility:
    - Bora Ridge or
    - MQL

6.3.3 Use of the quarry for landfilling (non-putrescible waste)

Should EPA requirements prove too difficult to achieve, there may be the ability to use the quarry for landfilling of non-putrescible waste. This would reduce the environmental risk, statutory/ regulatory requirements and costs associated with reuse of the site as a putrescible landfill. Amendment to EPL 12600 would also be required to facilitate resource recovery.

6.3.4 Use of the quarry for alternative use

Alternatives to landfilling of the quarry, once the resource is feasibly exhausted, may include:

- sustainable/green roads recycling
- material recovery from municipal waste/resource recovery
- combined operation to include both of the above

TFA acknowledge that baseline and technical information gathered during the preparation of the EIS for the proposed Myocum Quarry Landfill Project (Cardno 2014) ought to provide a sound basis for an assessment of site selection for the proposed Resource Recovery Centre. Amendment to EPL 12600 would also be required to facilitate resource recovery.

7. Recommendations

Based on the findings of the compliance and options assessment, and consideration of the risks associated with the 'do nothing' option, GHD recommends that the best course of action in the short term would be to seek development consent for a modified quarry proposal, which would involve modification to the existing development consent to legitimise the areas which have been over excavated whilst still pursuing the material that was envisaged to be extracted under the original approval (as modified).

Having reviewed the previous approval documentation it is recommended that the best course of action in the short term is to prepare a Section 4.55(2) modification to the original development consent for the quarry to enable extraction of the remaining resource, ongoing stockpiling, crushing, grinding and separating at the site, resolution of a revised rehabilitation strategy for the site given the over extraction at the site. This exercise may also rationalise the sediment basins on the site to be able to maximise the use of the site for identified long term options, if BSC chooses.

An SEE would also outline the proposed modifications for which approval is to be sought and assess the likely environmental impacts of the modifications. Consideration would be given to flora and fauna, visual amenity, air quality, water management, noise and vibration, Aboriginal cultural heritage, traffic and access, hazards and risks, geotechnical constraints, rehabilitation and revegetation. These matters would be considered relying on predominantly existing available desktop information.

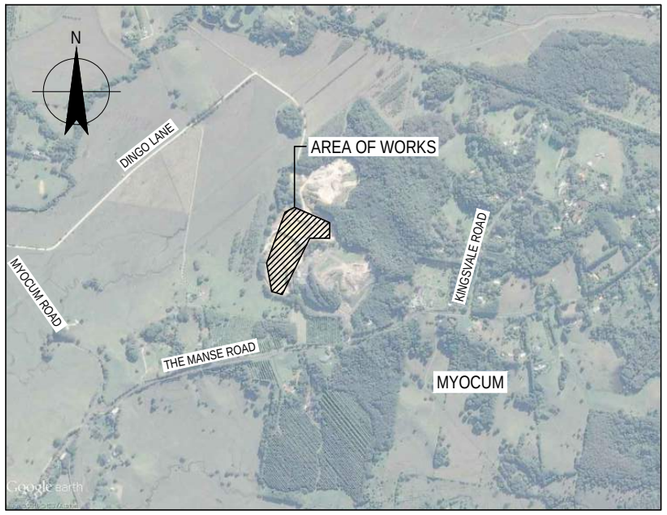
Appendices

Appendix A

2021 Survey

BYRON SHIRE COUNCIL

MYOCUM QUARRY SURVEY AND REHAB PLAN OVERLAY
22-12554185



LOCALITY PLAN
NTS

DRAWING INDEX	
DRAWING No.	DRAWING TITLE
22-12554185-G001	DRAWING INDEX & LOCALITY PLAN
22-12554185-C001	SITE LAYOUT AND CONTOURS
22-12554185-C002	DEPTH RANGE LEVELS
22-12554185-C003	LONGITUDINAL SECTION - CONTROL LINE 1
22-12554185-C004	CROSS SECTIONS - SHEET 1 OF 10
22-12554185-C005	CROSS SECTIONS - SHEET 2 OF 10
22-12554185-C006	CROSS SECTIONS - SHEET 3 OF 10
22-12554185-C007	CROSS SECTIONS - SHEET 4 OF 10
22-12554185-C008	CROSS SECTIONS - SHEET 5 OF 10
22-12554185-C009	CROSS SECTIONS - SHEET 6 OF 10
22-12554185-C010	CROSS SECTIONS - SHEET 7 OF 10
22-12554185-C011	CROSS SECTIONS - SHEET 8 OF 10
22-12554185-C012	CROSS SECTIONS - SHEET 9 OF 10
22-12554185-C013	CROSS SECTIONS - SHEET 10 OF 10

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT	B.C	S.L	A.O	20/08/21

Note: * indicates signatures on original issue of drawing or last revision of drawing

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Drafting Check	M. MASON	Design Check	
Approved (Project Director)			
Date			
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client: BYRON SHIRE COUNCIL
Project: MYOCUM QUARRY SURVEY AND REHAB PLAN
Title: DRAWING INDEX & LOCALITY PLAN

Original Size: A1
Drawing No: **22-12554185-G001**
Rev: 1

Plot Date: 20 August 2021 - 10:07 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-G001.dwg

LEGEND

- PROPERTY BOUNDARY
- POND WATERLINE
- EXISTING MINOR CONTOUR (1m)
- 20 — EXISTING MAJOR CONTOUR (5m)
- 20 — COUNCIL APPROVED DESIGN CONTOUR (1m)

PLAN

SCALE 1 : 500

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT	B.C	S.L	A.O	20/08/21

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0 5 10 15 20 25m
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Drafting Check	M. MASON	Design Check	
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Project MYOCUM QUARRY SURVEY AND REHAB PLAN
Title SITE LAYOUT AND CONTOURS

Original Size A1 **Drawing No: 22-12554185-C001** **Rev: 1**

Plot Date: 20 August 2021 - 10:08 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C001.dwg

DEPTH RANGE - AREAS TO CUT				
RANGE OF CUT				COLOUR
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-10.5	TO	-8.5	METRES	
-8.5	TO	-6.5	METRES	
-6.5	TO	-4.5	METRES	
-4.5	TO	-3.5	METRES	
-3.5	TO	-2.5	METRES	
-2.5	TO	-1.5	METRES	
-1.5	TO	-1.0	METRES	
-1.0	TO	-0.5	METRES	
-0.5	TO	0.0	METRES	

DEPTH RANGE - AREAS TO FILL				
RANGE OF FILL				COLOUR
0.0	TO	0.5	METRES	
0.5	TO	1.0	METRES	
1.0	TO	1.5	METRES	
1.5	TO	2.5	METRES	
2.5	TO	3.5	METRES	
3.5	TO	4.5	METRES	
4.5	TO	6.5	METRES	
6.5	TO	8.5	METRES	
8.5	TO	10.5	METRES	
10.5	TO	12.5	METRES	
12.5	TO	20	METRES	

QUANTITY		
CUT (-)	FILL (+)	BALANCE
54255 m^3	54198 m^3	57 m^3

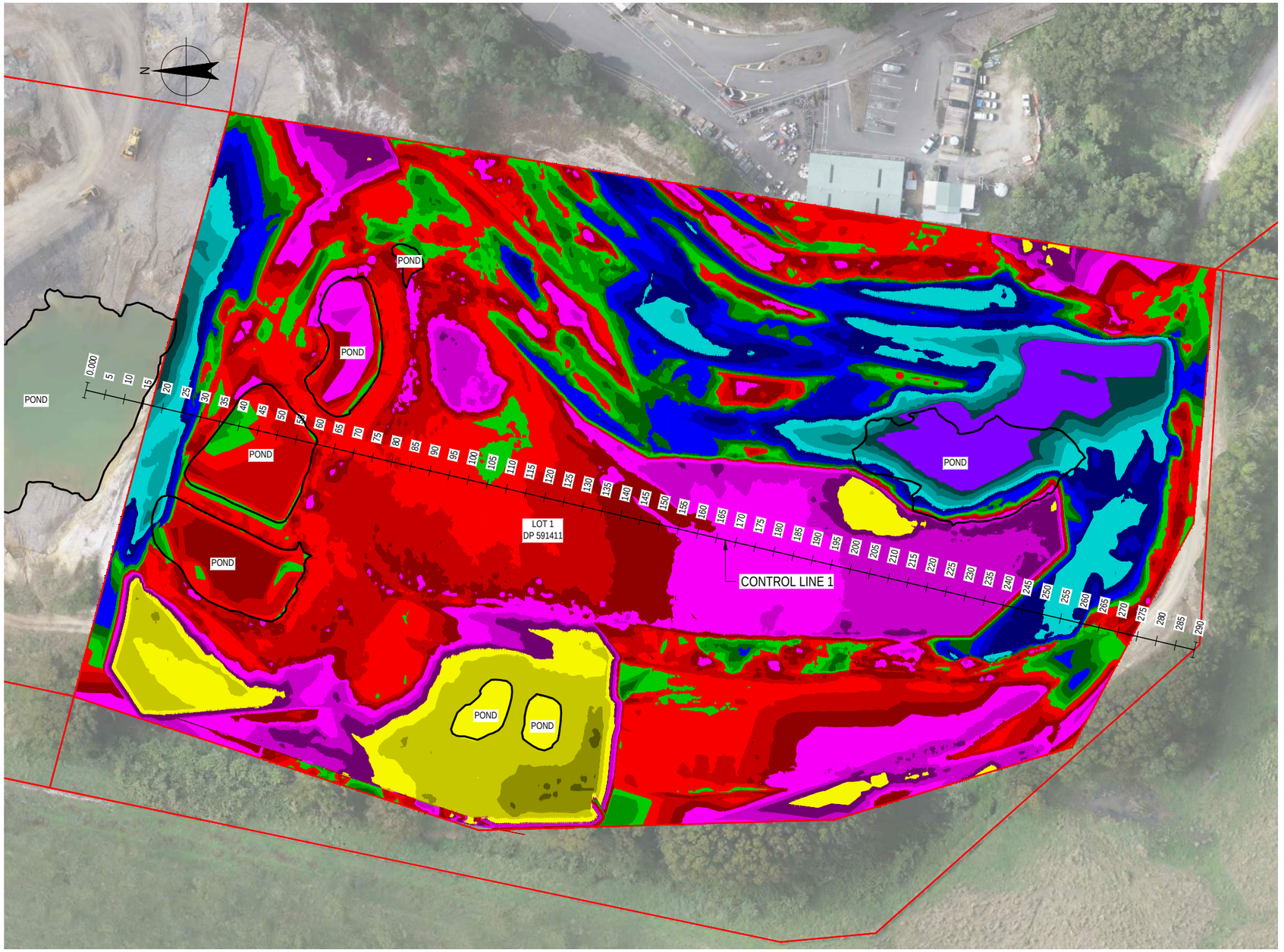
NOTE

1. NEGATIVE VALUES INDICATE AREAS WHERE THERE IS CUT AVAILABLE TO ACHIEVE COUNCIL APPROVED LEVELS. POSITIVE VALUES INDICATE AREAS WHERE FILL IS REQUIRED TO ACHIEVE COUNCIL APPROVED LEVELS.

LEGEND

PROPERTY BOUNDARY

POND WATER LINE



PLAN

SCALE 1 : 500

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT	B.C	S.L	A.O	20/08/21

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0 5 10 15 20 25m

SCALE 1:500 AT ORIGINAL SIZE

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Drafting Check	M. MASON	Design Check	
Approved (Project Director)			
Date			
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Client: BYRON SHIRE COUNCIL

Project: MYOCUM QUARRY SURVEY AND REHAB PLAN

Title: DEPTH RANGE LEVELS

Original Size: A1

Drawing No: 22-12554185-C002

Rev: 1

Plot Date: 20 August 2021 - 10:09 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C002.dwg

NOTE

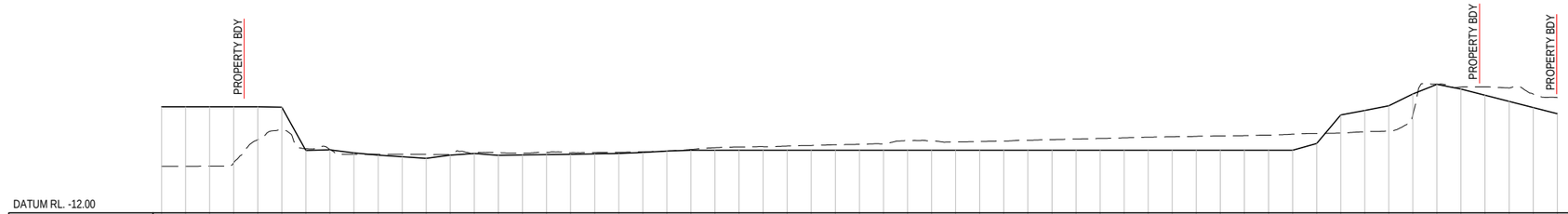
1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD

2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

COUNCIL APPROVED DESIGN LEVEL



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EXISTING QUARRY SURFACE LEVEL	-2.35	-2.34	-2.33	-1.62	3.18	5.25	1.31	1.11	0.14	0.14	0.13	0.12	0.13	0.48	0.48	0.40	0.52	0.46	0.48	0.58	0.66	0.83	1.13	1.51	1.66	1.73	1.86	1.98	2.12	2.21	2.32	2.94	2.92	2.69	2.79	2.90	3.05	3.19	3.32	3.43	3.56	3.70	3.79	3.86	3.94	4.02	4.13	4.34	4.47	4.55	4.84	4.98	8.33	14.68	14.13	14.16	13.91	12.65	11.93
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LONGITUDINAL SECTION - CONTROL LINE 1

SCALE HORZ 1:500 VERT 1:500

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT	B.C	S.L	A.O	20/08/21

Note: * indicates signatures on original issue of drawing or last revision of drawing

VERT/HORIZ 0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

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Drawn B. COLLISTER | Designer B. COLLISTER
Drafting Check M. MASON | Design Check
Approved (Project Director)
Date
Scale AS SHOWN

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Client BYRON SHIRE COUNCIL
Project MYOCUM QUARRY SURVEY AND REHAB PLAN
Title LONGITUDINAL SECTION - CONTROL LINE 1

Original Size A1 | Drawing No: 22-12554185-C003 | Rev: 1

Plot Date: 20 August 2021 - 10:09 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C003.dwg

NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD

2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

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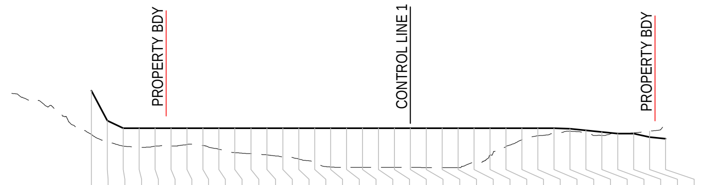
——— COUNCIL APPROVED DESIGN LEVEL



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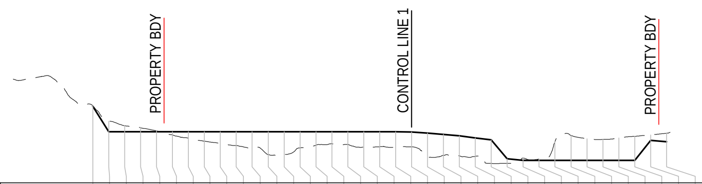
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80

CH 10



DATUM R.L. -6.00

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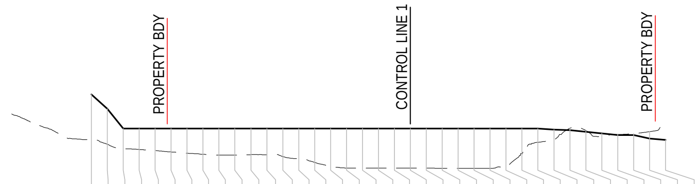

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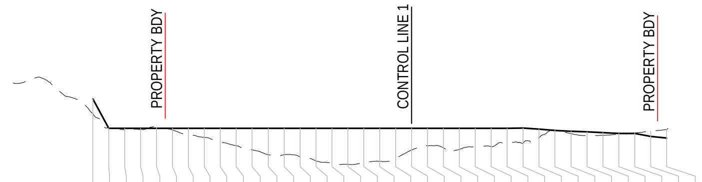
EXISTING QUARRY SURFACE LEVEL	6.58	5.12	3.61	3.49	3.16	2.73	2.31	1.99	1.74	1.75	1.87	1.83	1.26	0.75	-0.57	-1.79	-2.3	-2.31	-2.32	-2.33	-2.34	-2.36	-2.37	-2.38	-2.4	-2.37	-1.9	2.13	5.71	6.51	10.15	9.45	7.58	8.13	8.43	9.08	
COUNCIL APPROVED DESIGN LEVEL	20.698	16.202	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9.67	9.495	9.028	8.523	7.977	7.977	6.934	6.512
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80

CH 5



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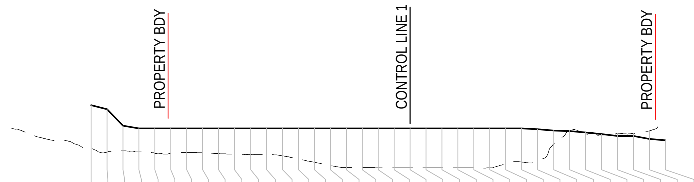
EXISTING QUARRY SURFACE LEVEL	14.6	10.18	9.47	9.63	10.37	9.46	7.9	7.19	5.59	4.56	3.24	1.72	1.74	1.05	-0.23	-0.92	-1.27	-0.77	-0.34	0.49	3.18	4.53	3.89	3.39	4.19	4.25	5.48	5.4	7.11	9.45	8.38	7.69	7.8	8.05	8.55	9.07	9.62
COUNCIL APPROVED DESIGN LEVEL	19.195	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10.13	9.713	9.351	9.108	8.865	8.621	8.378	8.378	7.452	6.935
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80

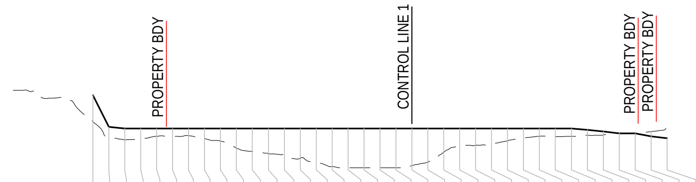
CH 20



DATUM R.L. -8.00

DEPTH CUT - / FILL +	13.5	13.44	7.85	7.38	7.83	7.76	7.52	7.65	7.9	8.09	8.19	8.16	8.6	9.6	10.6	11.64	12.31	12.32	12.33	12.34	12.35	12.37	12.38	12.39	12.41	12.4	11.07	10.52	9.69	4.26	-0.3	1.01	0.59	-0.83	-0.74	-2.49	
EXISTING QUARRY SURFACE LEVEL	3.8	2.53	2.97	2.62	2.17	2.24	2.48	2.35	2.1	1.91	1.81	1.84	1.4	0.4	-0.6	-1.64	-2.31	-2.32	-2.33	-2.34	-2.35	-2.37	-2.38	-2.39	-2.41	-2.4	-1.07	-0.52	0.02	5.06	9.41	7.74	7.64	8.49	8.4	9.22	
COUNCIL APPROVED DESIGN LEVEL	17.291	15.965	10.828	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9.708	9.315	9.109	8.754	8.228	7.659	7.659	6.731	6.309
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80

CH 0



DATUM R.L. -8.00

DEPTH CUT - / FILL +	8.3	3.3	3.54	3.23	2.44	2.44	2.23	3.12	3.93	6.1	7.22	7.82	8.2	9.31	10.64	11.93	12.29	12.3	12.3	12.31	11.62	10.54	7.41	5.54	5.29	4.83	3.82	2.94	2.43	2.51	2.45	1.7	1.04	-0.11	0.03	-1.47	
EXISTING QUARRY SURFACE LEVEL	12.16	7.23	6.46	6.77	7.56	7.56	7.77	6.88	6.07	3.9	2.78	2.18	1.8	0.69	-0.64	-1.93	-2.29	-2.3	-2.3	-2.31	-1.62	-0.54	2.59	4.46	4.71	5.17	6.18	7.06	7.57	7.49	7.55	7.87	7.99	8.6	8.46	9.04	
COUNCIL APPROVED DESIGN LEVEL	20.451	10.528	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9.571	9.031	8.491	8.491	7.567	6.919
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80

CH 15

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT	B.C	S.L	A.O	20/08/21

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

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E goldcoastmail@ghd.com W www.ghd.com

DO NOT SCALE

Drawn B. COLLISTER | Designer B. COLLISTER
Drafting Check M. MASON | Design Check
Approved (Project Director)
Date
Scale AS SHOWN

This Drawing must not be used for Construction unless signed as Approved

Client **BYRON SHIRE COUNCIL**
Project **MYOCUM QUARRY SURVEY AND REHAB PLAN**
Title **CROSS SECTIONS - CONTROL LINE 1**
SHEET 1 OF 10

Original Size **A1** **Drawing No: 22-12554185-C004** **Rev: 1**

Plot Date: 20 August 2021 - 10:09 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C004.dwg

NOTE

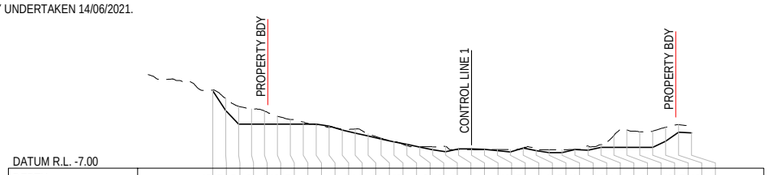
1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD

2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

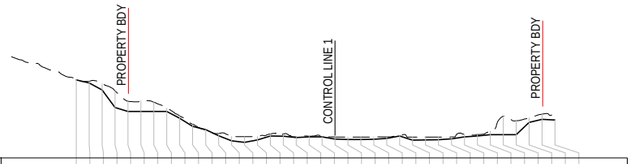
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-0.28	23.16	22.874
-95	-4.79	20.07	15.284
-90	10	16.89	
-85	10	15.85	
-80	10	15.11	
-75	10	13.03	
-70	10	11.79	
-65	10	10.8	
-60	10	9.75	
-55	10	8.71	9.279
-50	7.681	8.09	-0.41
-45	6.503	8.12	-1.62
-40	5.42	6.23	-0.81
-35	4.275	4.54	-0.27
-30	2.107	3.29	-0.18
-25	1.143	1.15	-0.05
-20	0.105	1.24	-1.13
-15	-0.712	1.33	-2.04
-10	0.432	0.13	0.3
-5	0.433	0.14	0.29
0	0.249	0.13	0.12
5	-0.273	0.15	-0.43
10	-0.782	0.21	-0.99
15	0.761	0.66	0.1
20	-0.282	0.06	-0.34
25	-1.019	0.07	-1.09
30	-0.98	0.1	-1.08
35	0.166	0.16	0.01
40	-0.048	1.61	-1.66
45	1	2.12	-1.12
50	1	5.6	-4.6
55	1	7.74	-6.74
60	1	7	-6
65	1		
70	1	7.28	-6.28
75	3.395	8.79	-5.39
80	6.856	9.79	-2.93
85	6.6		

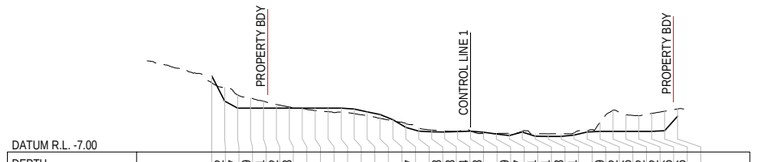
CH 40



DATUM R.L. -8.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-0.13	22.31	22.185
-95	-0.63	21.63	20.997
-90	-2.37	20.62	18.249
-85	-6.47	17.94	1.472
-80	-3.83	13.93	10
-75	-4.12	14.22	10
-70	-3.57	13.27	10
-65	-1.64	8.28	7.341
-60	-0.76	5.03	4.265
-55	0.22	2.72	2.939
-50	-0.87	1.46	0.584
-45	-1.7	0.34	-1.36
-40	-2.18	0.24	-1.935
-35	-1.23	0.24	-0.995
-30	-0.81	1.3	0.498
-25	-0.99	1.41	0.426
-20	-0.3	0.18	-0.122
-15	-0.29	0.46	0.169
-10	0.02	0.15	0.169
-5	-0.83	0.12	-0.712
0	-0.95	0.09	-0.861
5	-0.9	0.09	-0.819
10	-0.91	0.13	-0.776
15	-0.57	0.16	-0.418
20	-0.14	0.64	0.502
25	-1.15	0.04	-1.103
30	-1.1	0.06	-1.038
35	-1.03	0.08	-0.941
40	-0.69	0.13	-0.561
45	-0.94	1.1	0.167
50	-0.53	1.07	0.542
55	-1.48	2.48	1
60	-7.16	8.16	1
65	-5.39	6.39	1
70	-1.75	7.51	5.755
75	-2.03	8.95	6.915
80			6.646
85			

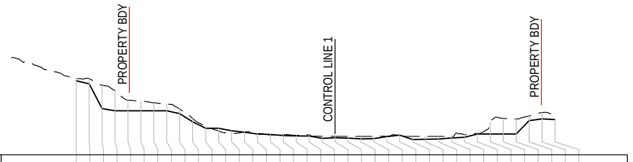
CH 55



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	2.57	19.82	22.396
-95	-5.22	17.95	12.726
-90	-5.07	15.07	10
-85	-3.89	13.89	10
-80	-2.71	12.71	10
-75	-1.42	11.42	10
-70	-0.43	10.43	10
-65	0.16	9.84	10
-60	0.99	9.01	10
-55	1.41	8.59	10
-50	1.55	8.45	10
-45	1.78	7.86	9.633
-40	1.47	7.11	9.579
-35	1.46	6.04	7.502
-30	1.41	5.1	5.534
-25	1.47	2.32	1.115
-20	0.68	1.5	0.821
-15	0.43	1.18	0.752
-10	0.14	1.03	0.89
-5	0.03	1.11	1.086
0	0.5	0.17	0.664
5	0.19	0.19	0.002
10	0.87	0.23	-0.637
15	0.31	1.02	0.71
20	0.91	0.07	-0.834
25	1.03	0.08	-0.951
30	1.01	0.08	-0.924
35	0.8	0.38	-0.418
40	0.69	0.72	0.727
45	3.42	1.42	
50	8.16	4.42	1
55	6.42	9.16	1
60	6.12	7.42	1
65	6.96	7.12	1
70	7.56	7.96	1
75	2.8	9.65	1.232
80			6.855

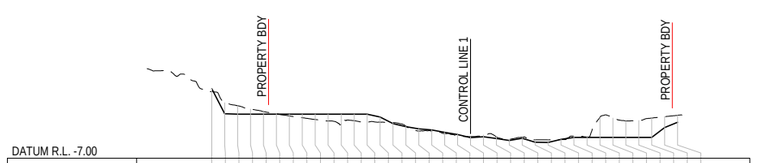
CH 35



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-0.85	22.49	21.641
-95	-2.03	20.401	20.401
-90	-9.02	19.92	10.898
-85	-7.76	17.76	10
-80	-4.11	14.11	10
-75	-3.79	13.79	10
-70	-3.07	13.07	10
-65	-2.62	12.62	10
-60	-1.79	10.67	8.884
-55	-1.31	7.09	5.781
-50	-0.81	4.08	3.269
-45	1.02	2.23	3.254
-40	0.99	1.33	2.316
-35	-0.19	1.88	1.685
-30	-0.29	1.34	1.054
-25	0.18	0.72	0.903
-20	-0.25	0.73	0.482
-15	-0.23	0.51	0.276
-10	-0.47	0.75	0.279
-5	-0.76	0.14	-0.621
0	-0.5	0.13	-0.368
5	-0.68	0.1	-0.582
10	-0.92	0.1	-0.82
15	-0.89	0.11	-0.778
20	-0.2	0.22	0.012
25	-0.44	1.01	0.573
30	-1.16	0.09	-1.063
35	-1.13	0.12	-1.009
40	-1.06	0.12	-0.938
45	-0.63	0.12	-0.514
50	-1.09	0.86	-0.225
55	-0.28	1	1
60	-4.71	1.28	1
65	-6.1	7.1	1
70	-5.86	7.99	1
75	-1.75	6.24	6.24
80	-2.43	9.32	6.893
85			6.623

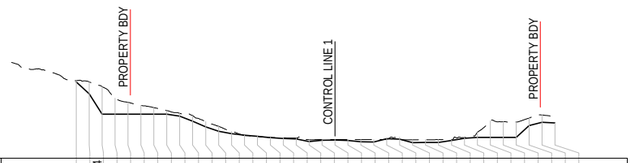
CH 50



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	1.13	18.71	19.837
-95	-4.24	14.41	10.167
-90	-3.22	13.22	10
-85	-1.94	11.94	10
-80	-0.97	10.97	10
-75	-0.1	10.1	10
-70	0.71	9.29	10
-65	1.39	8.61	10
-60	2.08	7.92	10
-55	2.69	7.31	10
-50	4.25	5.75	10
-45	2.53	7.47	10
-40	3.05	6.93	9.973
-35	1.98	6.89	8.876
-30	-0.41	6.72	6.312
-25	-0.47	5.4	4.133
-20	0.66	3.47	3.918
-15	0.44	3.48	2.923
-10	0.4	2.52	2.103
-5	0.37	1.73	0.937
0	-0.37	1.31	1.271
5	-0.66	1.93	0.611
10	-0.6	1.21	0.36
15	-0.53	0.36	-0.173
20	-0.43	1.09	0.66
25	-0.95	0.1	-0.856
30	-1.01	0.11	-0.906
35	0.12	0.12	0.24
40	-0.47	1.47	1
45	-0.18	1.18	1
50	-7.78	8.78	1
55	-7.45	8.45	1
60	-6.37	7.37	1
65	-6.56	7.56	1
70	-7.47	8.47	1
75	-4.2	9.02	4.82
80	-2.69	9.53	6.842

CH 30



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-0.54	22.95	22.41
-95	-4.61	22.46	17.843
-90	-10.64	20.64	10
-85	-6.18	16.18	10
-80	-4.56	14.56	10
-75	-3.38	13.38	10
-70	-2.49	12.49	10
-65	-1.77	11.77	10
-60	-2.12	10.28	9.185
-55	-2.08	9.42	7.297
-50	-1.96	7.13	5.048
-45	-0.86	5.33	3.372
-40	0.1	3.28	2.419
-35	0.08	1.78	1.876
-30	-0.03	1.32	1.397
-25	-0.27	0.98	0.944
-20	-0.32	0.81	0.547
-15	-0.76	0.71	0.392
-10	-0.23	0.12	-0.633
-5	-0.16	0.13	-0.095
0	-0.28	0.12	-0.167
5	-0.81	0.12	-0.688
10	-0.91	0.13	-0.78
15	0.22	0.26	0.473
20	-0.77	1.09	0.323
25	-1.13	0.1	-1.024
30	-1.08	0.11	-0.97
35	-0.27	0.12	-0.914
40	-0.32	0.96	-0.154
45	-1.94	2.94	0.634
50	-6.38	7.08	1
55	-6.08	7.38	1
60	-5.95	6.95	1
65	-2.92	8.48	5.558
70	-2.78	9.65	6.871
75			6.609
80			
85			

CH 45

PRELIMINARY

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT		B.C	S.L	A.O	20/08/21

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

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Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	
Approved (Project Director)		Date	
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client	BYRON SHIRE COUNCIL
Project	MYOCUM QUARRY SURVEY AND REHAB PLAN
Title	CROSS SECTIONS - CONTROL LINE 1 SHEET 2 OF 10
Original Size	A1
Drawing No:	22-12554185-C005
Rev:	1

Plot Date: 20 August 2021 - 10:09 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C005.dwg

NOTE

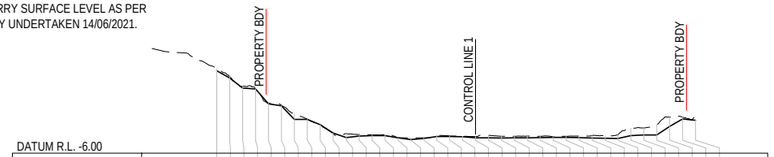
1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD

2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

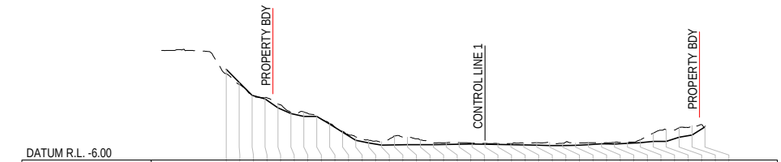
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -6.00

DEPTH CUT - / FILL +	-0.81	-0.51	-0.69	-0.12	-0.36	-0.24	-2.27	-0.11	0.21	0.32	-1.48	-0.59	-0.33	-0.12	-0.22	-0.37	-0.19	-0.21	-0.57	-0.91	-0.63	-0.64	-0.5	-0.18	-0.48	-0.59	-0.9	-1.45	-2.75	-3.9	-3.69	-0.69
EXISTING QUARRY SURFACE LEVEL	26.69	23.56	19.83	18.94	13.38	12.51	9.29	7.13	4.79	1.52	1.53	1.18	1.11	1.08	0.98	0.83	0.65	0.54	0.48	0.87	0.52	0.58	0.53	0.3	0.56	0.57	0.7	1.16	3.57	4.9	7.94	
COUNCIL APPROVED DESIGN LEVEL	25.887	23.048	19.14	18.818	13.019	12.264	7.022	7.022	4.998	1.84	0.046	0.591	0.775	0.749	-0.999	-0.218	0.458	0.462	0.332	-0.082	-0.04	-0.107	-0.09	0.034	0.078	-0.018	-0.199	-0.288	0.822	1	4.299	7.247
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

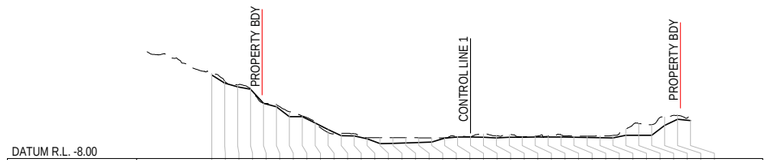
CH 70



DATUM R.L. -6.00

DEPTH CUT - / FILL +	1.71	0.84	0.51	-0.44	-1.53	-0.39	-1.72	0.02	-0.23	-0.32	-1.37	-1.11	-1.36	-3.5	-2.89	-1.84	-0.67	-0.65	-0.33	-0.38	-0.31	-0.41	-0.78	-0.95	-1.2	-0.9	-0.97	-0.77	-0.42	-0.6	-0.51	-1.1	-3.2	-4.51	-3.7	-3.69	-0.16
EXISTING QUARRY SURFACE LEVEL	27.36	23.19	18.49	18.11	15.71	12.37	10.67	10.864	8.11	5.08	2.99	1.73	1.14	3.37	2.86	1.83	0.69	0.78	0.57	0.42	0.46	0.35	0.71	0.63	0.85	0.53	0.67	0.7	0.7	0.85	1.02	1.86	4.4	5.71	6.55	7.35	6.99
COUNCIL APPROVED DESIGN LEVEL	29.068	24.031	18.993	17.668	14.184	11.981	10.664	10.864	7.888	4.758	1.628	0.616	-0.224	-0.13	-0.031	-0.012	0.003	0.054	0.131	0.241	0.15	-0.053	-0.15	-0.248	-0.345	-0.362	-0.298	-0.072	0.288	0.254	0.51	0.765	1.201	1.201	2.844	3.665	6.833
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

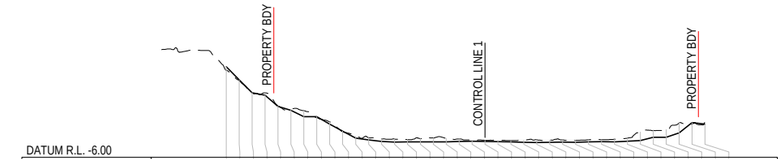
CH 85



DATUM R.L. -8.00

DEPTH CUT - / FILL +	-0.66	-0.77	-0.72	-0.22	-0.85	-1.9	-0.27	-0.27	1.15	-0.99	-0.88	-0.43	-2.31	-2.18	-1.79	-1.61	-0.1	0.26	0.16	1.2	0.81	1.05	0.15	0.38	0.36	0.89	-0.45	-0.47	-0.79	-0.92	-2.41	-4.49	-4.11	-3.26	-1.5
EXISTING QUARRY SURFACE LEVEL	24.93	21.91	20.42	18.98	13.34	12.06	10.08	8.44		6	2																					5.49	5.11	8.04	8.65
COUNCIL APPROVED DESIGN LEVEL	24.263	21.137	19.701	18.762	13.356	12.014	8.176	8.176	5.724	3.149	0.788	0.735	-0.36	-2.263	-2.449	-1.79	-1.618	-0.129	0.263	0.326	0.254	-0.015	0.197	0.23	0.266	0.302	0.28	0.231	0.172	0.053	-0.008	1	1	4.785	7.149
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

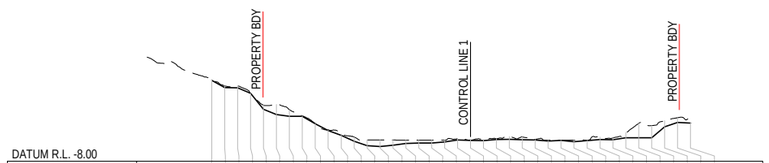
CH 65



DATUM R.L. -6.00

DEPTH CUT - / FILL +	1.36	0.38	-0.07	-0.85	-0.18	-0.28	-0.36	-0.9	0.26	-0.69	-0.84	-0.98	-1.15	-0.9	-1.27	-1.6	-1.37	-0.95	-0.44	-0.55	-0.54	-0.78	-1.06	-0.81	-0.84	-0.72	-0.85	-0.73	-0.99	-1.2	-3.3	-2.6	-2.92	-3.88	0.57
EXISTING QUARRY SURFACE LEVEL	27.57	23.51	18.93	18.61	13.8	12.36	9.9	7.62	6.719	4.06	3.8	2.02	1.48	1	0.99	0.8	1.14	1.45	1.29	0.57	0.52	0.51	0.4	0.54	0.72	0.52	0.63	0.47	0.71	0.88	1.32	4.28	4.6	7.21	6.74
COUNCIL APPROVED DESIGN LEVEL	28.93	23.893	18.855	17.964	13.615	12.077	9.596	7.622	6.719	4.06	1.328	0.634	0.02	-0.154	-0.101	-0.128	-0.144	-0.085	0.024	0.134	0.075	-0.038	-0.14	-0.237	-0.335	-0.289	-0.201	-0.253	-0.135	-0.101	0.126	0.371	1.686	3.329	7.312
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

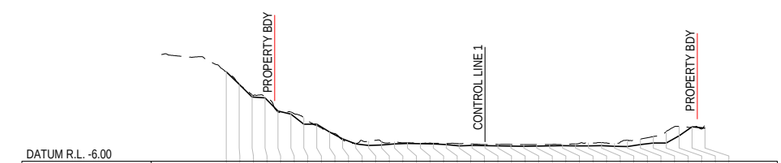
CH 80



DATUM R.L. -8.00

DEPTH CUT - / FILL +	-0.28	-0.71	-0.73	0.04	-1.55	-3.87	-2.53	-0.16	-0.06	-0.36	-0.5	-1.63	-2.2	-2.5	-1.98	-1.09	-1.06	-0.63	-0.55	-0.17	-0.41	-0.98	-1.11	-0.33	-0.26	-0.11	-0.11	-0.65	-0.19	-0.9	-0.7	-2.06	-5.59	-4.74	-2.34	-1.79
EXISTING QUARRY SURFACE LEVEL	23.51	21.1	18.14	13.6	13.87	11.88	9.5	6.48	4.15	2.46	1.3	0.16	0.15	0.13	0.12	0.11	0.09	0.07	0.71	0.13	0.34	0.64	1.41	0.39	0.13	0.1	0.11	0.87	0.91	1.23	0.97	3.06	6.59	5.74	7.61	8.76
COUNCIL APPROVED DESIGN LEVEL	23.224	20.388	20.352	18.18	12.053	10	9.347	9.347	6.418	3.791	1.961	-0.327	-2.039	-2.357	-1.161	-0.988	-0.978	-0.561	0.162	-0.036	-0.072	0.34	0.424	0.288	0.135	-0.218	-0.014	-0.542	-0.085	0.332	0.272	1	1	5.27	6.978	6.67
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

CH 60



DATUM R.L. -6.00

DEPTH CUT - / FILL +	0.03	0.11	-0.79	-0.5	-0.62	0.39	0.53	0.04	0.43	-0.2	-1.62	-0.78	-0.25	-0.18	-0.23	-0.49	-0.89	-0.63	-0.55	-0.68	-0.71	-0.63	-0.51	-0.47	-0.74	-1.04	-1.18	-1.04	-2.52	-2.08	-2.48	-4.41	-3.56	0.18	
EXISTING QUARRY SURFACE LEVEL	28.49	23.58	19.59	18.89	12.92	11.99	7.78	5.18	2.2	1.7	1.53	1.41	1.04	0.95	0.91	0.87	0.76	0.66	0.4	0.43	0.46	0.41	0.38	0.43	0.64	0.94	1.15	0.79	2.12	2.51	3.48	5.41	7.37	7.09	
COUNCIL APPROVED DESIGN LEVEL	28.523	23.693	18.799	18.391	13.317	12.17	8.309	5.221	2.637	0.669	0.08	0.216	0.629	0.795	0.768	0.678	0.38	-0.128	0.027	-0	-0.112	-0.225	-0.303	-0.215	-0.127	-0.039	-0.091	-0.09	-0.029	-0.258	-0.403	0.434	1	3.814	7.272	6.714
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

CH 75

PRELIMINARY

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT		B.C	S.L	A.O	20/08/21

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

GHD

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203 Robina Town Centre Drive
QLD 4226 Australia
T 61 7 5557 1000 **F** 61 7 5557 1099
E goldcoastmail@ghd.com **W** www.ghd.com

Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	
Approved (Project Director)		Date	
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client	BYRON SHIRE COUNCIL
Project	MYOCUM QUARRY SURVEY AND REHAB PLAN
Title	CROSS SECTIONS - CONTROL LINE 1 SHEET 3 OF 10
Original Size	A1
Drawing No:	22-12554185-C006
Rev:	1

Plot Date: 20 August 2021 - 10:10 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C006.dwg

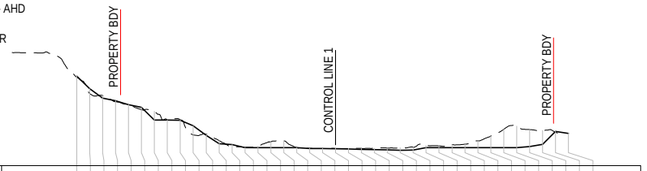
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

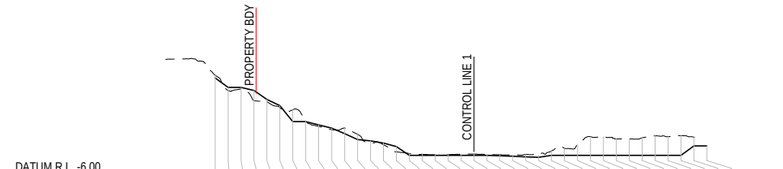
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	0.33	28.24	28.575
-95	1.87	21.91	23.777
-90	-1.03	21.1	20.07
-85	0.35	18.71	19.057
-80	0.05	17.47	17.527
-75	0.9	15.62	16.519
-70	-3.4	15.01	11.612
-65	0.12	11.49	11.612
-60	-0.2	11.77	11.567
-55	3.58	5.88	9.461
-50	-0.52	6.25	5.728
-45	-1.2	3.65	2.45
-40	0.84	1.29	2.125
-35	-0.16	1.16	1
-30	-0.58	1.58	1
-25	-2.65	3.65	1
-20	-0.01	1.01	1
-15	-0.09	0.71	0.619
-10	-0.02	0.64	0.62
-5	-0.11	0.66	0.542
0	-0.36	0.67	0.317
5	-0.19	0.62	0.43
10	-0.51	0.71	0.205
15	-0.72	0.81	0.092
20	-0.95	0.93	-0.02
25	-1.13	1.13	0.005
30	-0.83	1.83	1
35	-0.66	1.66	1
40	-1.16	2.16	1
45	-1.29	2.29	1
50	-2.58	3.58	1
55	-4.44	5.44	1
60	-7.06	8.06	1
65	-8.25	9.25	1
70	-6.56	7.95	1.388
75	-5.4	7.61	2.21
80	0.3	6.94	7.236
85			6.475
90			

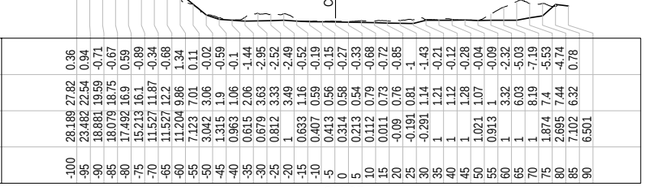
CH 100



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-1.05	31.92	30.875
-95	1.22	26.08	27.293
-90	0.51	27.24	26.72
-85	0.88	22.18	23.063
-80	0.53	21.42	20.202
-75	0.78	19.42	14.031
-70	-4.61	18.64	14.031
-65	-0.4	14.43	12.814
-60	0.57	12.24	11.485
-55	0.59	10.89	9.401
-50	-2.16	11.57	7.094
-45	-2.07	9.16	6.62
-40	0.73	5.89	5.725
-35	0.58	5.14	4.446
-30	2.07	2.37	1
-25	-0.74	1.74	1
-20	-0.44	1.44	1
-15	-0.22	1.22	1
-10	-0.21	1.21	1
-5	-0.53	1.53	1
0	-0.51	1.51	1
5	-0.33	1.33	1
10	-0.41	1.26	0.855
15	-0.5	1.2	0.704
20	-0.89	1.35	0.466
25	-0.89	1.12	0.228
30	-1.67	2.67	1
35	-2.74	3.74	1
40	-4.26	5.26	1
45	-7.22	8.22	1
50	-7.2	8.2	1
55	-6.39	7.39	1
60	-6.34	7.34	1
65	-6.78	7.78	1
70	-7.56	8.56	1
75	-7.24	8.24	1
80	-7.66	8.66	1
85	-3.43	8.07	4.641
90			4.641

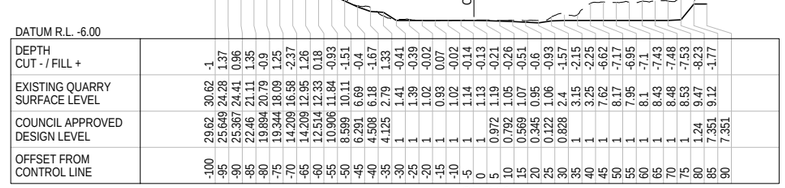
CH 115



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	0.36	27.82	28.188
-95	0.94	22.54	23.482
-90	-0.71	19.59	18.881
-85	-0.67	18.75	18.079
-80	0.59	16.9	17.492
-75	-0.89	16.1	15.213
-70	-0.34	11.87	11.527
-65	-0.68	12.2	11.527
-60	1.34	9.86	11.208
-55	0.11	7.01	7.123
-50	-0.02	3.06	3.042
-45	-0.59	1.9	1.315
-40	-0.1	1.06	0.963
-35	-1.44	2.06	0.615
-30	-2.95	3.63	0.679
-25	-2.49	3.49	1.012
-20	-0.52	1.16	0.633
-15	-0.19	0.59	0.407
-10	-0.15	0.56	0.413
-5	-0.27	0.58	0.314
0	-0.33	0.54	0.213
5	-0.68	0.79	0.112
10	-0.72	0.73	0.011
15	-0.85	0.76	-0.09
20	-1	0.81	-0.191
25	-1.43	1.14	-0.291
30	-0.21	1.21	1
35	-0.12	1.12	1
40	-0.28	1.28	1
45	-0.04	1.07	1.021
50	-0.09	1	0.913
55	-2.32	3.32	1
60	-5.03	6.03	1
65	-7.19	8.19	1
70	-5.53	7.4	1.874
75	-4.74	7.44	2.695
80	0.78	6.32	7.102
85			6.501
90			

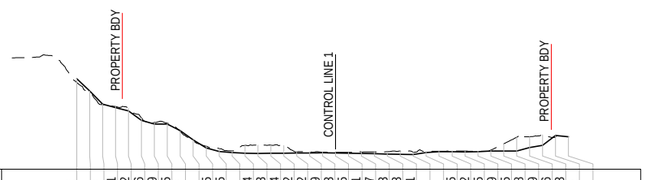
CH 95



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-1	30.62	29.62
-95	1.37	24.28	25.649
-90	0.96	24.41	25.367
-85	-0.5	21.11	22.96
-80	1.25	18.09	19.344
-75	-0.09	16.68	14.209
-70	-2.37	12.95	14.209
-65	1.26	12.33	12.514
-60	0.18	11.84	10.906
-55	-0.93	10.11	8.599
-50	-1.51	6.69	6.291
-45	-0.4	6.18	4.508
-40	-1.67	2.79	4.125
-35	1.33	1.41	1
-30	-0.41	1.39	1.02
-25	-0.39	1.02	0.93
-20	-0.02	1.02	1
-15	0.07	0.93	1
-10	-0.02	1.02	1
-5	-0.14	1.14	1
0	-0.13	1.13	1
5	-0.21	1.19	0.972
10	-0.26	1.05	0.792
15	-0.51	1.07	0.569
20	-0.6	0.95	0.345
25	-0.93	1.06	0.122
30	-1.57	2.4	0.828
35	-2.15	3.15	1
40	-2.25	3.25	1
45	-6.62	7.62	1
50	-7.17	8.17	1
55	-6.95	7.95	1
60	-7.1	8.1	1
65	-7.43	8.43	1
70	-7.48	8.48	1
75	-7.53	8.53	1
80	-8.23	9.47	1.24
85	-7.77	9.12	7.351
90			

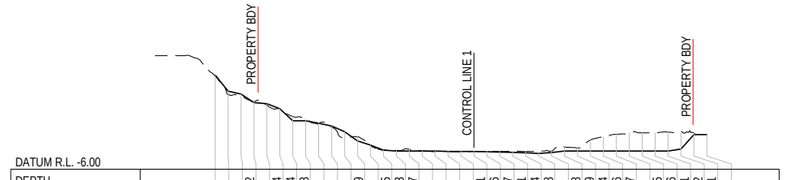
CH 110



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	1.46	27.5	28.961
-95	0.7	23.46	24.16
-90	0.22	18.91	19.131
-85	-0.41	18.18	17.774
-80	-0.92	17.44	16.52
-75	-0.96	13.84	12.881
-70	-0.59	12.03	11.439
-65	-0.25	11.69	11.439
-60	0.32	8.54	8.866
-55	0.5	4.82	5.323
-50	-0.65	2.84	2.194
-45	-1.15	1.96	0.869
-40	-0.7	1.08	0.38
-35	-3.04	3.18	0.133
-30	-3.23	3.27	0.04
-25	-2.44	3.08	0.106
-20	-0.42	0.64	0.22
-15	-0.39	0.63	0.241
-10	-0.23	0.57	0.337
-5	-0.25	0.48	0.229
0	-0.31	0.45	0.131
5	-0.57	0.61	0.034
10	-0.73	0.67	-0.063
15	-0.93	0.77	-0.162
20	-1.21	0.95	-0.263
25	-0.9	0.54	-0.364
30	-0.4	0.83	0.426
35	-0.15	0.9	0.756
40	-0.32	1.04	0.713
45	-0.35	0.96	0.613
50	-0.19	0.9	0.705
55	-0.35	1	1
60	-2.78	3.78	1
65	-5.29	6.29	1
70	-4.16	6.52	2.359
75	-4.03	7.21	3.18
80	0.58	6.39	6.967
85			6.527
90			

CH 90



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	0.52	29.88	30.394
-95	1.31	22.91	24.118
-90	0.56	22.48	23.026
-85	-0.62	20.29	19.257
-80	-0.14	17.45	17.312
-75	-1.64	14.35	12.71
-70	-0.58	11.6	11.705
-65	0.11	10.2	10.66
-60	0.46	6.07	8.473
-55	2.4	6.48	4.887
-50	-1.59	3.15	3.247
-45	0.09	1.35	1.301
-40	-0.05	1.23	1
-35	-0.23	1.57	1
-30	-0.57	0.99	0.76
-25	0.01	0.8	0.843
-20	0.24	0.73	0.82
-15	0.04	0.83	0.812
-10	0.09	0.86	0.699
-5	-0.01	0.86	0.587
0	-0.016	0.88	0.476
5	-0.027	0.82	0.282
10	-0.41	0.84	0.059
15	-0.54	0.96	0.357
20	-0.78	0.96	1
25	-0.6	2.58	1
30	-1.58	2.19	1
35	-1.19	5.24	1
40	-4.24	6.36	1
45	-5.36	7.47	1
50	-6.47	8.1	1
55	-7.1	8.05	1
60	-7.05	8.06	1
65	-7.06	8.31	1
70	-7.31	8.82	1.725
75	-6.82	8.54	1.302
80	-0.71	6.01	7.302
85			
90			

CH 105

PRELIMINARY

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT		B.C	S.L	A.O	20/08/21

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

GHD
Level 13 The Rocket
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QLD 4226 Australia
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E goldcoastmail@ghd.com W www.ghd.com

Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	
Approved (Project Director)			
Date			
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client	BYRON SHIRE COUNCIL
Project	MYOCUM QUARRY SURVEY AND REHAB PLAN
Title	CROSS SECTIONS - CONTROL LINE 1 SHEET 4 OF 10
Original Size	A1
Drawing No:	22-12554185-C007
Rev:	1

Plot Date: 20 August 2021 - 10:10 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C007.dwg

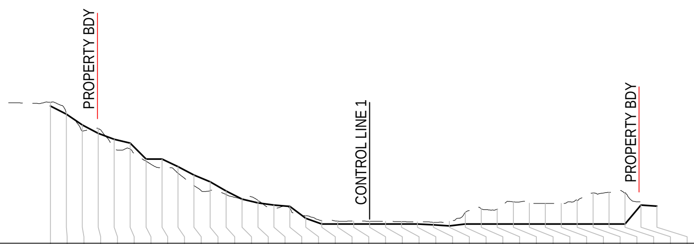
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

— — — EXISTING QUARRY SURFACE LEVEL

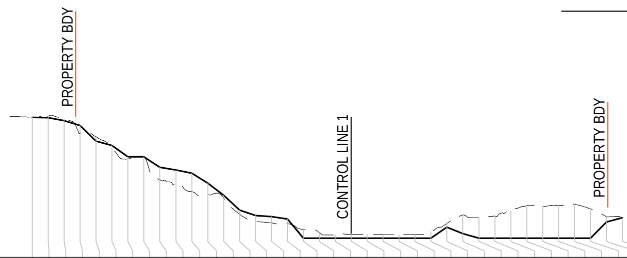
——— COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-1.18	-0.5	1.99	-1.48	3.14	1.84	0.68	2.77	2.05	3.36	2.76	1.07	-0.02	-0.83	0.92	0.59	-0.84	-1.04	-0.87	-0.93	-0.86	-0.78	-0.77	-0.64	-0.79	-1.42	-3.61	-4.71	-4.62	-6.91	-6.47	-6.41	-6.43	-7.41	-9.71	-9.89	-9.75		
EXISTING QUARRY SURFACE LEVEL	39.07	35.82	29.99	30.86	24.34	24.44	20.6	18.51	16.86	12.96	11.39	10.22	8.83	8.38	5.96	5.86	3.57	2.04	1.87	1.93	1.86	1.78	1.77	1.63	1.47	1.81	4.61	5.71	5.62	7.91	7.47	7.41	7.43	8.41	10.71	10.89	10.75		
COUNCIL APPROVED DESIGN LEVEL	37.888	35.324	31.985	29.381	27.484	26.286	21.287	21.287	18.911	16.323	14.152	11.288	8.806	7.545	6.881	6.444	2.73	1	1	1	1	1	1	0.991	0.688	0.39	1	1	1	1	1	1	1	1	1	1	1	6.937	6.561
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90

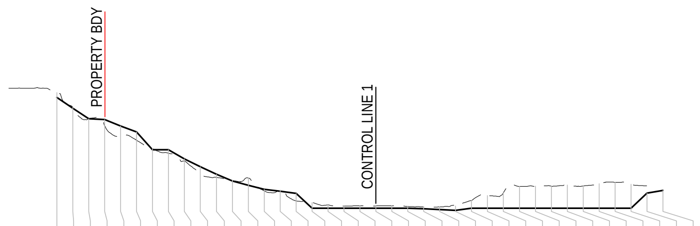
CH 130



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.04	-0.42	-0.58	2.36	-1.41	0.75	0.67	0.1	4.02	4.01	5.75	3.78	0.84	1.27	1.74	1.97	1.51	-2.71	-1.87	-1.07	-1.21	-1.21	-1.16	-1.15	-1.19	-2.02	-1.17	-5.81	-6.46	-6.93	-8.69	-10.27	-10.07	-10.36	-10.73	-9.24	-1.73	
EXISTING QUARRY SURFACE LEVEL	39.01	39.33	38.49	34.01	32.91	29.41	25.94	26.5	19.31	18.41	15.63	14.51	13.62	8.57	6.4	5.8	5.55	3.71	2.87	2.07	2.21	2.21	2.16	2.15	2.19	3.02	5.69	8.27	7.46	7.93	9.69	11.27	11.07	11.36	11.73	10.24	7.81	
COUNCIL APPROVED DESIGN LEVEL	38.979	38.908	37.916	36.377	31.504	30.165	26.606	26.606	23.325	22.419	21.385	18.284	14.462	9.835	8.14	7.778	7.06	1	1	1	1	1	1	1	1	1	4.523	2.463	1	1	1	1	1	1	1	1	6.084	7.438
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

CH 145



DATUM R.L. -5.00

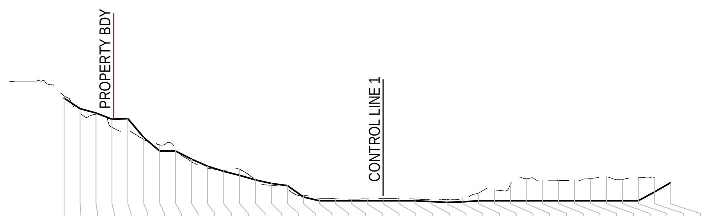
DEPTH CUT - / FILL +	-1.56	-0.31	-0	1.91	3.44	2.59	-0.38	1.09	0.65	2.26	0.97	-0.22	-2.33	0.53	-0.34	2.35	-1.78	-1.05	-0.65	-0.75	-0.73	-0.74	-0.58	-0.58	-0.83	-1.36	-2.47	-4.01	-4.84	-6.88	-6.92	-6.89	-7.29	-6.99	-7.69	-8.15	-7.54		
EXISTING QUARRY SURFACE LEVEL	37.32	32.73	29.08	26.91	23.4	22.34	19.71	18.23	15.83	11.78	10.66	9.77	10.5	6.42	6.63	3.28	2.78	2.05	1.65	1.75	1.73	1.74	1.58	1.43	1.38	1.67	3.47	5.01	5.84	7.88	7.92	7.89	8.29	7.99	8.69	9.15	8.54		
COUNCIL APPROVED DESIGN LEVEL	35.756	32.418	29.079	28.828	26.833	24.93	19.327	19.327	16.474	14.036	11.633	9.55	8.168	6.957	6.293	5.629	1	1	1	1	1	1	1	0.845	0.546	0.311	1	1	1	1	1	1	1	1	1	1	1	5.728	6.559
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90

CH 125

DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.3	-0.74	-0.57	0.43	-1.35	3.97	-1.11	3.48	3.88	5.98	5.94	3.11	1.89	1.03	1.36	1.18	1.05	-2.29	-1.03	-1.14	-1.12	-1.07	-0.99	-0.96	-0.88	-1.25	-4.19	-6.48	-5.73	-6.68	-6.8	-6.86	-7.05	-8.36	-10.52	-9.99	-4.71	
EXISTING QUARRY SURFACE LEVEL	39.21	39.13	37.8	32.99	31.33	24.91	25.43	20.85	18.44	15.57	13.25	13.14	11.26	7.77	6.59	6.42	6.2	3.29	2.03	2.14	2.12	2.07	1.99	1.96	1.88	2.25	5.19	7.48	6.73	7.68	7.8	7.86	8.05	9.36	11.52	10.99	8.28	
COUNCIL APPROVED DESIGN LEVEL	38.91	38.39	37.238	33.42	29.982	28.877	24.324	24.324	22.325	21.548	19.191	16.248	13.147	8.797	7.953	7.6	7.248	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3.574	7.307
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

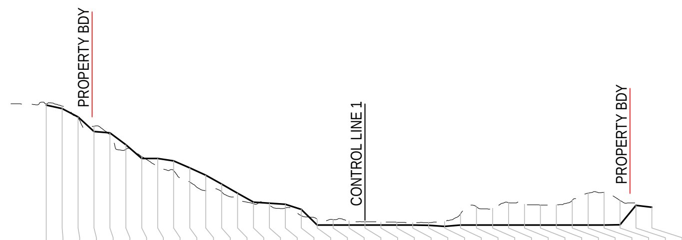
CH 140



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.68	1.55	0.42	2.55	3.53	0.64	-1.87	-0.36	0.88	0.62	-0.24	-1.94	-0.09	0.59	1.16	-0.39	-0.75	-0.61	-0.45	-0.56	-0.66	-0.62	-0.52	-0.7	-0.94	-1.26	-2.4	-3.41	-5.26	-6.98	-6.43	-6.36	-6.28	-6.94	-7.49	-6.63	-7.17	-4.6	
EXISTING QUARRY SURFACE LEVEL	33.81	28.27	28.07	24.02	23.21	20.14	18.45	16.94	13.15	11.14	10.45	10.85	7.62	5.78	4.55	2.58	1.75	1.61	1.45	1.56	1.66	1.62	1.51	1.4	1.41	1.88	3.4	4.41	6.26	7.98	7.43	7.36	7.28	7.94	8.49	7.63	8.17	8.29	
COUNCIL APPROVED DESIGN LEVEL	33.129	29.825	28.49	26.568	26.745	20.778	16.588	16.588	14.033	11.767	10.203	8.912	7.53	6.37	5.706	2.188	1	1	1	1	1	1	0.989	0.701	0.472	0.626	1	1	1	1	1	1	1	1	1	1	1	3.681	6.545
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90

CH 120



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.44	-0.82	0.32	-1.68	0.67	1.46	-0.53	2.62	3.07	4.39	4.9	2.41	1.58	0.45	0.61	1.16	1.91	-1.84	-1.68	-1.24	-0.98	-0.93	-0.86	-0.71	-0.86	-1.52	-3.55	-5.72	-5.18	-7.01	-6.53	-6.27	-6.3	-7.76	-10.01	-10.27	-7.64		
EXISTING QUARRY SURFACE LEVEL	39.08	38.36	34.57	32.05	29.22	24.75	22.44	19.29	18.06	14.51	11.77	11.39	9.36	7.68	7.2	6.33	3.94	2.84	2.68	2.24	1.98	1.93	1.86	1.71	1.71	2.05	4.55	6.72	6.18	8.01	7.53	7.27	7.3	8.76	11.01	11.27	8.7		
COUNCIL APPROVED DESIGN LEVEL	38.637	37.542	34.891	30.363	29.887	26.205	21.913	21.913	21.127	18.903	16.672	13.807	10.943	8.127	7.808	7.497	5.848	1	1	1	1	1	1	1	0.845	0.532	1	1	1	1	1	1	1	1	1	1	1.064	7.12	6.57
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90

CH 135

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT	B.C	S.L	A.O	20/08/21

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

GHD
Level 13 The Rocket
203 Robina Town Centre Drive
QLD 4226 Australia
T 61 7 5557 1000 F 61 7 5557 1099
E goldcoastmail@ghd.com W www.ghd.com

DO NOT SCALE

Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	
Approved (Project Director)			
Date			
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client **BYRON SHIRE COUNCIL**

Project **MYOCUM QUARRY SURVEY AND REHAB PLAN**

Title **CROSS SECTIONS - CONTROL LINE 1**
SHEET 5 OF 10

Original Size **A1** Drawing No: **22-12554185-C008** Rev: **1**

Plot Date: 20 August 2021 - 10:10 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C008.dwg

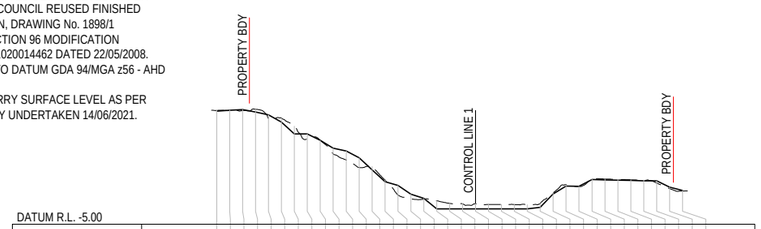
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

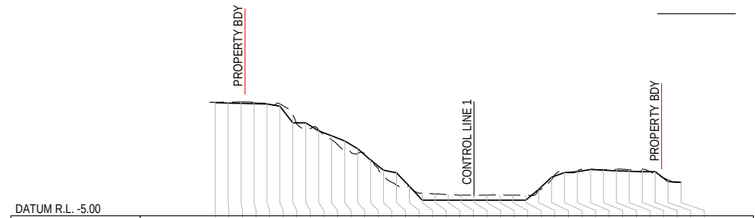
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.29	0.15	0.4	-1.14	1.5	-1.48	-2.97	2.03	0.06	2.18	3.43	3.72	-1.21	-0.71	3.65	1.82	0.32	-3.13	-2.1	3.1	-1.88	-1.92	-1.63	-1.69	-1.63	-1.59	-1.53	-0.4	-0.59	0.07	-0.13	-0.29	-0.29	-0.24	-0.26	0.82	0.58	0.26
EXISTING QUARRY SURFACE LEVEL	39.02	38.9	38.95	39.52	35.82	36.01	32.91	27.91	27.44	22.22	19.89	16.94	17.27	12.14	9.84	5.82	4.74	4.13	3.1	2.88	2.92	2.63	2.69	2.63	2.63	2.59	3.1	7.11	10.39	9.58	12.43	12.48	12.36	12.06	10.98	8.8	7.84	
COUNCIL APPROVED DESIGN LEVEL	38.731	39.042	39.355	38.375	37.313	34.53	29.935	29.935	27.5	24.395	23.317	20.659	16.058	11.43	9.991	6.936	5.055	1	1	1	1	1	1	1	1	1	1.571	6.704	9.799	9.652	12.299	12.183	12.071	11.941	11.802	11.802	9.382	8.108	
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	

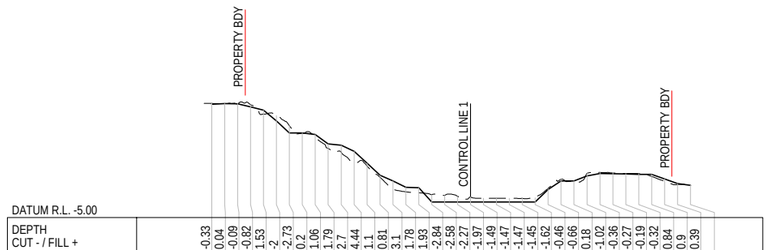
CH 160



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.23	-0.39	-0.59	-0.38	0.05	-0.88	2.37	-0.46	1.5	3.29	1.93	2.25	0.2	-2.67	-2.4	-2.12	-1.89	-1.9	-1.93	-2.02	-1.91	-1.85	0.46	0.93	-0.12	-0.3	-0.08	-0.15	-0.57	-0.65	-1.05	0.87	-0.65					
EXISTING QUARRY SURFACE LEVEL	38.85	38.9	38.97	38.63	38.11	38.17	34.53	27.91	24.33	20.55	18.94	16.87	10.34	6.19	3.67	3.12	2.89	2.9	2.93	3.02	2.91	2.85	4.66	8.91	11.77	12.28	12.87	12.74	12.92	12.78	13.04	11.12	8.81					
COUNCIL APPROVED DESIGN LEVEL	38.616	38.507	38.383	38.256	38.162	37.284	30.899	27.705	25.829	23.836	20.873	16.425	12.591	11.531	6.391	3.4	1	1	1	1	1	1	5.123	9.842	11.648	11.976	12.79	12.59	12.349	12.132	11.993	11.993	8.156	7.87				
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	

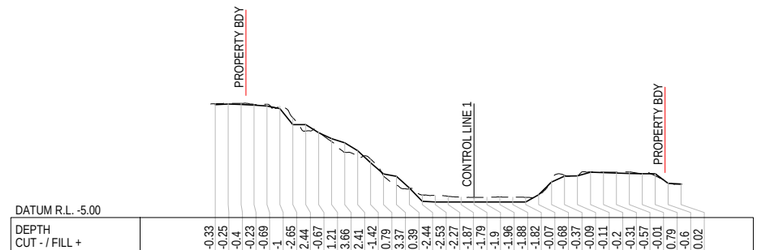
CH 175



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.33	0.04	-0.09	-0.82	1.53	-2	-2.73	0.2	1.06	1.79	2.7	4.44	1.1	0.81	3.1	1.78	1.93	2.84	2.58	-2.27	-1.97	-1.49	-1.47	-1.47	-1.45	-1.62	-0.46	-0.66	0.18	-1.02	-0.36	-0.27	-0.19	-0.32	0.84	0.9	0.39	
EXISTING QUARRY SURFACE LEVEL	39.11	38.98	39.04	38.64	34.96	34.39	30.47	27.54	26.06	21.68	20.24	16.18	14.9	10.56	6.98	4.6	1.93	3.84	3.58	3.27	2.97	2.49	2.47	2.47	2.45	2.62	6.3	9.79	8.96	12.1	12.43	12.23	12.05	10.89	9.01	7.77		
COUNCIL APPROVED DESIGN LEVEL	38.785	39.019	38.955	37.822	36.486	32.395	27.74	27.74	27.113	23.477	22.938	20.626	16.001	11.373	9.782	6.534	6.535	1	1	1	1	1	1	1	1	1	5.842	9.132	9.145	11.072	12.067	11.955	11.844	11.733	11.733	9.91	8.16	7.461	
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

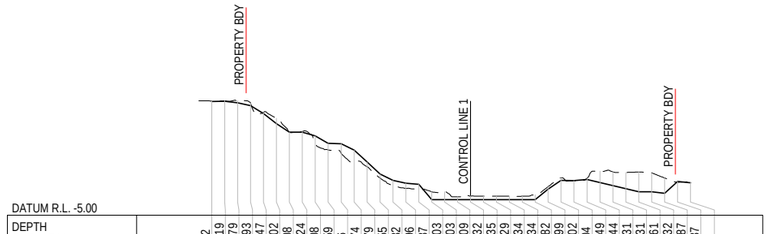
CH 155



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.33	-0.25	-0.4	-0.23	-0.69	-1.65	-2.44	-0.67	1.21	3.66	2.41	-1.42	0.79	3.37	0.39	-2.44	-2.53	-2.27	-1.87	-1.79	-1.9	-1.96	-1.88	-1.82	-0.07	-0.68	-0.37	-0.09	-0.11	-0.2	-0.31	-0.57	-0.01	0.79	-0.6	0.02		
EXISTING QUARRY SURFACE LEVEL	38.99	38.878	38.76	38.488	38.129	37.088	30.907	27.763	25.532	23.926	20.812	16.235	11.91	10.959	6.49	1.31	3.53	3.27	2.87	2.79	2.9	2.96	2.88	2.82	3.844	8.714	11.05	11.075	12.531	12.346	12.207	12.068	11.929	11.929	8.225	7.949		
COUNCIL APPROVED DESIGN LEVEL	38.662	38.878	39.13	38.72	38.09	33.56	30.907	27.763	25.532	23.926	20.812	18.4	17.66	11.12	7.59	6.1	3.75	1	1	1	1	1	1	1	3.92	9.4	11.42	11.16	12.64	12.55	12.52	12.64	11.34	11.13	8.83	7.93		
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	

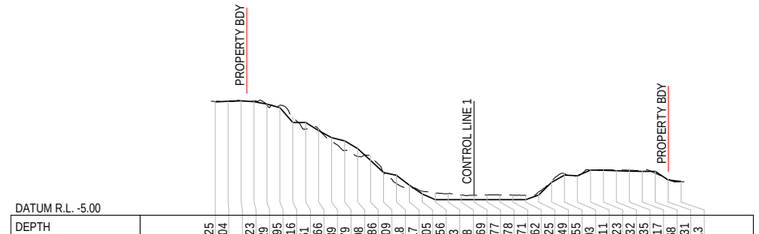
CH 170



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.2	-0.19	-0.79	-0.93	-0.47	-2.02	0.08	-0.24	3.08	2.59	3.6	4.74	1.79	1.55	2.32	1.96	1.97	-3.03	-3.03	-1.09	-1.32	-1.35	-1.29	-1.34	-1.34	-1.82	-0.99	-1.02	0.04	-0.49	-4.44	-5.31	-6.31	-7.61	-7.32	-5.87	0.37	
EXISTING QUARRY SURFACE LEVEL	39.09	39.15	39.23	38.2	34.69	32.38	26.99	27.31	22.57	20.17	18.93	15.38	13.71	9.32	6.49	5.45	4.99	4.03	4.03	2.09	2.32	2.35	2.29	2.34	2.34	2.34	6.03	9.43	8.27	9.24	12	11.69	11.61	11.32	9.34	7.66		
COUNCIL APPROVED DESIGN LEVEL	38.89	38.963	38.435	37.268	34.222	30.361	27.07	27.07	25.646	22.759	22.531	20.126	15.499	10.872	9.416	7.304	6.861	1	1	1	1	1	1	1	1	1	5.037	8.406	8.307	8.748	7.562	6.375	5.188	4.002	4.002	3.467	8.031	7.449	
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

CH 150



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.25	-0.04	-0	-0.23	-0.95	-0.16	-2.51	-0.66	1.39	3.79	2.98	-0.09	3.18	1.17	-1.05	-2.56	-2.3	-1.8	-1.69	-1.77	-1.78	-1.71	-1.62	-1.25	-0.49	-0.55	0.03	10.19	12.51	12.52	12.46	12.36	12.04	11.19	8.87	-0.31	0.13	
EXISTING QUARRY SURFACE LEVEL	38.94	38.996	39.07	37.838	37.745	30.784	28.274	27.635	24.964	23.694	20.692	16.091	11.488	10.386	6.601	3.182	3.56	3.3	2.8	2.69	2.77	2.78	2.71	2.62	2.707	7.66	10.425	10.219	12.41	12.283	12.144	12.005	11.866	11.866	8.563	8.028		
COUNCIL APPROVED DESIGN LEVEL	38.696	38.963	39.137	37.838	36.505	30.784	28.274	27.635	24.964	23.694	20.692	16.091	11.488	10.386	6.601	3.182	4.424	3.56	2.8	2.69	2.77	2.78	2.71	2.62	3.96	8.15	10.97	10.19	12.52	12.51	12.46	12.36	12.04	11.19	8.87	7.9		
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	

CH 165

PRELIMINARY

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT		B.C	S.L	A.O	20/08/21

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

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Drafting Check	M. MASON	Design Check	
Approved (Project Director)		Date	
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client	BYRON SHIRE COUNCIL
Project	MYOCUM QUARRY SURVEY AND REHAB PLAN
Title	CROSS SECTIONS - CONTROL LINE 1 SHEET 6 OF 10
Original Size	A1
Drawing No:	22-12554185-C009
Rev:	1

Plot Date: 20 August 2021 - 10:11 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C009.dwg

NOTE

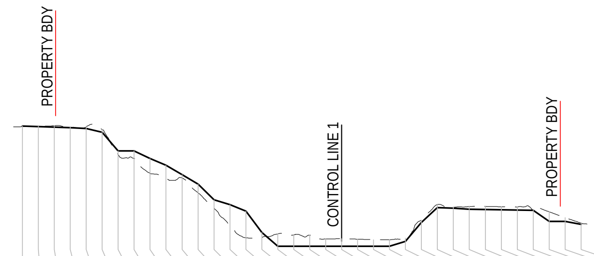
1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD

2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

— — — — EXISTING QUARRY SURFACE LEVEL

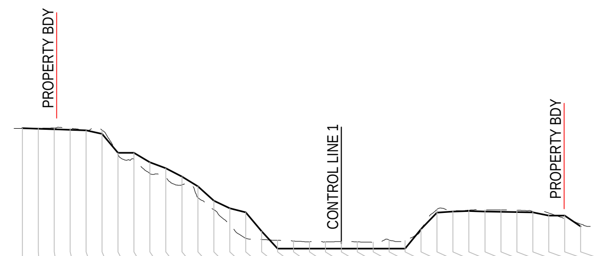
——— COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	0.24	38.45	38.687
-95	-0.03	38.54	38.509
-90	-0.46	38.75	38.286
-85	-0.3	38.41	38.112
-80	-0.48	38.42	37.938
-75	-0.83	37.55	36.716
-70	1.18	29.71	30.89
-65	2.39	28.5	30.89
-60	4.62	23.84	28.462
-55	4.05	22.31	26.366
-50	1.06	22.39	23.451
-45	2.73	17.74	20.474
-40	2.66	12.92	15.574
-35	6.64	7.4	14.044
-30	8.4	3.62	12.021
-25	1.59	3.71	5.301
-20	-3.87	4.87	1
-15	-3.54	4.54	1
-10	-3.46	4.46	1
-5	-2.25	3.25	1
0	-2.32	3.32	1
5	-2.2	3.2	1
10	-2.05	3.05	1
15	-2.03	3.03	1
20	-0.98	3.49	2.508
25	-0.74	9.17	8.428
30	-0.99	14.06	13.077
35	-0.37	13.31	12.939
40	-0.86	13.42	12.56
45	-0.99	13.47	12.485
50	-0.94	13.35	12.404
55	-0.97	13.3	12.323
60	-0.09	12.35	12.264
65	-2.98	11.79	8.808
70	-1.14	9.95	8.808
75	-0.39	8.23	7.838

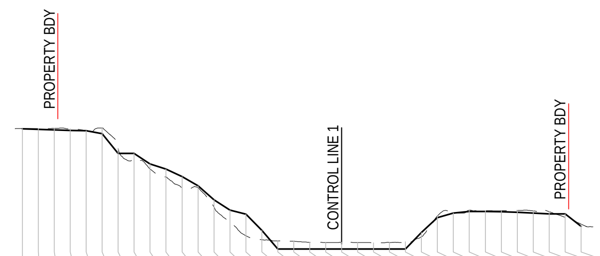
CH 190



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	0.08	38.58	38.665
-95	-0.13	38.62	38.485
-90	-0.44	38.76	38.316
-85	-0.41	38.56	38.146
-80	-0.01	38.02	38.011
-75	-1.1	38.01	36.912
-70	0.57	30.41	30.981
-65	2.1	28.88	30.981
-60	3.52	24.48	28.003
-55	2.88	23.29	26.167
-50	2.61	20.94	23.549
-45	3.48	17	20.482
-40	2.79	13.17	15.958
-35	5.29	8.32	13.606
-30	8.03	4.27	12.305
-25	2.59	3.84	6.428
-20	-2.62	3.62	1
-15	-2.36	3.36	1
-10	-2.14	3.14	1
-5	-2.08	3.08	1
0	-2.19	3.19	1
5	-2.1	3.1	1
10	-2	3	1
15	-2.66	3.66	1
20	-2.49	3.49	1
25	0.03	7.08	7.114
30	-1.03	13.26	12.235
35	-0.12	12.74	12.618
40	-0.24	13.02	12.776
45	-0.51	13.13	12.62
50	-0.62	13.09	12.465
55	-0.61	12.99	12.384
60	-0.25	12.55	12.303
65	-0.78	12.12	11.338
70	0.93	10.41	11.338
75	-0.76	8.7	7.938

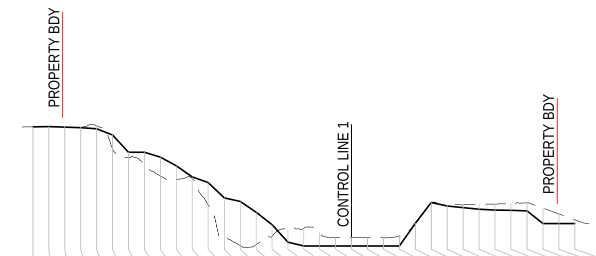
CH 185



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-0.07	38.71	38.64
-95	-0.27	38.75	38.481
-90	-0.44	38.79	38.343
-85	-0.44	38.62	38.181
-80	0.22	37.87	38.087
-75	-1.8	38.9	37.098
-70	-1.6	32.56	30.955
-65	1.86	29.09	30.955
-60	1.58	26.04	27.619
-55	2.47	23.54	26.013
-50	3.5	20.19	23.688
-45	0.62	20.18	20.794
-40	2.21	14.13	16.342
-35	3.72	9.45	13.166
-30	6.77	5.15	11.926
-25	2.9	3.89	6.785
-20	-2.52	3.52	1
-15	-2.4	3.4	1
-10	-2.05	3.05	1
-5	-2	3	1
0	-2.05	3.05	1
5	-1.99	2.99	1
10	-1.95	2.95	1
15	-2.01	3.01	1
20	-2.24	3.24	1
25	1.27	4.85	6.124
30	-0.61	11.4	10.796
35	-0.06	12.25	12.194
40	-0.4	13.14	12.74
45	-0.21	12.99	12.78
50	-0.34	12.97	12.631
55	-0.64	13.11	12.468
60	-0.67	12.94	12.266
65	-0.72	12.68	11.957
70	1.02	10.93	11.957
75	-0.72	8.8	8.077

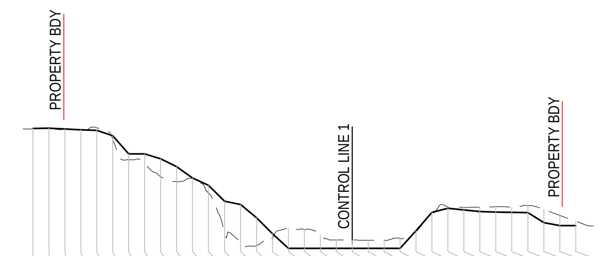
CH 180



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	0	38.37	38.37
-95	0.05	38.4	38.446
-90	-0.04	38.32	38.279
-85	-0.38	38.47	38.088
-80	-0.85	38.65	37.805
-75	4.48	31.36	35.841
-70	1.66	28.73	30.387
-65	3.92	26.46	30.387
-60	5.89	22.98	28.873
-55	4.4	21.8	26.2
-50	0.48	22.2	22.678
-45	6.89	13.99	20.879
-40	12.42	3.67	16.094
-35	13.83	1.19	15.016
-30	10.19	1.37	11.565
-25	3.7	3.99	7.692
-20	-3.93	6.14	2.204
-15	-5.58	6.58	1
-10	-4.15	5.15	1
-5	-2.71	3.71	1
0	-2.7	3.7	1
5	-2.62	3.62	1
10	-2.6	3.6	1
15	-3.2	4.2	1
20	0.39	7.74	8.123
25	0.22	14.46	14.681
30	-0.3	13.86	13.553
35	-0.9	13.93	13.035
40	-1.5	14.02	12.516
45	-1.9	14.17	12.271
50	-2.11	14.31	12.205
55	-2.56	14.57	12.012
60	-4.85	12.89	8.04
65	-3.03	11.07	8.041
70	-1.21	9.25	8.041

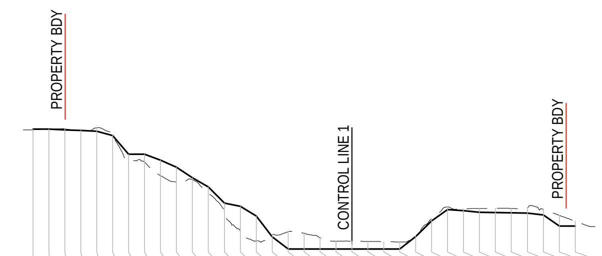
CH 205



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	0.13	38.38	38.507
-95	0.05	38.51	38.566
-90	0.1	38.24	38.337
-85	0.01	38.09	38.108
-80	-0.88	38.76	37.886
-75	1.17	35	36.17
-70	1.88	28.68	30.556
-65	3.09	27.47	30.556
-60	5.62	23.37	28.997
-55	4.68	21.85	26.53
-50	0.17	22.82	22.989
-45	2.43	18.26	20.684
-40	9.6	6.12	15.725
-35	11.82	2.85	14.668
-30	8.74	1.82	10.564
-25	1.47	4.09	5.562
-20	-6.2	7.2	1
-15	-5.89	6.89	1
-10	-4.12	5.12	1
-5	-2.61	3.61	1
0	-2.56	3.56	1
5	-2.53	3.53	1
10	-2.49	3.49	1
15	-3.1	4.1	1
20	0.23	6.25	6.481
25	0.73	11.52	12.247
30	-0.33	13.87	13.538
35	-0.78	13.8	13.019
40	-1.36	13.86	12.501
45	-1.67	14.01	12.346
50	-1.62	13.9	12.279
55	-2.15	14.35	12.2
60	-4.13	13.15	9.017
65	-3.2	11.29	8.097
70	-1.37	9.46	8.097

CH 200



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	0.25	38.35	38.6
-95	0	38.53	38.537
-90	-0.35	38.65	38.307
-85	-0.07	38.18	38.104
-80	-1.09	39.01	37.92
-75	-0.34	36.84	36.505
-70	2.01	28.71	30.723
-65	2.5	28.22	30.723
-60	4.85	23.95	28.799
-55	4.67	21.92	26.593
-50	0.58	22.73	23.3
-45	2.08	18.39	20.465
-40	2.93	12.42	15.356
-35	7.82	6.54	14.362
-30	7.79	3.51	11.293
-25	-0.83	5.57	4.746
-20	-5.39	6.39	1
-15	-4.93	5.93	1
-10	-3.51	4.51	1
-5	-2.4	3.4	1
0	-2.43	3.43	1
5	-2.36	3.36	1
10	-2.26	3.26	1
15	-2.16	3.16	1
20	-0.36	5.19	4.83
25	-0.58	10.39	9.813
30	-0.82	14.17	13.351
35	-0.6	13.61	13.004
40	-1.19	13.67	12.486
45	-1.3	13.72	12.42
50	-1.34	13.68	12.342
55	-1.69	13.95	12.261
60	-1.8	13.42	11.626
65	-3.4	11.55	8.152
70	-1.52	9.67	8.152

CH 195

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT	B.C	S.L	A.O	20/08/21

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

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Drafting Check M. MASON | Design Check
Approved (Project Director)
Date
Scale AS SHOWN
This Drawing must not be used for Construction unless signed as Approved

Client **BYRON SHIRE COUNCIL**
Project **MYOCUM QUARRY SURVEY AND REHAB PLAN**
Title **CROSS SECTIONS - CONTROL LINE 1 SHEET 7 OF 10**
Original Size **A1** Drawing No: **22-12554185-C010** Rev: **1**

Plot Date: 20 August 2021 - 10:11 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C010.dwg

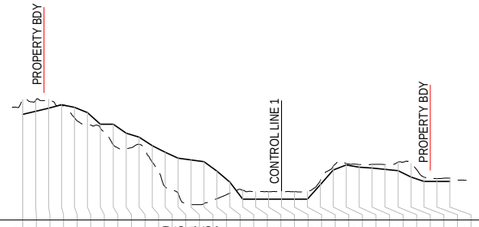
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

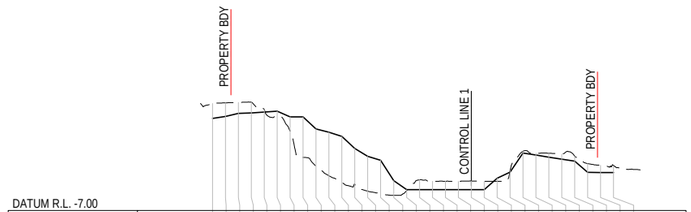
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-5.63	39.45	33.82
-95	-4.27	39.23	34.965
-90	-3.32	39.5	36.18
-85	0.26	37.22	37.487
-80	4.04	32.46	36.501
-75	4.73	29.7	34.44
-70	1.4	29.54	29.938
-65	7.92	22.01	29.938
-60	6.08	20.44	26.52
-55	2.83	22.17	25.004
-50	6.39	15.29	21.68
-45	13.39	5.78	19.17
-40	13.45	3.44	16.886
-35	17.24	-1.08	16.16
-30	16.67	-0.77	15.894
-25	4.26	3.33	7.585
-20	-3.46	4.46	
-15	-2.91	3.91	1
-10	-2.93	3.93	1
-5	-2.94	3.94	1
0	-2.9	3.9	1
5	-2.99	3.99	1
10	-1.65	8.2	6.556
15	-1.57	13.8	12.232
20	-0.57	14.76	14.184
25	-1	14.41	13.414
30	-1.41	14.44	13.024
35	-1.85	14.41	12.562
40	-5.32	14.92	9.601
45	-3.24	15.29	12.048
50	-1.72	9.59	7.871
55	-1.07	8.95	7.872
60	-1.28	9.16	7.874
65			

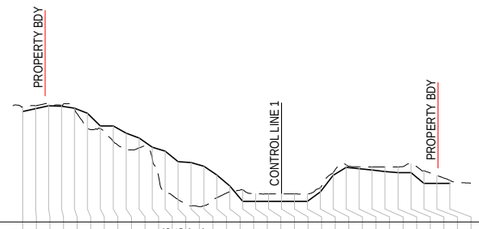
CH 220



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-5.81	34.32	28.508
-95	-5.25	34.54	29.298
-90	-4.27	34.72	30.443
-85	-4.14	34.77	30.627
-80	-1.06	32.02	30.961
-75	1.65	29.65	31.295
-70	5.52	23.56	29.085
-65	15.6	13.48	29.085
-60	14.45	9.98	24.427
-55	16.82	6.36	23.18
-50	17.8	3.79	21.594
-45	13.8	1.1	16.905
-40	13.44	0.41	13.847
-35	12.75	-0.42	12.331
-30	5.71	-1.19	4.511
-25	0.4	0.66	1
-20	-3.81	4.61	1
-15	-3.23	4.23	1
-10	-3.23	4.22	1
-5	-3.34	4.34	1
0	-3.26	4.26	1
5	-0.7	8.5	7.804
10	1.2	4.2	5.398
15	-0.71	15.83	15.118
20	-0.7	15.04	14.345
25	-1.52	15.08	13.56
30	-1.99	14.77	12.775
35	-2.01	14	11.99
40	-3.35	11.06	7.716
45	-2.86	10.44	7.586
50	-2.72	10.31	7.586
55			

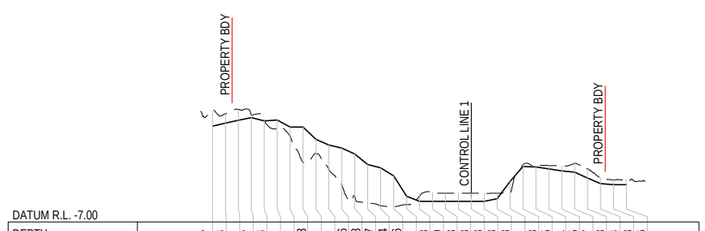
CH 235



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-1.94	37.64	35.696
-95	-1.06	37.92	36.854
-90	-0.68	38.6	37.926
-85	-0.4	38.13	37.733
-80	0.43	36.57	36.999
-75	5.9	29.14	35.041
-70	1.05	29.04	30.087
-65	5.98	24.11	30.087
-60	6.33	20.96	27.295
-55	3.78	21.68	25.465
-50	4.25	17.69	21.939
-45	15.63	4.72	20.353
-40	14.66	1.86	16.34
-35	16.77	-0.76	16.009
-30	15.27	-0.73	14.54
-25	2.29	2.42	6.944
-20	-4.43	4.65	
-15	-2.92	5.43	1
-10	-2.85	3.92	1
-5	-2.86	3.85	1
0	-2.87	3.86	1
5	-2.84	3.87	1
10	-1.66	3.84	1
15	-1.08	6.29	4.629
20	-0.95	12.14	11.062
25	-0.73	15.08	14.13
30	-1.21	14.35	13.616
35	-1.75	14.28	13.065
40	-2.2	14.3	12.547
45	-3.54	14.32	12.122
50	-4.89	15.59	12.056
55	-3.08	12.82	7.927
60	-1.19	11.01	7.928
65		9.12	7.93

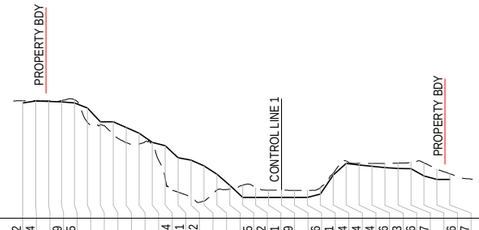
CH 215



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-5.87	35.92	30.043
-95	-3.64	34.83	31.187
-90	-4.1	36.44	32.336
-85	-0.97	34.27	33.308
-80	-0.34	32.42	32.084
-75	3.33	29.08	32.411
-70	3.63	26.02	29.647
-65	13.63	16.02	29.647
-60	5.47	19.42	24.889
-55	9.5	13.24	22.742
-50	14.36	7.21	21.578
-45	16.38	2.87	19.248
-40	14.74	0.94	15.202
-35	11.86	0.79	13.948
-30	3.29	1.11	10.749
-25	2.03	0.37	2.929
-20	-2.03	2.03	1
-15	-3.13	4.13	1
-10	-3.08	4.08	1
-5	-3.13	4.13	1
0	-3.03	4.03	1
5	-2.08	4.09	2.014
10	4.31	4.37	8.671
15	-0.73	15.14	14.407
20	-0.45	14.74	14.291
25	-1.31	14.81	13.506
30	-1.95	14.67	12.721
35	-3.47	15.65	12.187
40	-3.63	13.55	9.925
45	-2.24	10.07	7.838
50	-1.88	9.27	7.388
55	-2.06	9.45	7.388
60			

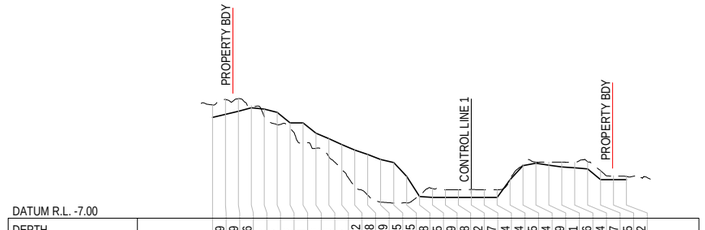
CH 230



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-0.82	38.33	37.509
-95	-0.04	38.28	38.238
-90	-0.2	38.32	38.123
-85	-0.49	38.44	37.946
-80	-1.25	38.74	37.493
-75	5.54	29.97	35.51
-70	1.07	29.16	30.232
-65	4.85	25.38	30.232
-60	5.9	22.13	28.026
-55	4.15	21.68	25.832
-50	1.02	21.24	22.26
-45	12.54	8.45	20.986
-40	13.31	3.04	16.351
-35	14.42	0.99	15.41
-30	13.67	3.48	13.224
-25	1.41	4.22	5.631
-20	-4.75	5.75	
-15	-3.62	4.62	1
-10	-2.81	3.81	1
-5	-2.79	3.79	1
0	-2.7	3.7	1
5	-2.76	3.76	1
10	-2.41	4.67	2.261
15	-0.74	10.37	9.629
20	-0.94	15.05	14.114
25	-0.64	14.21	13.568
30	-1.06	14.11	13.05
35	-1.63	14.17	12.531
40	-2.06	14.25	12.197
45	-2.57	14.7	12.131
50	-5.1	14.39	9.292
55	-3.96	11.95	7.984
60	-2.17	10.15	7.985
65			

CH 210



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-4.8	36.73	31.932
-95	-5.79	38.86	33.076
-90	-4.89	39.15	34.258
-85	-0.86	36.46	35.599
-80	2.92	32.23	35.154
-75	4.77	29.09	33.865
-70	2.12	27.67	29.792
-65	8.11	21.68	29.792
-60	5.83	19.96	25.795
-55	6.94	16.72	23.661
-50	9.77	11.67	21.437
-45	13.72	5.55	19.275
-40	15.08	1.88	17.565
-35	16.49	-0.83	15.665
-30	15.65	-1.19	14.455
-25	10.25	-1.09	9.167
-20	-0.38	1.73	1.347
-15	-2.45	4.45	1
-10	-2.99	3.99	1
-5	-2.98	3.98	1
0	-2.97	4.02	1
5	-2.94	3.94	1
10	-0.14	8	7.853
15	-0.35	13.67	13.319
20	-0.44	14.67	14.238
25	-1.19	14.64	13.452
30	-1.81	14.61	12.801
35	-2.16	14.57	12.41
40	-2.74	14.76	12.02
45	-3.47	11.3	7.836
50	-1.55	9.42	7.871
55	-1.22	9.11	7.885
60			

CH 225

PRELIMINARY

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT		B.C	S.L	A.O	20/08/21

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

GHD
Level 13 The Rocket
203 Robina Town Centre Drive
QLD 4226 Australia
T 61 7 5557 1000 F 61 7 5557 1099
E goldcoastmail@ghd.com W www.ghd.com

Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	
Approved (Project Director)		Date	
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client BYRON SHIRE COUNCIL
Project MYOCUM QUARRY SURVEY AND REHAB PLAN
Title CROSS SECTIONS - CONTROL LINE 1 SHEET 8 OF 10

Original Size A1 Drawing No: 22-12554185-C011 Rev: 1

Plot Date: 20 August 2021 - 10:11 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C011.dwg

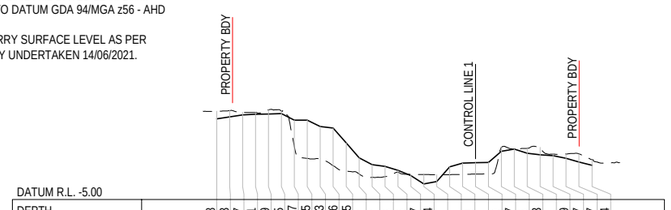
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

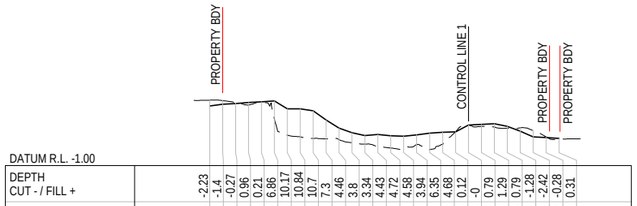
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-2.98	29.12	26.138
-95	-2.43	29.36	26.922
-90	-0.97	28.66	27.692
-85	-0.71	28.62	27.91
-80	-1.59	29.64	28.058
-75	-0.95	29.14	28.19
-70	10.17	15.49	25.664
-65	14.75	10.91	25.664
-60	12.73	10.5	23.227
-55	14.56	8.06	22.621
-50	10.95	5.92	16.872
-45	6.17	4.69	11.051
-40	4.97	3.53	8.493
-35	3.93	3.84	7.77
-30	0.76	5.52	6.284
-25	-0.47	4.75	4.272
-20	-3.64	4.64	
-15	-2.6	4.57	1.974
-10	3.01	4.6	7.614
-5	4.34	4.69	9.027
0	4.41	4.84	9.246
5	4.49	4.82	9.312
10	-1.57	15.18	13.612
15	0.13	14.37	14.502
20	-1.93	14.78	12.851
25	-2.9	15.2	12.298
30	-0.59	12.56	11.968
35	-1.67	12.57	10.893
40	-3.17	12.64	9.473
45	-2.24	10.43	8.19

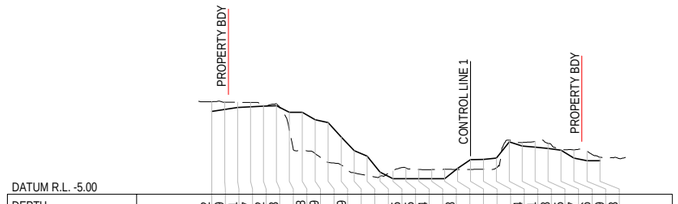
CH 250



DATUM R.L. -1.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-2.23	24.28	22.055
-95	-1.4	24.11	22.714
-90	-0.27	23.21	22.945
-85	0.96	22.41	23.375
-80	0.21	23.44	23.652
-75	6.86	17.14	24
-70	10.17	10.74	20.917
-65	10.84	10.07	20.917
-60	10.7	9.49	20.191
-55	7.3	9.31	16.603
-50	4.46	9.02	13.482
-45	3.8	7.93	11.728
-40	3.34	7.28	10.616
-35	4.43	6.55	10.983
-30	4.72	5.78	10.506
-25	4.58	5.74	10.321
-20	3.94	6.92	10.855
-15	6.35	5.15	11.497
-10	4.68	7.15	11.833
-5	0.12	11.96	12.075
0	-0	14.68	14.681
5	0.79	14.13	14.914
10	1.29	13.96	15.152
15	0.79	13.36	14.153
20	-2.42	12.54	10.119
30	-0.28	10.09	9.812
35	0.31	9.19	9.505

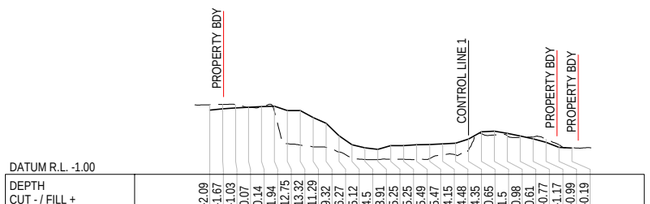
CH 265



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-3.72	30.74	27.019
-95	-2.79	30.55	27.763
-90	-2.01	30.51	28.507
-85	-1.67	30.47	28.801
-80	-0.52	29.52	29.002
-75	-0.73	29.93	29.202
-70	6.97	19.66	26.627
-65	11.95	14.68	26.627
-60	13.09	10.66	23.748
-55	15.4	7.28	22.688
-50	10.79	6.28	17.073
-45	8.61	3.24	11.851
-40	7.48	2.23	9.711
-35	1.64	1.89	3.53
-30	-2.95	3.95	1
-25	-4.15	4.54	
-20	-3.54	4.54	
-15	-3.5	4.5	
-10	-3.68	4.68	
-5	0.47	4.53	4.993
0	3.78	4.55	8.329
5	3.85	4.63	8.47
10	3.7	5.22	8.919
15	-0.64	15.88	15.239
20	-1.41	15	13.588
25	-2.28	15.44	13.167
30	-1.85	14.53	12.687
35	-0.17	12.2	12.025
40	-3.16	12.09	8.933
45	-3.69	11.64	7.953
50	-1.33	9.28	7.953

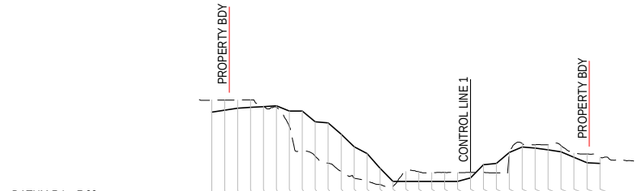
CH 245



DATUM R.L. -1.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-2.09	25.9	23.817
-95	-1.67	26.03	24.358
-90	-1.03	25.67	24.636
-85	0.07	24.85	24.914
-80	0.14	25.02	25.17
-75	1.94	23.4	25.34
-70	12.75	10.9	23.649
-65	13.32	10.33	23.649
-60	11.29	9.62	20.916
-55	9.32	9.41	18.735
-50	6.27	7.65	13.916
-45	5.12	5.31	10.427
-40	4.5	4.76	9.253
-35	3.91	4.72	8.632
-30	5.25	4.89	10.148
-25	5.49	4.92	10.062
-20	5.47	5.1	10.571
-15	4.15	6.65	10.8
-10	4.35	6.56	11.034
-5	0.65	8.33	12.678
0	1.5	14.77	15.42
5	0.98	14.22	15.718
10	0.26	13.99	14.879
15	-0.77	13.51	12.743
20	-1.17	12.56	11.394
25	-0.99	10.42	9.429
30	-0.19	9.36	9.166

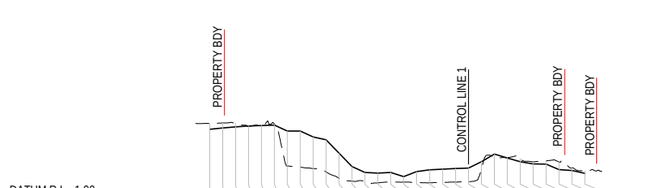
CH 260



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-4.73	32.53	27.795
-95	-3.84	32.38	28.539
-90	-3.14	32.42	29.283
-85	-2.92	32.51	29.594
-80	-0.35	30.2	29.845
-75	0.46	29.71	30.179
-70	6.02	22.16	28.188
-65	15.51	12.67	28.188
-60	13.36	10.7	24.064
-55	15.59	7.99	23.582
-50	14.4	4.8	19.202
-45	12.07	2.32	14.391
-40	10.63	1.11	11.742
-35	6.29	0.19	6.093
-30	1.87	3.87	1
-25	-3.75	4.75	
-20	-3.4	4.4	
-15	-3.47	4.47	
-10	-3.41	4.41	
-5	-2.1	4.47	2.371
0	2.93	4.47	7.397
5	3.64	4.29	7.936
10	1.06	11.08	12.149
15	-1.28	15.18	13.905
20	-1.29	15.61	14.325
25	-1.28	15.12	13.188
30	-1.93	14.83	12.421
35	-2.41	11.94	10.336
40	-1.6	11.59	8.189
45	-3.4	10.4	7.966
50	-2.44		

CH 240



DATUM R.L. -1.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-2.33	27.51	25.181
-95	-1.89	27.64	25.755
-90	-1.26	27.44	26.175
-85	0.08	26.37	26.453
-80	-0.32	26.94	26.625
-75	-0.46	27.26	26.796
-70	13.51	11.02	24.53
-65	13.95	10.58	24.53
-60	12.14	10.06	22.202
-55	12.38	8.73	21.111
-50	9.72	6.29	16.009
-45	5.61	5.18	10.793
-40	3.37	5.12	8.497
-35	3.72	4.51	8.225
-30	3.7	4.88	8.525
-25	2.08	4.8	6.878
-20	4.17	4.68	8.845
-15	5.04	4.54	9.572
-10	5.09	4.7	9.791
-5	5.21	4.81	10.024
0	5.26	4.98	10.235
5	2.39	5.25	12.637
10	1.28	14.32	15.605
15	-0.19	14.31	14.119
20	-0.62	13.68	12.859
25	-1.28	13.01	11.729
30	-2.97	12.58	9.613
40	-1.03	10.3	9.273
45	-0.97	9.14	8.169

CH 255

PRELIMINARY

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT		B.C	S.L	A.O	20/08/21

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

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DO NOT SCALE

Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	
Approved (Project Director)			
Date			
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client: BYRON SHIRE COUNCIL
Project: MYOCUM QUARRY SURVEY AND REHAB PLAN
Title: CROSS SECTIONS - CONTROL LINE 1
SHEET 9 OF 10

Original Size: A1 Drawing No: 22-12554185-C012 Rev: 1

Plot Date: 20 August 2021 - 10:12 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C012.dwg

NOTE

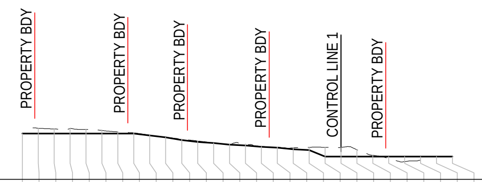
1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD

2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

— — — — EXISTING QUARRY SURFACE LEVEL

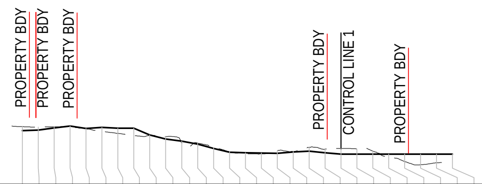
———— COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. 4.00

OFFSET FROM CONTROL LINE	COUNCIL APPROVED DESIGN LEVEL	EXISTING QUARRY SURFACE LEVEL	DEPTH CUT - / FILL +
-100	18.276		
-95	18.276	19.95	-1.67
-90	18.276	19.73	-1.45
-85	18.276	19.89	-1.61
-80	18.276	19.57	-1.3
-75	18.276	19.28	-1
-70	18.276	18.83	-0.55
-65	18.276	18.48	-0.2
-60	17.692	17.78	-0.09
-55	17.099	17.11	-0.02
-50	16.275	16.57	-0.3
-45	15.697	15.97	-0.27
-40	15.333	15.37	-0.04
-35	14.832	14.96	-0.13
-30	14.55	15.08	-0.53
-25	14.175	14.24	-0.06
-20	13.92	14.05	-0.13
-15	13.425	13.84	-0.41
-10	13.156	14.01	-0.86
-5	11.129	13.98	-2.85
0	11.129	13.95	-2.82
5	11.129	13.23	-2.1
10	11.129	11.54	-0.41
15	11.129	10.49	0.64
20	11.129	9.52	1.61
25	11.129		
30	11.129		
35	11.129		

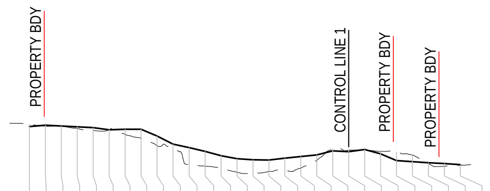
CH 280



DATUM R.L. 3.00

OFFSET FROM CONTROL LINE	COUNCIL APPROVED DESIGN LEVEL	EXISTING QUARRY SURFACE LEVEL	DEPTH CUT - / FILL +
-100	19.703	20.99	-1.28
-95	19.906	20.82	-0.91
-90	20.558	20.92	-0.36
-85	21.212	20.93	0.28
-80	20.451	20.33	0.12
-75	20.764	19.55	1.21
-70	20.469	18.88	1.59
-65	20.469	18.23	2.24
-60	18.349	18.18	0.16
-55	17.099	17.86	-0.76
-50	16.463	15.93	0.53
-45	15.518	15.84	-0.33
-40	14.178	14.44	-0.26
-35	13.002	13.13	-0.13
-30	12.839	12.54	0.3
-25	12.716	12.48	0.23
-20	12.592	13.46	-0.87
-15	13.048	13.19	-0.15
-10	13.335	14.52	-1.19
-5	12.841	13.95	-1.11
0	12.405	14.16	-1.75
5	12.405	14	-1.59
10	12.405	13.32	-0.92
15	12.405	11.48	0.92
20	12.405	10.05	2.35
25	12.405	9.05	3.35
30	12.405	9.68	2.73
35	12.405		

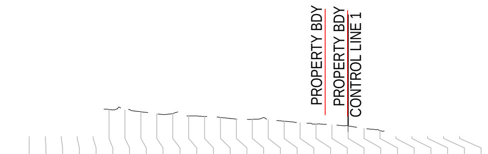
CH 275



DATUM R.L. 1.00

OFFSET FROM CONTROL LINE	COUNCIL APPROVED DESIGN LEVEL	EXISTING QUARRY SURFACE LEVEL	DEPTH CUT - / FILL +
-100	21.535	22.23	-0.7
-95	21.933	21.69	0.24
-90	21.676	21.47	0.2
-85	21.419	20.92	0.5
-80	21.17	20.26	0.91
-75	20.526	20.57	-0.04
-70	20.7	19.08	1.62
-65	20.7	17.8	2.9
-60	18.609	15.55	3.06
-55	16.067	14.56	1.51
-50	14.94	9.62	5.32
-45	13.716	9.12	4.59
-40	12.363	8.43	3.93
-35	11.489	7.2	4.29
-30	11.088	6.97	4.12
-25	11.076	7.45	3.63
-20	11.589	7.68	3.91
-15	12.17	8.51	3.66
-10	12.661	10.92	1.74
-5	13.891	14.56	-0.67
0	13.68	14.13	-0.45
5	14.356	14.11	0.24
10	12.945	13.79	-0.85
15	10.829	13.59	-2.76
20	10.522	12.62	-2.09
25	10.215	9.92	0.3
30	9.909	9.1	0.81
35	9.602	9.36	0.24

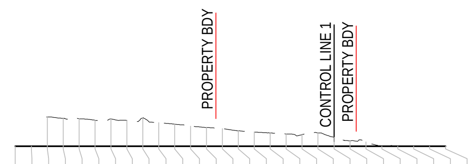
CH 270



DATUM R.L. 3.00

OFFSET FROM CONTROL LINE	COUNCIL APPROVED DESIGN LEVEL	EXISTING QUARRY SURFACE LEVEL	DEPTH CUT - / FILL +
-100	8.579		
-95	8.579		
-90	8.579		
-85	8.579		
-80	8.579		
-75	8.579	17.03	-8.46
-70	8.579	16.89	-8.31
-65	8.579	16.31	-7.73
-60	8.579	15.68	-7.1
-55	8.579	15.74	-7.16
-50	8.579	15.05	-6.47
-45	8.579	14.88	-6.31
-40	8.579	14.55	-5.97
-35	8.579	14.02	-5.44
-30	8.579	13.96	-5.38
-25	8.579	13.83	-5.25
-20	8.579	13.37	-4.79
-15	8.579	12.87	-4.29
-10	8.579	12.5	-3.92
-5	8.579	12.23	-3.65
0	8.579	11.93	-3.35
5	8.579	11.12	-2.54
10	8.579	10.49	-1.91
15	8.579		
20	8.579		
25	8.579		
30	8.579		
35	8.579		

CH 290



DATUM R.L. 4.00

OFFSET FROM CONTROL LINE	COUNCIL APPROVED DESIGN LEVEL	EXISTING QUARRY SURFACE LEVEL	DEPTH CUT - / FILL +
-100	9.854		
-95	9.854		
-90	9.854	19.05	-9.2
-85	9.854	18.63	-8.77
-80	9.854	18.48	-8.63
-75	9.854	18.01	-8.15
-70	9.854	18.45	-8.6
-65	9.854	17.92	-8.06
-60	9.854	18.75	-8.89
-55	9.854	17.23	-7.37
-50	9.854	16.78	-6.93
-45	9.854	16.18	-6.33
-40	9.854	15.7	-5.85
-35	9.854	15.37	-5.51
-30	9.854	14.69	-4.84
-25	9.854	14.34	-4.48
-20	9.854	14.06	-4.2
-15	9.854	13.72	-3.87
-10	9.854	13.54	-3.68
-5	9.854	14.06	-4.21
0	9.854	12.65	-2.8
5	9.854	11.59	-1.74
10	9.854	11.24	-1.39
15	9.854	9.85	0.01
20	9.854		
25	9.854		
30	9.854		
35	9.854		

CH 285

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
1	PRELIMINARY ISSUE FOR COMMENT	B.C	S.L	A.O	20/08/21

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

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QLD 4226 Australia
T 61 7 5557 1000 F 61 7 5557 1099
E goldcoastmail@ghd.com W www.ghd.com

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Drawn B. COLLISTER | Designer B. COLLISTER
Drafting Check M. MASON | Design Check
Approved (Project Director)
Date
Scale AS SHOWN
This Drawing must not be used for Construction unless signed as Approved

Client **BYRON SHIRE COUNCIL**
Project **MYOCUM QUARRY SURVEY AND REHAB PLAN**
Title **CROSS SECTIONS - CONTROL LINE 1**
SHEET 10 OF 10

Original Size **A1** Drawing No: **22-12554185-C013** Rev: **1**

Plot Date: 20 August 2021 - 10:12 AM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C013.dwg

Appendix B

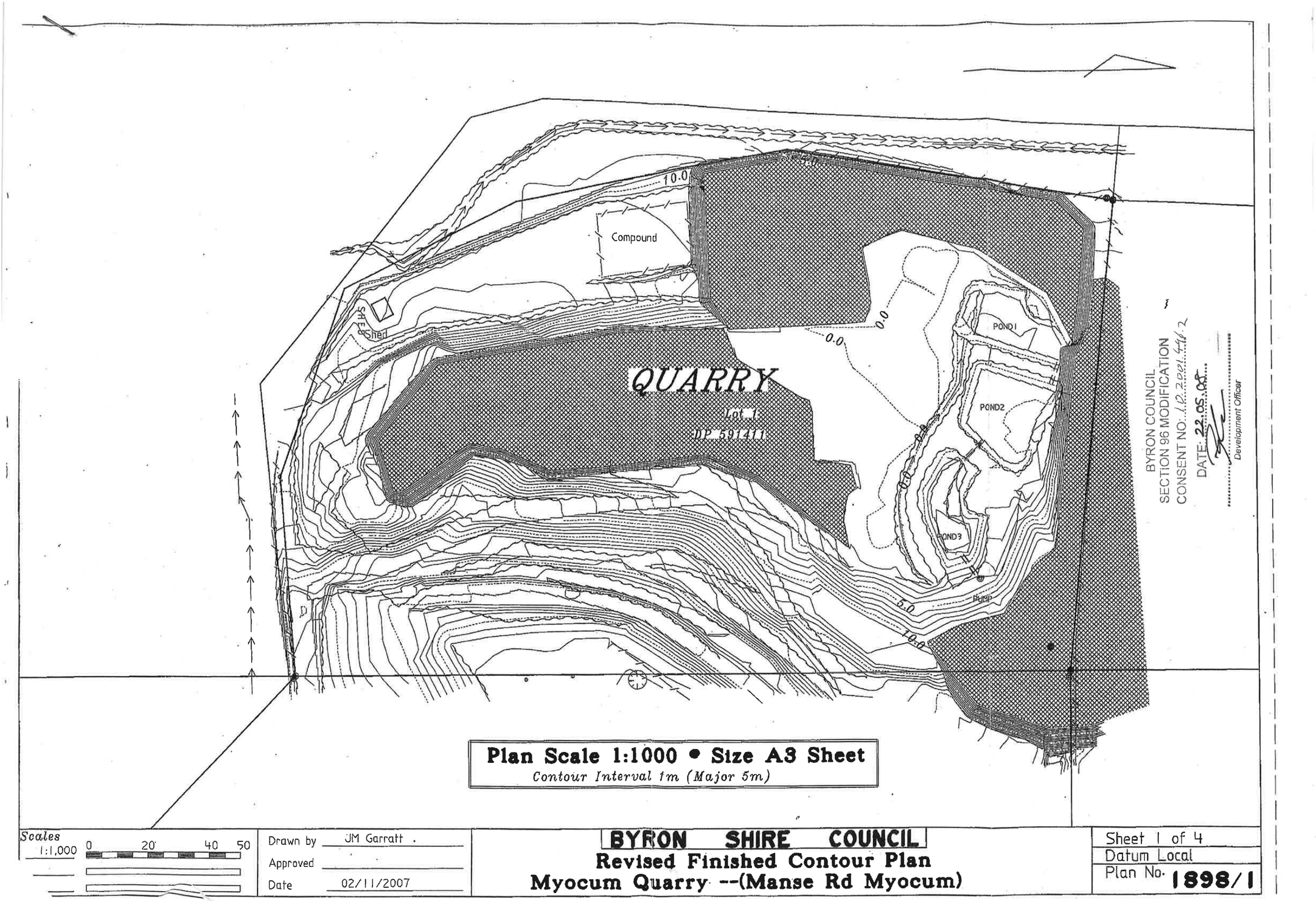
Extract of the 2018 Compliance Noise Monitoring Report for the BRRC and Myocum Quarry, showing location of nearby residences and noise monitoring locations

Illustration 2.1:
Noise Monitoring Locations and Dwelling Setbacks

Acoustic Assessment • Myocum Landfill • Lot 1 DP 1052900 • The Manse Road, Myocum

Appendix C

Approved Final Landform Plan


10.0
Compound
Shed
QUARRY
Lot 1
DP 591411
POND 1
POND2
POND3
Pump
0.0
5.0
10.0
BYRON COUNCIL
SECTION 96 MODIFICATION
CONSENT NO: 10.2021.446.2
DATE: 22.05.07
Development Officer
Plan Scale 1:1000 • Size A3 Sheet
Contour Interval 1m (Major 5m)
Scales
1:1,000
0 20 40 50
Drawn by JM Garratt
Approved
Date 02/11/2007
BYRON SHIRE COUNCIL
Revised Finished Contour Plan
Myocum Quarry --(Manse Rd Myocum)
Sheet 1 of 4
Datum Local
Plan No. 1898/1

Appendix D

Conditions Assessment

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
1	Superseded	Development to be strictly in accordance with the written details and plans in the 'Environmental Impact Statement prepared by GHD dated August 2001 and Supplementary Report dated July 2002' as modified by Statement of Environmental Effects - Proposed Minor Expansion to Myocum Quarry at Lot 1 DP 591441, The Manse Road, Myocum, prepared by GHD, dated November 2007 as modified in red ink and as modified by conditions of this consent.		There are a number of issues which the current operation of the quarry does not meet. These are generally outlined in more detail below
2	A licence under Part V of the Water Act must be obtained from the Department of Land and Water Conservation for the monitoring bores.		Does not mention Water Act licence, contains conditions relating to monitoring	Yes a monitoring licence exists for BSC which monitors bore hole MW03. MW03 is located within the quarry (north western corner) but forms part of the leachate monitoring program for the landfill. Previous discussions with BSC indicated that monitoring of the bore was undertaken on a quarterly basis as per the leachate monitoring from the landfill program. – No documentation to support this was reviewed. The bore needs to be included in the quarry monitoring plan.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
3	An application for a Section 138 Roads Act approval for construction of the following roadworks, with associated stormwater drainage structures: a. Myocum Road must be widened to provide an Austroads Type “B” intersection for right hand turns into Manse Road, Myocum. b. A stop sign and appropriate line marking must be provided in Manse Road at the intersection with Myocum Road. c. Intersection warning signs highlighted by a green background must be provided on Myocum Road in advance of the Manse Road intersection. Prominent direction signs must also be provided in Manse Road. d. The quarry access road intersection with Manse Road must be widened to provide an Austroads Type “A” intersection. e. The existing signage for the access on Manse Road must be upgraded.			Type B intersection for right hand turn into Manse Road from Myocum Road has been undertaken, A stop sign and line markings at Manse Road / Myocum Road intersection has been established. Intersection warning signs and prominent direction signs have not been established on Myocum and Manse Road. The Quarry access road has been partially sealed.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
4	A erosion and sediment control plan must be submitted and approved by Council, such plan is to be drafted in accordance with “Managing Urban Stormwater Soils and Construction” (NSW Department of Housing 1998).		P1.1 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point (Wet weather discharge from last sediment pond on boundary of quarry. Easting:549798; Northing: 6837365) P1.2 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area. L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997. L1.2 The licensee must take all practical measures to avoid or minimise Oil and Grease, TSS etc. contained in wet weather discharges. L2.1 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table. L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges. L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s. L2.4 Water and/or Land Concentration Limits (pH 6.5- 8.5 and TSS 50)	A sediment and erosion control plan was developed as part of the EIS and supplementary report. This plan outlines the position of drains and the location of ponds to prevent sediments leaving the site. In addition the plan outlines that progressive rehabilitation will be undertaken to minimise areas of potential erosion and the plan outlines techniques that will be used to prevent contamination of clean runoff and for dust suppression. As progressive rehabilitation has not been undertaken to minimise areas exposed to potential erosion and documentation of the monitoring required is limited it is considered to be below compliance.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
5	An overall Monitoring Plan is to be prepared for the quarry operation including addressing procedures for managing unexpected adverse environmental impacts. The monitoring plan is to be reviewed every two years so as to optimise the monitoring requirements based on the data from previous monitoring periods. A copy of the adopted monitoring plan and any reviews of the plan must be submitted to Council for it's records.		Contains conditions relating to monitoring	There is a Quarry Operations Safety Management Plan and Guidelines (doc 605360) which outlines some issues in relation to routine monitoring on site however a more specific monitoring plan and monitoring procedures are required / needs formalising.
6	A formal easement is to be created over Council's landfill site (i.e. Lot 1 DP 584473) in favour of the quarry site (Lot 1 DP 591441) so as to provide legal access across the landfill site. An approved copy of the easement must be submitted to Council.			As Byron Shire owns both lots it has not been a problem at this stage however should the quarry ever be sold an easement would need to be created to guarantee access across the landfill land to the quarry.
7	Superseded	Condition 7 deleted		A geotechnical assessment to determine the appropriate slope for maintaining slope stability may still be required.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
8	Superseded	Modified Condition 8 is to read as follows: In addition to the proposed works outlined in the Rehabilitation Plan as called up by Condition 1 of this consent, the following measures are to be carried out: The proposed supplementary planting of trees along the northern, western and southern boundaries of the quarry is to be undertaken as soon as practicable with tall, dense, fast-growing tree species which are endemic to the area, so as to provide the earliest time possible for screening the quarry. The upper benches of the quarry are to be formed and revegetated as soon as practical, so as to provide the early screening of the most visually prominent exposed upper slopes of the quarry. The minimum depth of topsoil and overburden on the benches is to be increased to 1.0 metre to provide additional moisture storage within the growing medium, thereby reducing potential for water stress in the vegetation during dry periods.		The EIS outlines a rehabilitation plan for the site. The main features of the rehabilitation plan are bank stabilisation, proposed vegetation establishment and erosion and sediment control through minimising time of disturbance and ensuring stability of ground surface as well as improve visual appearance. No progressive rehabilitation has been undertaken.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
9	The existing Quarry Management Plan must be revised by the quarry operator and approved by the Department of Mineral Resources prior for the expansion of the existing quarry. A copy is to be provided to Council.		M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition. M1.2 All records required to be kept by this licence must be: a. in a legible form, or in a form that can readily be reduced to a legible form; b. kept for at least 4 years after the monitoring or event to which they relate took place; and c. produced in a legible form to any authorised officer of the EPA who asks to see them. M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence: a. the date(s) on which the sample was taken; b. the time(s) at which the sample was collected; c. the point at which the sample was taken; and d. the name of the person who collected the sample. M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns: M2.2 Water and/ or Land Monitoring Requirements (TSS, m/L, daily discharge, grab sample) M3.1 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area	There is a Quarry Operations Safety Management Plan and Guidelines (doc 605360). Status and compliance with EPL is unknown

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
			must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted. M4.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies. M4.2 The record must include details of the following: a) the date and time of the complaint; b) the method by which the complaint was made; c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect; d) the nature of the complaint; e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and f) if no action was taken by the licensee, the reasons why no action was taken. M4.3 The record of a complaint must be kept for at least 4 years after the complaint was made. M4.4 The record must be produced to any authorised officer of the EPA who asks to see them. M5.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.	

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
			M5.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint. M5.3 The preceding two conditions do not apply until 3 months after: a) the date of the issue of this licence or b) if this licence is a replacement licence within the meaning of the Protection of the EnvironmentOperations (Savings and Transitional) Regulation 1998, the date on which a copy of the licence was served on the licensee under clause 10 of that regulation.	
10	The environmental safeguard measures proposed in the EIS, Supplementary Report and associated Management Plans (provided as Appendices in the reports) are to be implemented.			Not all safeguards outline in the EIS and the Supplementary Report have been implemented. These include rehabilitation, noise assessments, traffic flow assessments, monitoring etc.
11	The access road from Manse Road to the quarry lot must be bitumen sealed.			Yes
12	Traffic flow monitoring must be undertaken annually to assess the need to widen Manse Road/ Myocum Roads and Manse Road / quarry access.			Traffic flow monitoring occurs on a shire wide basis but assessment with specific regard to the quarry is not undertaken.
13	The extraction of material must not exceed 30000 tonnes per annum.			Extraction including extraction of overburden from the site appears to exceed 30,000 tpa, (See Sequel 2005 blast design for 48,200 tonne). In addition extraction has occurred outside the property boundary at the north eastern corners and extraction has occurred below the approved 0 m AHD level. This is not compliant with the DA conditions or associated reports on which consent was granted.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
14	Standards for wastewater discharge will be: a. Less than 50mg per litre of non filterable residues; b. Free from oil and grease; c. A pH which varies by no more than 0.5 from the receiving waters measured at a location to be specified by the council in consultation with the Environment Protection Authority. d. The water discharge point to be determined in consultation with Council and the EPA. Details to be provided in the EMP (after consultation).		L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997. L1.2 The licensee must take all practical measures to avoid or minimise Oil and Grease, TSS etc. contained in wet weather discharges. L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges. Condition P1.1 lists a wet weather discharge point L3.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence. L3.2 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.	Surface water monitoring is undertaken however procedures used for undertaking water monitoring are not documented. A water monitoring procedures document needs to be developed. Previous results of water sampling reviewed indicate that pH criteria are not being meet
15	Settling ponds must be of sufficient volume to produce discharge water standards as specified in condition fourteen (14). Settling ponds must be maintained with minimum water volumes to provide adequate water for quarrying operations and maximum flood storage. Design details to be submitted to and approved by Council prior to any lateral expansion of the quarry.		Condition P1.1 and P1.2	Sediment management in the quarry is evolving as the quarry development progresses. Sediment ponds at the quarry do not reflect the sediment ponds in the approval. However current basins and treatment appear to be working. Water monitoring that has been reviewed shows that sediment leaving the site comply with criteria. To prove due diligence, documentation of procedures and records of monitoring and cleaning should be developed and implemented.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
16	The quarry operator must obtain and keep current all relative licences pertaining to the quarry operations under the Clean Waters Act, Noise Control Act and Clean Air Act. Copies of such approvals must be submitted to Council.			The Clean Waters Act, Noise Control Act and Clean Air Act have been replaced by the POEO Act. EPL to be complied with.
17	In the event that noise levels exceed 5dB(A) above ambient background noise level at the nearest residence the quarry operator is to demonstrate to Councils satisfaction that appropriate noise attenuation measures will be implemented.		See L4 Noise limits, L5 Blasting, L6 Hours of operation	August 2018 Compliance Noise Monitoring Byron Resource Recovery Centre & Myocum Quarry: States that there was no audible noise emanating from the Myocum Quarry during the exceeded noise limits in its EPL (6057) at 2 receivers (not including the receivers owned by Council)
18	Hours of operation are to be from: 7.00am - 6.00pm Monday to Friday and 7am to 12 midday Saturday. No operation must be undertaken on Sunday or Public Holidays. No trucks are permitted to arrive prior to 7.00am.		L6 Hours of operation L6.1 Activities covered by this licence must only be carried out between the hours of 0700 hrs and 1800 hrs Monday to Friday, and 0700 hrs and 1200 hrs Saturday, and at no time on Sundays and Public Holidays. L6.2 Blasting operations at the premises may only take place between 0900 hrs and 1700 hrs. (Where compelling safety reasons exist, the EPA may permit a blast to occur outside the above hours. A prior written request for approval of any such blast must be made to the EPA). L6.3 The hours of operation specified in conditions L6.1 and L6.2 may be varied with written consent if the EPA is satisfied that the amenity of the residents in the locality will not be adversely affected.	There is a requirement for annual noise monitoring, This has not been undertaken and therefore an assessment of noise levels based on current operation is required.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
19	Blasting must be limited to a maximum of three (3) occasions per annum between the hours of 9am and 3pm Monday to Friday and adjacent landowners notified 24 hours prior to any blasts.		L5.1 The overpressure level from blasting operations on the premises must not: a. Exceed 115dB (Lin Peak) for more than 5% of the total number of blasts over a period of 12 months; and b. Exceed 120dB (Lin Peak) at any time. The airblast overpressure values stated above apply when the measurements are performed with equipment having a lower cut-off frequency of 2Hz or less. If the instrumentation has a higher cut-off frequency then a correction of 5dB should be added to the measure value. Equipment with a lower cut-off frequency exceeding 10Hz should not be used for the purpose of measuring airblast overpressure. L5.2 Ground vibration peak particle velocity from the blasting operations at the premises must not: a. Exceed 5mm/s for more than 5% of the total number of blasts over a period of 12 months; and b. Exceed 10mm/s at any time, when measured at any point within 1 metre of any affected residential boundary or other noise sensitive location such as a school or hospital. L5.3 To determine compliance with condition(s) L5.1 and L5.2: a. Airblast overpressure and ground vibration levels must be measured at the nearest residence that is likely to be most affected that is not owned by the licensee or subject to a private agreement between the owner of the residence and the licensee as to alternative airblast overpressure and ground vibration levels for all blasts carried out in or on the premises; and b. Instrumentation used to measure the airblast overpressure and ground	It is understood limited blasting has been undertaken at the site in recent years.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
			vibration levels must meet the requirements of Australian Standard AS 2187.2-2006. L5.4 Blasting at the premises is limited to 3 blasts per year.	
20	All loads leaving the quarry premises must be covered to minimise the effects of dust on the surrounding areas.		O1.1 Licensed activities must be carried out in a competent manner. This includes: a. the processing, handling, movement and storage of materials and substances used to carry out the activity; and b. the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity. O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity: a. must be maintained in a proper and efficient condition; and b. must be operated in a proper and efficient manner. O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.	August 2018 Compliance Noise Monitoring Byron Resource Recovery Centre & Myocum Quarry states that for BRRC: *Council operates a single body, dual axle, hook lift truck for the purpose of transporting water for dust suppression, emergency spot fire fighting and moving various waste and recyclable products within the site within hook lift bins.*
21	Trade waste from the site is to be disposed of only in a manner approved by Council.			The site has a Porta loo which requires routine cleaning. A contractors removes the porta loo for cleaning and waste.
22	No burning off of stockpiled material is permitted.			No burning off occurs on site
23	The use and occupation of the premises including all plant and equipment installed thereon, not giving rise to any offensive noise or vibration within the meaning of the Noise Control Act, 1975.		L4 Noise limits L4.1 Noise from the premises must not exceed an LAeq (15 minute) noise emission criteria of 38 dB(A). Where LAeq means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.	Upper benches are occasionally worked on but this is limited due to noise issues and lack of material No assessment of noise has been undertaken as per condition M5.1 and therefore an assessment of appropriate noise measures at site is difficult to determine

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
			L4.2 To determine compliance with condition(s) L4.1 noise must be measured at, or computed for, the nearest affected residence. A modifying factor correction must be applied for tonal, impulsive or intermittent noise in accordance with the "Environmental Noise Management - NSW Industrial Noise Policy (January 2000)". L4.3 The noise emission limits identified in this licence apply under all meteorological conditions except: a. during rain and wind speeds (at 10m height) greater than 3m/s; and b. under "non-significant weather conditions".	
24	The proposal must meet the requirements of the Workcover Authority of New South Wales.			The OH&S procedures for the quarry were not reviewed. The Safety Management Plan for the quarry outlines incident reporting, safe work methods etc.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
25	A contribution under Section 94 of the Environmental Planning and Assessment Act 1979 for road pavement damage must be set at the rate of $0.23 per tonne of all materials transported from the quarry and in respect of the said contribution the following provisions must apply: a the said contribution will be calculated and paid quarterly the first payment calculated from the date of this consent to be paid three months from the date of this consent, and thereafter on the corresponding day of each three month period; b the said contribution must be indexed and adjusted annually as and from the date this consent becomes effective, in accordance with the Consumer Price Index applicable to each year; c on or before the due date of payment for the duration of the consent, the applicant will deliver or procure delivery to the Council of a true certified copy of weighbridge dockets or other returns or records showing the true quantities of extracted materials transported from the property during the immediately preceding three month period together with the contributions as calculated in (b) above;			Based on discussions with BSC it was confirmed that: Loader bucket has scales in them thus what goes out the gate is tally of what loader puts in the trucks. Index is undertaken by BSC. Final records are undertaken at the end of the financial year. Appears from records provided by BSC, condition is complied with.
26	Any fuel stored on site must be contained within the concrete bunded area.			On ground fuel tank in a concrete bunded area. Other fuel is stored in the fuel trailer adjacent to the crusher. Trailer (only viewed from, a photograph) but may be subject to fuel leakage and is not adequately bunded.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
27	In the event of any bone, or stone artefacts, or discrete distributions of shell being unearthed during excavation, work must cease immediately in the affected area, and Tweed/Byron Local Aboriginal Land Council, and officers of the National Parks and Wildlife Service, informed of the discovery. Work should not recommence until the material has been inspected by those officials and permission has been given to proceed.			Operators indicated that they are aware of process if an artefact is found.
28	Superseded	Modified Condition 28 is to read as follows: 28. The site shall be progressively rehabilitated during the operation of the quarry in accordance with the rehabilitation plan detailed in the Environmental Impact Statement and Condition 8. The site shall be fully rehabilitated within 6 months of completion of the operation of the quarry. The full revegetation of the land along the ridge to the northern rock curtain is to be undertaken immediately that the ridgeline has been lowered to its finished level.		No progressive rehabilitation has been undertaken on the site.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
			R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising: a. a Statement of Compliance; and b. a Monitoring and Complaints Summary. At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA. R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below. R1.3 Where this licence is transferred from the licensee to a new licensee: a. the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and b. the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period. R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on: a. in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or b. in relation to the revocation of the licence - the date from which notice revoking the licence operates.	No information to confirm whether annual returns have been lodged each year for the quarry.

Condition	10.2014.630.1	10.2001.496.2	EPL 12600	Compliance
			R1.5 The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date'). R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA. R1.7 Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by: a. the licence holder; or b. by a person approved in writing by the EPA to sign on behalf of the licence holder. R1.8 A person who has been given written approval to certify a certificate of compliance under a licence issued under the Pollution Control Act 1970 is taken to be approved for the purpose of this condition until the date of first review of this licence. Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.	

Appendix E

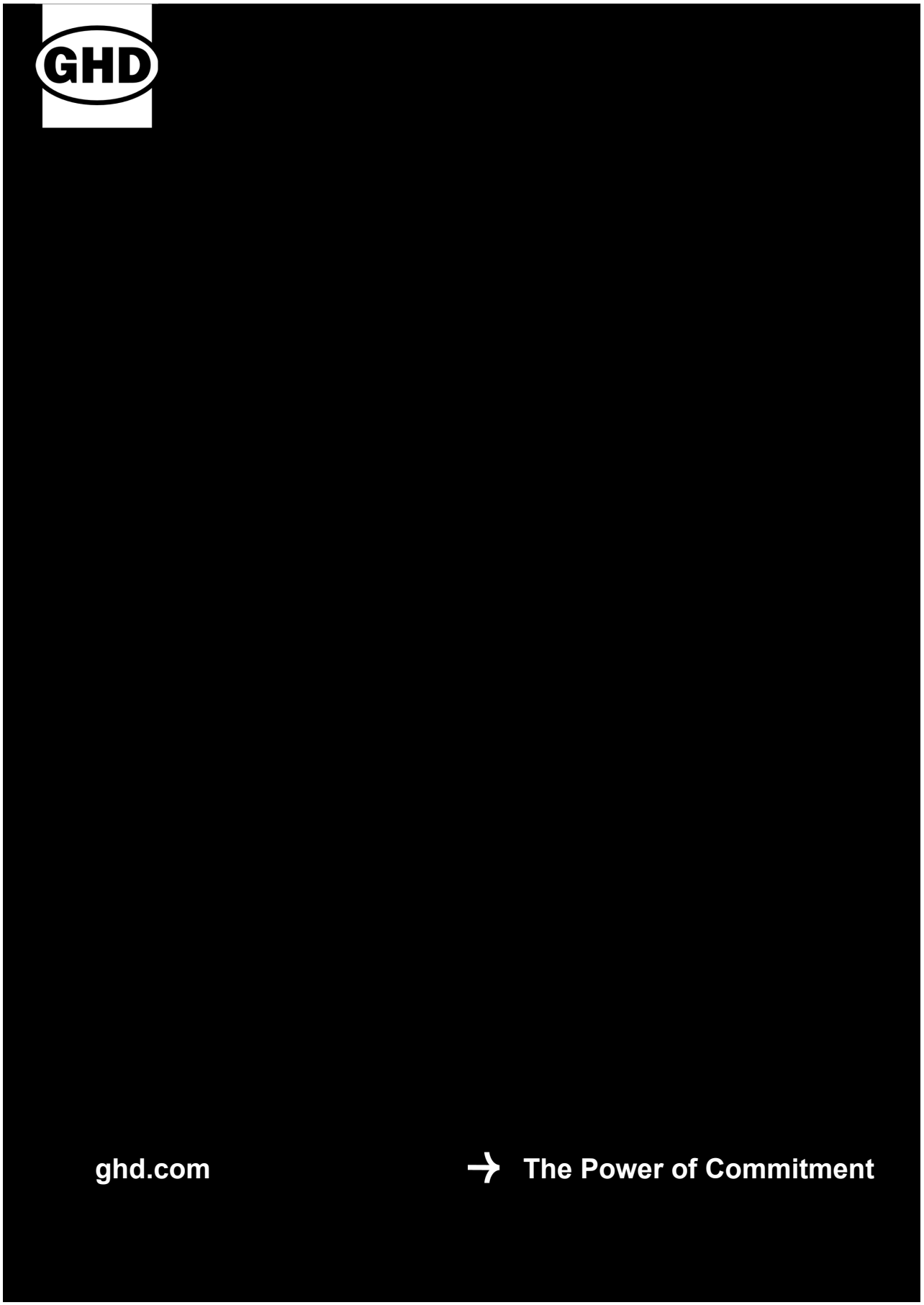
Groundwater monitoring results – MW03

Table 1 of 2

Sample Date/Time	Description	Total Dissolved Solids @180C	Alkalinity as CaCO3	TOC	Nitrogen-Oxidised	Ammonia - N	Nitrate-N	Nitrite-N	Chloride
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
27/03/2013 11:00:00	Myocum Landfill - EIS Groundwaters - Chemical	299	26	1	0.06	0.04	0.06	<0.02	130
24/06/2013 10:00:00	Myocum Landfill-Quarterly-GWs-EPL6057-Chemical		25	1.8	0.04	0.04	0.04	<0.02	123
01/10/2013 10:00:00	Myocum Landfill-Quarterly-GWs-EPL6057-Chemical		32	0.3	0.04	<0.02	0.04	<0.02	118
13/02/2014 11:00:00	Myocum Quarry Landfill - Chemical	273	26	1.1	0.08	0.07	0.08	<0.02	119
20/05/2014 10:00:00	Myocum Landfill EPA6057- Groundwater - Chemical		24	0.3	0.06	0.03	0.06	<0.02	120
20/08/2014 10:00:00	Myocum Landfill - EPL 6057 Groundwater - Chemical	261	25	<0.2	0.02	<0.02	0.02	<0.02	120
12/11/2014 11:00:00	Myocum Landfill-Quarterly-GWs-EPL6057-Chemical		22	0.8	0.04	0.04	0.04	<0.02	123
24/02/2015 11:00:00	BRRC-EPL 6057 Groundwater -Chemical		21	0.5	0.1	0.07	0.1	<0.02	110
13/05/2015 10:00:00	BRRC-EPL 6057 Groundwater -Chemical		24	0.2	0.02	<0.02	0.02	<0.02	124
13/08/2015 10:00:00	BRRC - EPL 6057 Groundwater - Chem		24	0.6	<0.02	<0.02	<0.02	<0.02	125
12/11/2015 11:00:00	BRRC - EPL 6057 Groundwater - Chem		23	0.6	0.02	<0.02	0.02	<0.02	120
11/02/2016 11:00:00	BRRC - EPL 6057 Groundwater		20	0.4416	0.03	<0.02	0.03	<0.02	121
19/05/2016 10:00:00	BRRC - EPL 6057 Groundwater		24	0.34	0.02	<0.02	0.02	<0.02	128
11/08/2016 10:00:00	BRRC - EPL 6057 Groundwater		24.3	<0.2	<0.02	<0.02	<0.02	<0.02	115
09/11/2016 11:00:00	BRRC - EPL 6057 Groundwater		22.3	0.2949	0.02	<0.02	0.02	<0.02	124
09/02/2017 11:00:00	BRRC - EPL 6057 Groundwater		22.8	0.7492	0.03	0.02	0.03	<0.02	122
10/05/2017 10:00:00	BRRC - EPL 6057 Groundwater		25.2	0.356	0.11	<0.02	0.11	<0.02	122
07/08/2017 10:00:00	BRRC - EPL 6057 Groundwater		25.32	0.3145	0.04	<0.02	0.04	<0.02	127
14/11/2017 11:00:00	BRRC - EPL 6057 Groundwater		27.81	0.4416	0.02	<0.02	0.02	<0.02	121
14/02/2019 00:00:00	BRRC - EPL 6057 Groundwater		403	0.5	<0.02	0.31	<0.02	0.02	88
14/02/2019 00:00:00	BRRC - EPL 6057 Groundwater		403	0.5	<0.02	0.31	<0.02	0.02	88
14/02/2019 00:00:00	BRRC - EPL 6057 Groundwater		403	0.5	<0.02	0.31	<0.02	0.02	88
11/02/2021 00:00:00	BRRC - EPL 6057 Groundwater Annual		412	1.3	0.28	0.26	0.28	<0.02	300

Table 2 of 2

	Description	Fluoride (by ISE)	Calcium	Magnesium	Sodium	Potassium M8	Sulphur as	Arsenic (Soluble)	Chromium (Soluble)	Copper (Soluble)	Iron (Total)	Iron (Soluble)	Manganese (Total)	Manganese	Nickel (Soluble)	Zinc (Soluble)	Cadmium (Soluble)	Lead (Soluble)	Mercury (Soluble)	Volatile TPH in	Benzene	Toluene	Ethyl Benzene	mp Xylene	o Xylene	4-Bromoflu	C10-C14 in water	C15-C28 in Water	C29-C36 in Water	C10-C36 in water	Total Phenol	Pentachlorophenol
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	%	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Sample Date/Time																																
27/03/2013 11:00:00	Myocum Landfill - EIS Groundwaters - Chemical	0.06	11	10	68	<5	14	<0.005	<0.01	<0.01	0.96	<0.01	6.2	5.96	<0.01	0.08	<0.001	0.01	<0.1													
27/03/2013 11:00:00	Myocum Landfill - EIS Groundwaters - Organics																			<20	<0.5	<1	<1	<2	<1	104	<20	<100	<100	<20	<0.8	<0.8
24/06/2013 10:00:00	Myocum Landfill-Quarterly-GWs-EPL6057-Chemical		11	11	67	<5	11				1.24		6.16																			
01/10/2013 10:00:00	Myocum Landfill-Quarterly-GWs-EPL6057-Chemical		9.6	8	52	<5	10				0.58		5.87																			
13/02/2014 11:00:00	Myocum Quarry Landfill - Chemical	0.06	13	9.2	65	<5	14	<0.005	<0.01	<0.01	1.89		3.82		<0.01	0.08	<0.001	<0.01	<0.1													
13/02/2014 11:00:00	Myocum Quarry Landfill - Organics																			<20	<0.5	<1	<1	<2	<1	103	<20	<100	<100	<20	<4	<4
20/05/2014 10:00:00	Myocum Landfill EPA6057- Groundwater - Chemical		10	9.6	64	<5	13				0.76		6.6																			
20/08/2014 10:00:00	Myocum Landfill - EPL 6057 Groundwater - Chemical	0.07	9.8	9.2	61	<5	12	<0.005	<0.01	<0.01	0.58		6.98		<0.01	0.01	<0.001	<0.01	0.1													
20/08/2014 10:00:00	Myocum Landfill - EPL 6057 Groundwater - Chemical																										<20	<100	<100	<20	<2.4	<0.8
12/11/2014 11:00:00	Myocum Landfill-Quarterly-GWs-EPL6057-Chemical		9.9	9.3	62.4	<5	11.8				0.69		4.26																			
11/02/2021 00:00:00	BRRC - EPL 6057 Groundwater Annual																				<0.5	<1	<1	<2	<1							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BYRON SHIRE COUNCIL
MYOCUM QUARRY SURVEY AND REHABILITATION PLAN OVERLAY
22-12554185

LOCALITY PLAN
NTS

DRAWING INDEX	
DRAWING No.	DRAWING TITLE
22-12554185-G001	DRAWING INDEX AND LOCALITY PLAN
22-12554185-C001	SITE LAYOUT AND COMBINED CONTOURS
22-12554185-C002	SITE LAYOUT AND EXISTING CONTOURS
22-12554185-C003	SITE LAYOUT AND REHABILITATION CONTOURS
22-12554185-C004	DEPTH RANGE LEVELS
22-12554185-C005	LONGITUDINAL SECTION - CONTROL LINE 1
22-12554185-C006	CROSS SECTIONS - CONTROL LINE 1 - SHEET 1 OF 10
22-12554185-C007	CROSS SECTIONS - CONTROL LINE 1 - SHEET 2 OF 10
22-12554185-C008	CROSS SECTIONS - CONTROL LINE 1 - SHEET 3 OF 10
22-12554185-C009	CROSS SECTIONS - CONTROL LINE 1 - SHEET 4 OF 10
22-12554185-C010	CROSS SECTIONS - CONTROL LINE 1 - SHEET 5 OF 10
22-12554185-C011	CROSS SECTIONS - CONTROL LINE 1 - SHEET 6 OF 10
22-12554185-C012	CROSS SECTIONS - CONTROL LINE 1 - SHEET 7 OF 10
22-12554185-C013	CROSS SECTIONS - CONTROL LINE 1 - SHEET 8 OF 10
22-12554185-C014	CROSS SECTIONS - CONTROL LINE 1 - SHEET 9 OF 10
22-12554185-C015	CROSS SECTIONS - CONTROL LINE 1 - SHEET 10 OF 10

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUE FOR INFORMATION	B.C	S.L	A.O	04/03/22

Note: * indicates signatures on original issue of drawing or last revision of drawing

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Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
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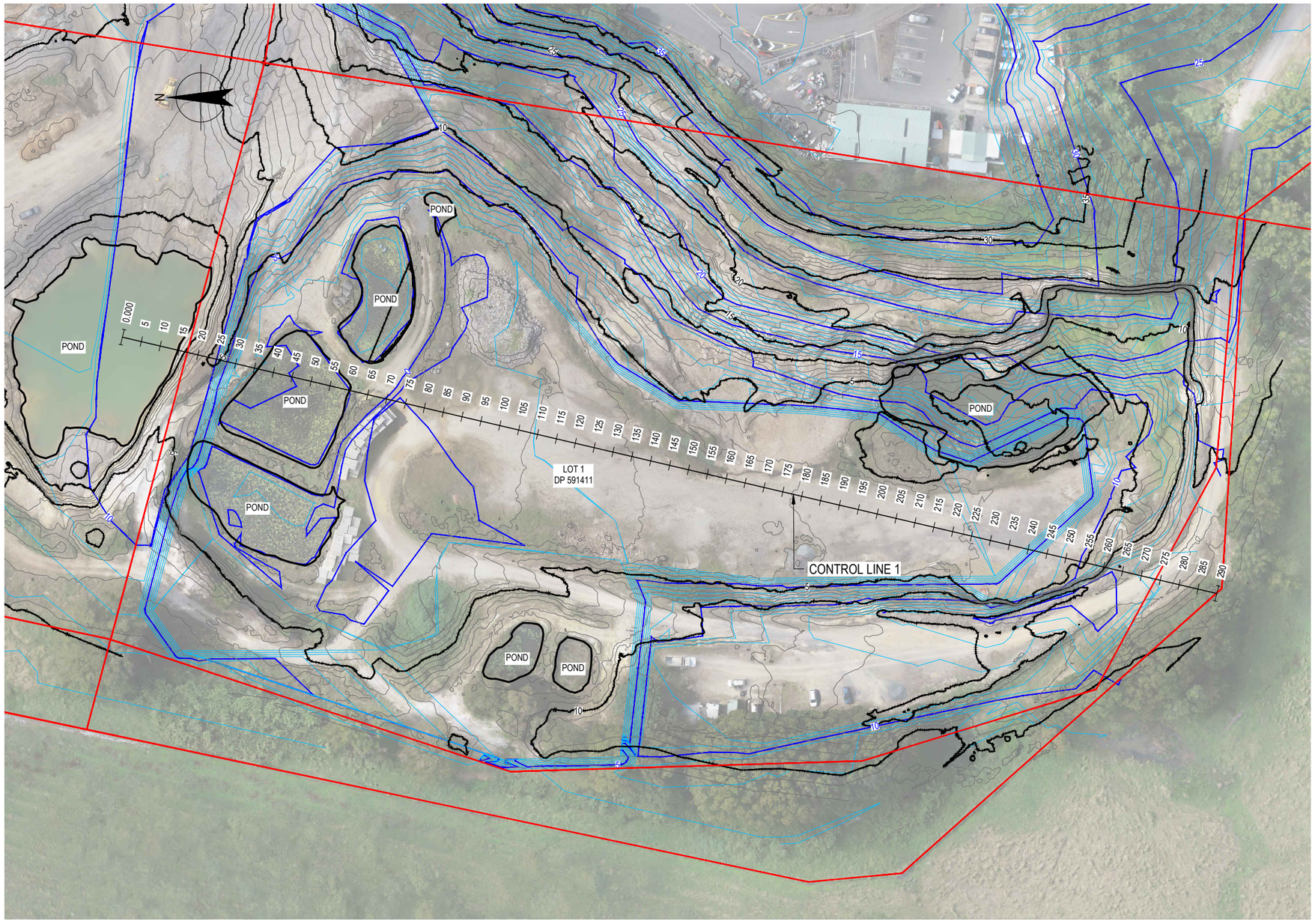
Client BYRON SHIRE COUNCIL
Project MYOCUM QUARRY SURVEY AND REHAB PLAN
Title DRAWING INDEX AND LOCALITY PLAN

Original Size A1 Drawing No: 22-12554185-G001 Rev: A

Plot Date: 3 March 2022 - 12:04 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-G001.dwg



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- POND WATERLINE
- EXISTING MINOR CONTOUR (1m)
- 20 EXISTING MAJOR CONTOUR (5m)
- COUNCIL APPROVED REHABILITATION MINOR CONTOUR (1m)
- 20 COUNCIL APPROVED REHABILITATION MINOR CONTOUR (5m)

PLAN
SCALE 1 : 500

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
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Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
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Title SITE LAYOUT AND COMBINED CONTOURS

Original Size A1
Drawing No: 22-12554185-C001
Rev: A

Plot Date: 3 March 2022 - 12:04 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C001.dwg

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- PROPERTY BOUNDARY
- POND WATERLINE
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- 20 EXISTING MAJOR CONTOUR (5m)

PLAN
SCALE 1 : 500

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0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

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Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
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Title SITE LAYOUT AND EXISTING CONTOURS

Original Size A1
Drawing No: 22-12554185-C002
Rev: A

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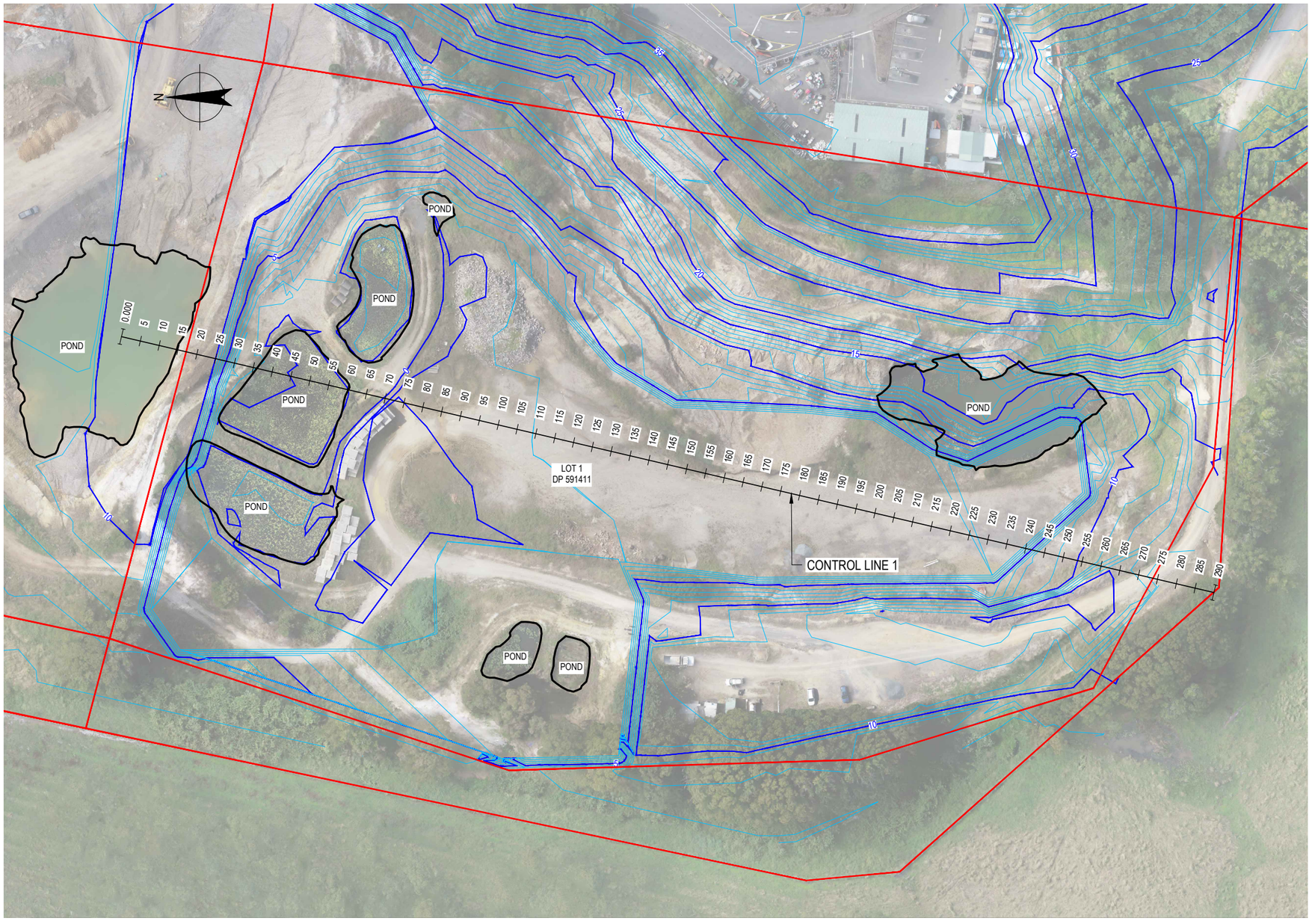

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A	ISSUE FOR INFORMATION		B.C	S.L	A.O	04/03/22

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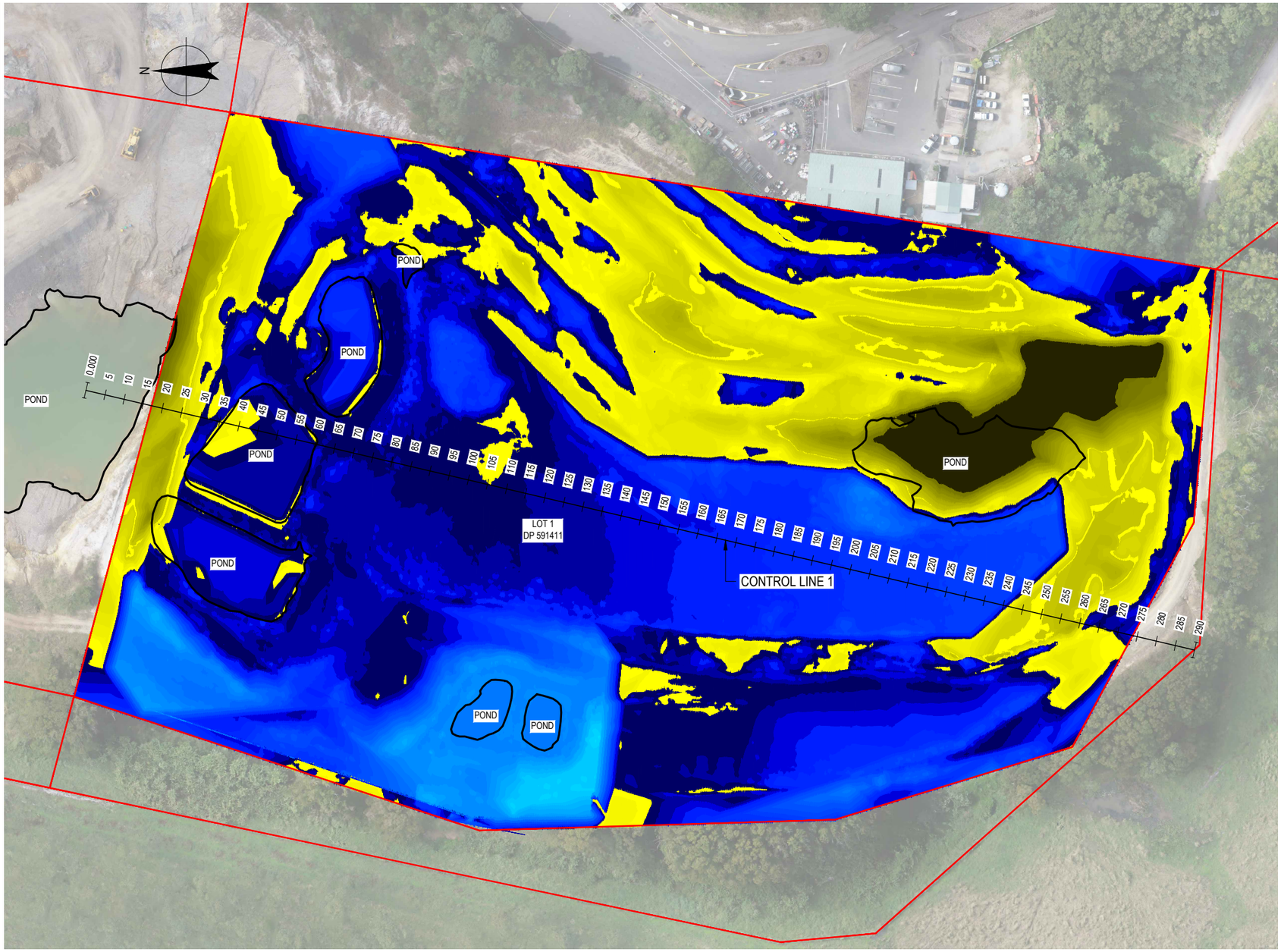
Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client BYRON SHIRE COUNCIL
Project MYOCUM QUARRY SURVEY AND REHAB PLAN
Title SITE LAYOUT AND REHABILITATION CONTOURS

Original Size A1
Drawing No: 22-12554185-C003
Rev: A

Plot Date: 3 March 2022 - 12:05 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C003.dwg

DEPTH RANGE - AREAS TO CUT					DEPTH RANGE - AREAS TO FILL				
RANGE OF CUT				COLOUR	RANGE OF FILL				COLOUR
0.0	TO	0.5	METERS		-20.0	TO	-12.0	METERS	
0.5	TO	1.0	METERS		-12.0	TO	-11.5	METERS	
1.0	TO	1.5	METERS		-11.5	TO	-11.0	METERS	
1.5	TO	2.0	METERS		-11.0	TO	-10.5	METERS	
2.0	TO	2.5	METERS		-10.5	TO	-10.0	METERS	
2.5	TO	3.0	METERS		-10.0	TO	-9.5	METERS	
3.0	TO	3.5	METERS		-9.5	TO	-9.0	METERS	
3.5	TO	4.0	METERS		-9.0	TO	-8.5	METERS	
4.0	TO	4.5	METERS		-8.5	TO	-8.0	METERS	
4.5	TO	5.0	METERS		-8.0	TO	-7.5	METERS	
5.0	TO	5.5	METERS		-7.5	TO	-7.0	METERS	
5.5	TO	6.0	METERS		-7.0	TO	-6.5	METERS	
6.0	TO	6.5	METERS		-6.5	TO	-6.0	METERS	
6.5	TO	7.0	METERS		-6.0	TO	-5.5	METERS	
7.0	TO	7.5	METERS		-5.5	TO	-5.0	METERS	
7.5	TO	8.0	METERS		-5.0	TO	-4.5	METERS	
8.0	TO	8.5	METERS		-4.5	TO	-4.0	METERS	
8.5	TO	9.0	METERS		-4.0	TO	-3.5	METERS	
9.0	TO	9.5	METERS		-3.5	TO	-3.0	METERS	
9.5	TO	10.0	METERS		-3.0	TO	-2.5	METERS	
10.0	TO	10.5	METERS		-2.5	TO	-2.0	METERS	
10.5	TO	11.0	METERS		-2.0	TO	-1.5	METERS	
11.0	TO	11.5	METERS		-1.5	TO	-1.0	METERS	
11.5	TO	12.0	METERS		-1.0	TO	-0.5	METERS	
					-0.5	TO	0.0	METERS	



QUANTITY		
CUT (-)	FILL (+)	BALANCE
54255 m^3	54198 m^3	57 m^3

NOTE

1. NEGATIVE VALUES INDICATE AREAS WHERE THERE IS CUT AVAILABLE TO ACHIEVE COUNCIL APPROVED LEVELS. POSITIVE VALUES INDICATE AREAS WHERE FILL IS REQUIRED TO ACHIEVE COUNCIL APPROVED LEVELS.

LEGEND

PROPERTY BOUNDARY

POND WATER LINE

PLAN
SCALE 1 : 500

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
A	ISSUE FOR INFORMATION		B.C	S.L	A.O	04/03/22

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

GHD
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Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client BYRON SHIRE COUNCIL
Project MYOCUM QUARRY SURVEY AND REHAB PLAN
Title DEPTH RANGE LEVELS

Original Size A1
Drawing No: 22-12554185-C004
Rev: A

Plot Date: 3 March 2022 - 12:05 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C004.dwg

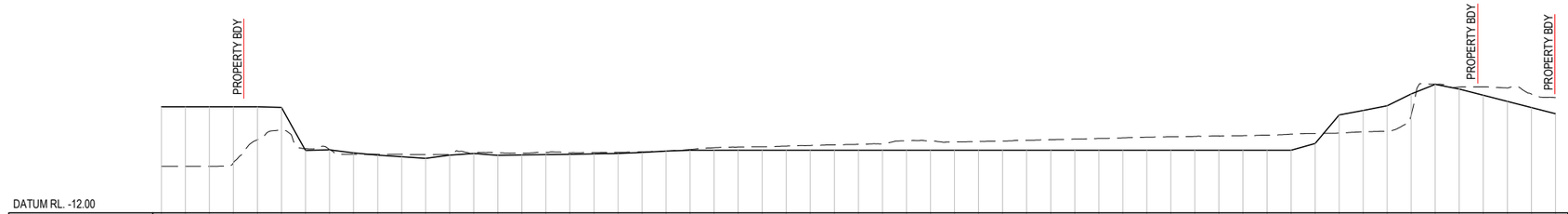
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

COUNCIL APPROVED DESIGN LEVEL



DATUM RL. -12.00

CHAINAGE	0.00	5.00	10.00	15.00	20.00	25.00	30.00	35.00	40.00	45.00	50.00	55.00	60.00	65.00	70.00	75.00	80.00	85.00	90.00	95.00	100.00	105.00	110.00	115.00	120.00	125.00	130.00	135.00	140.00	145.00	150.00	155.00	160.00	165.00	170.00	175.00	180.00	185.00	190.00	195.00	200.00	205.00	210.00	215.00	220.00	225.00	230.00	235.00	240.00	245.00	250.00	255.00	260.00	265.00	270.00	275.00	280.00	285.00	290.00
EXISTING QUARRY SURFACE LEVEL	-2.35	-2.34	-2.33	-1.62	3.18	5.25	1.31	1.11	0.14	0.14	0.13	0.12	0.13	0.48	0.48	0.40	0.52	0.46	0.48	0.58	0.66	0.83	1.13	1.51	1.66	1.73	1.86	1.98	2.12	2.21	2.32	2.94	2.92	2.69	2.79	2.90	3.05	3.19	3.32	3.43	3.56	3.70	3.79	3.86	3.94	4.02	4.13	4.34	4.47	4.55	4.84	4.98	8.33	14.68	14.13	14.16	13.91	12.65	11.93
COUNCIL APPROVED DESIGN LEVEL	10.000	10.000	10.000	10.000	10.000	9.903	0.937	1.086	0.433	-0.024	-0.368	-0.712	-0.036	0.326	-0.082	-0.000	0.075	0.150	0.229	0.314	0.542	0.812	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	2.371	8.329	9.246	10.235	12.676	14.681	13.680	12.405	11.129	9.854	8.579
CUT - / FILL +	12.35	12.34	12.33	11.62	6.82	4.65	-0.37	-0.03	0.29	-0.16	-0.50	-0.83	-0.17	-0.16	-0.57	-0.40	-0.44	-0.31	-0.25	-0.27	-0.11	-0.01	-0.13	-0.51	-0.66	-0.73	-0.86	-0.98	-1.12	-1.21	-1.32	-1.94	-1.92	-1.69	-1.79	-1.90	-2.05	-2.19	-2.32	-2.43	-2.56	-2.70	-2.79	-2.86	-2.94	-3.02	-3.13	-3.34	-2.10	3.78	4.41	5.26	4.35	-0.00	-0.45	-1.75	-2.78	-2.80	-3.35
LEVEL DIFFERENCE																																																																							

LONGITUDINAL SECTION - CONTROL LINE 1

SCALE HORZ 1:500 VERT 1:500

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUE FOR INFORMATION	B.C	S.L	A.O	04/03/22

Note: * indicates signatures on original issue of drawing or last revision of drawing

VERT/HORIZ 0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

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Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client BYRON SHIRE COUNCIL
Project MYOCUM QUARRY SURVEY AND REHAB PLAN
Title LONGITUDINAL SECTION - CONTROL LINE 1

Original Size A1
Drawing No: 22-12554185-C005
Rev: A

Plot Date: 3 March 2022 - 12:05 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C005.dwg

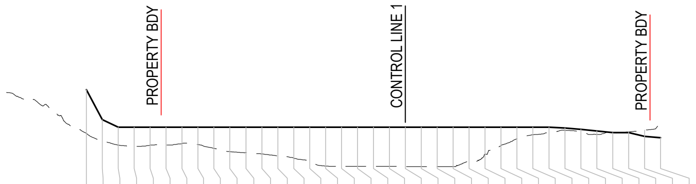
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

– – – – EXISTING QUARRY SURFACE LEVEL

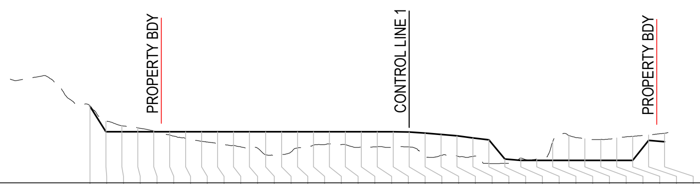
——— COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -8.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	13.76	8	21.76
-95	6.58	5.77	12.346
-90	5.61	4.39	10
-85	5.99	4.01	10
-80	5.62	4.38	10
-75	5.59	4.41	10
-70	5.11	4.89	10
-65	5.46	4.54	10
-60	6.65	3.35	10
-55	7.68	2.32	10
-50	8	2	10
-45	8.39	1.61	10
-40	9.03	0.97	10
-35	9.66	0.34	10
-30	10.69	-0.69	10
-25	12.2	-2.2	10
-20	12.3	-2.31	10
-15	12.3	-2.3	10
-10	12.31	-2.31	10
-5	12.32	-2.32	10
0	12.33	-2.33	10
5	12.35	-2.35	10
10	12.36	-2.36	10
15	12.38	-2.38	10
20	10.75	-0.75	10
25	8.49	1.51	10
30	5.78	4.22	10
35	3.63	6.37	10
40	2.38	7.62	10
45	1.63	8.37	10
50	0.76	9.02	9.781
55	0.86	8.44	9.303
60	1.09	7.71	8.797
65	0.11	8.18	8.291
70	-0.2	8.49	8.291
75	-1.89	9.04	7.15
80			6.715

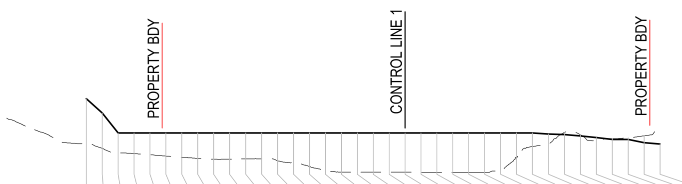
CH 10



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-0.2	18.13	17.938
-95	-3.29	13.29	10
-90	-1.88	11.88	10
-85	-1.26	11.26	10
-80	-0.24	10.24	10
-75	1.06	8.94	10
-70	2.03	7.97	10
-65	2.95	7.05	10
-60	3.73	6.27	10
-55	4.3	5.7	10
-50	5	5	10
-45	7.16	2.84	10
-40	7.32	2.68	10
-35	5.06	4.94	10
-30	4.21	5.79	10
-25	3.78	6.22	10
-20	4.01	5.99	10
-15	4.84	5.16	10
-10	4.71	5.29	10
-5	4.78	5.22	10
0	4.65	5.25	9.903
5	7.4	2.15	9.551
10	6.6	2.57	9.165
15	6.27	2.43	8.703
20	5.82	2.26	8.081
25	7.39	0.06	7.458
30	1.41	0.08	1.491
35	-0.78	1.78	1
40	-0.48	1.48	1
45	-5.85	6.85	1
50	-7.85	8.85	1
55	-6.8	7.8	1
60	-6.59	7.59	1
65	-7.04	8.04	1
70	-7.58	8.58	1
75	-1.67	8.99	7.32
80	-2.66	9.54	6.884

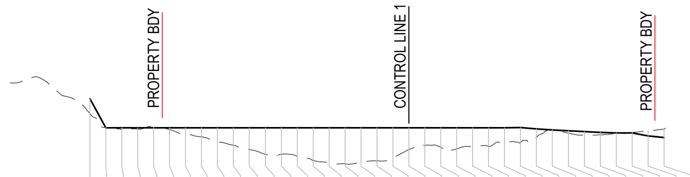
CH 25



DATUM R.L. -8.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	14.12	6.58	20.698
-95	11.08	5.12	16.202
-90	6.39	3.61	10
-85	6.51	3.49	10
-80	6.84	3.16	10
-75	7.27	2.73	10
-70	7.69	2.31	10
-65	8.01	1.99	10
-60	8.26	1.74	10
-55	8.25	1.75	10
-50	8.13	1.87	10
-45	8.17	1.83	10
-40	8.74	1.26	10
-35	9.25	0.75	10
-30	10.57	-0.57	10
-25	11.79	-1.79	10
-20	12.3	-2.3	10
-15	12.31	-2.31	10
-10	12.32	-2.32	10
-5	12.33	-2.33	10
0	12.34	-2.34	10
5	12.36	-2.36	10
10	12.37	-2.37	10
15	12.38	-2.38	10
20	12.4	-2.4	10
25	12.37	-2.37	10
30	11.9	-1.9	10
35	7.87	2.13	10
40	4.29	5.71	10
45	3.16	6.51	9.67
50	-0.66	10.15	9.495
55	-0.43	9.45	9.028
60	0.94	7.58	8.523
65	-0.16	8.13	7.977
70	-0.46	8.43	7.977
75	-2.14	9.08	6.934
80			6.512

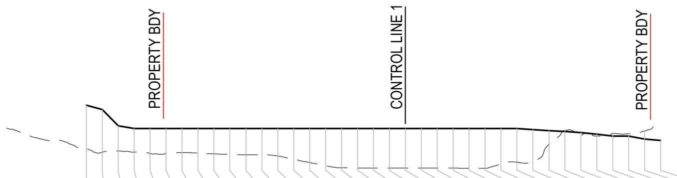
CH 5



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	4.6	14.6	19.195
-95	-0.18	10.18	10
-90	0.53	9.47	10
-85	0.37	9.63	10
-80	-0.37	10.37	10
-75	0.54	9.46	10
-70	2.1	7.9	10
-65	2.81	7.19	10
-60	4.41	5.59	10
-55	5.44	4.56	10
-50	6.76	3.24	10
-45	8.28	1.72	10
-40	8.26	1.74	10
-35	8.95	1.05	10
-30	10.23	-0.23	10
-25	10.92	-0.92	10
-20	11.27	-1.27	10
-15	10.77	-0.77	10
-10	10.34	-0.34	10
-5	9.51	0.49	10
0	6.82	3.18	10
5	5.47	4.53	10
10	6.11	3.89	10
15	6.61	3.39	10
20	5.81	4.19	10
25	5.75	4.25	10
30	4.52	5.48	10
35	4.73	5.4	10.13
40	2.6	7.11	9.713
45	-0.1	9.45	9.351
50	0.73	8.38	9.108
55	1.17	7.69	8.865
60	0.82	7.8	8.621
65	0.32	8.05	8.378
70	-0.17	8.55	8.378
75	-1.62	9.07	7.452
80	-2.69	9.62	6.935

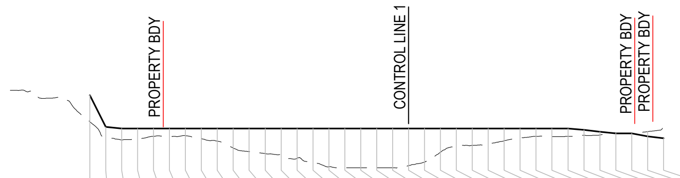
CH 20



DATUM R.L. -8.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	13.5	3.8	17.291
-95	13.44	2.53	15.965
-90	7.85	2.97	10.828
-85	7.38	2.62	10
-80	7.83	2.17	10
-75	7.76	2.24	10
-70	7.52	2.48	10
-65	7.65	2.35	10
-60	7.9	2.1	10
-55	8.09	1.91	10
-50	8.19	1.81	10
-45	8.16	1.84	10
-40	8.6	1.4	10
-35	9.6	0.4	10
-30	10.6	-0.6	10
-25	11.64	-1.64	10
-20	12.31	-2.31	10
-15	12.32	-2.32	10
-10	12.33	-2.33	10
-5	12.34	-2.34	10
0	12.35	-2.35	10
5	12.37	-2.37	10
10	12.38	-2.38	10
15	12.39	-2.39	10
20	12.41	-2.41	10
25	12.4	-2.4	10
30	11.07	-1.07	10
35	10.52	-0.52	10
40	9.69	0.02	9.708
45	4.26	5.06	9.315
50	-0.3	9.41	9.109
55	1.01	7.74	8.754
60	0.59	7.64	8.228
65	-0.83	8.49	7.659
70	-0.74	8.4	7.659
75	-2.49	9.22	6.731
80			6.309

CH 0



DATUM R.L. -8.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	8.3	12.16	20.451
-95	3.3	7.23	10.528
-90	3.54	6.46	10
-85	3.23	6.77	10
-80	2.44	7.56	10
-75	2.44	7.56	10
-70	2.23	7.77	10
-65	3.12	6.88	10
-60	3.93	6.07	10
-55	6.1	3.9	10
-50	7.22	2.78	10
-45	7.82	2.18	10
-40	8.2	1.8	10
-35	9.31	0.69	10
-30	10.64	-0.64	10
-25	11.93	-1.93	10
-20	12.29	-2.29	10
-15	12.3	-2.3	10
-10	12.3	-2.3	10
-5	12.31	-2.31	10
0	11.62	-1.62	10
5	10.54	-0.54	10
10	7.41	2.59	10
15	5.54	4.46	10
20	5.29	4.71	10
25	4.83	5.17	10
30	3.82	6.18	10
35	2.94	7.06	10
40	2.43	7.57	10
45	2.51	7.49	10
50	2.45	7.55	10
55	1.7	7.87	9.571
60	1.04	7.99	9.031
65	-0.11	8.6	8.491
70	0.03	8.46	8.491
75	-1.47	9.04	7.567
80			6.919

CH 15

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUE FOR INFORMATION	B.C	S.L	A.O	04/03/22

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

Byron Shire Council

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Drawn: B. COLLISTER | Designer: B. COLLISTER
Drafting Check: M. MASON | Design Check: S. LAWER
Approved (Project Director): A. OLIVER
Date: 04/03/22
Scale: AS SHOWN
This Drawing must not be used for Construction unless signed as Approved

Client: **BYRON SHIRE COUNCIL**
Project: **MYOCUM QUARRY SURVEY AND REHAB PLAN**
Title: **CROSS SECTIONS - CONTROL LINE 1 SHEET 1 OF 10**
Original Size: **A1**
Drawing No: **22-12554185-C006**
Rev: **A**

Plot Date: 3 March 2022 - 12:05 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C006.dwg

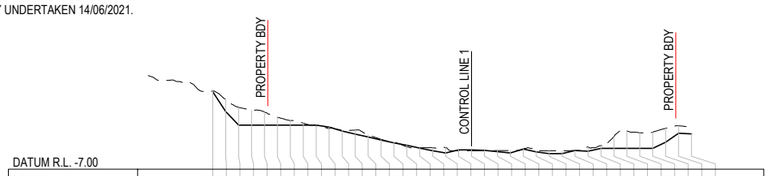
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

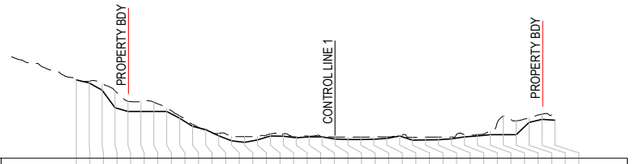
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -7.00

DEPTH CUT - / FILL +	-0.28	-4.79	-6.89	-5.85	-5.11	-3.03	-1.79	-0.8	0.25	0.56	-0.41	-1.62	-0.61	-0.27	-0.16	0.05	-1.13	-2.04	0.3	0.29	0.12	-0.43	-0.99	0.1	-0.34	-1.09	0.22	-0.67	-1.7	-2.18	-1.23	-0.81	-0.99	-0.3	-0.29	0.02	-0.83	-0.95	-0.9	-0.91	-0.57	-0.14	-1.15	-1.03	-0.69	-0.94	-0.53	-1.48	-7.16	-5.39	-1.75	-2.03
EXISTING QUARRY SURFACE LEVEL	23.16	20.07	16.89	15.85	15.11	13.03	11.79	10.8	9.75	8.71	8.09	8.12	6.23	4.54	3.29	1.65	1.2	1.24	1.33	0.14	0.15	0.15	0.66	0.06	0.06	0.07	0.1	1.46	0.34	0.24	0.24	1.3	0.18	1.41	0.46	0.15	0.12	0.09	0.09	0.13	0.16	0.64	0.04	0.08	0.06	0.13	1.1	2.48	8.16	6.39	7.51	8.95
COUNCIL APPROVED DESIGN LEVEL	22.874	15.284	10	10	10	10	10	10	10	9279	7.881	6.503	5.42	4.275	3.107	2.213	1.149	0.105	-0.712	0.432	0.433	0.249	-0.273	-0.782	0.761	-0.282	-1.019	-0.98	0.166	-0.048	1	2.12	5.6	7.74	7	1	3.395	6.856	6.6
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

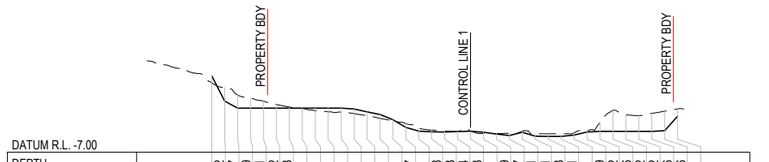
CH 40



DATUM R.L. -8.00

DEPTH CUT - / FILL +	-0.13	-0.63	-2.37	-6.47	-4.12	-3.93	-3.57	-0.64	-0.76	0.22	-0.67	-1.7	-2.18	-1.23	-0.81	-0.99	-0.3	-0.29	0.02	-0.83	-0.95	-0.9	-0.91	-0.57	-0.14	-1.15	-1.03	-0.69	-0.94	-0.53	-1.48	-7.16	-5.39	-1.75	-2.03
EXISTING QUARRY SURFACE LEVEL	22.31	21.63	20.62	17.94	14.12	13.93	13.57	11.27	8.28	5.03	2.72	1.46	0.24	0.24	1.3	1.41	0.18	0.46	0.15	0.12	0.09	0.09	0.13	0.16	0.64	0.04	0.06	0.08	1.1	1.07	2.48	8.16	6.39	7.51	8.95
COUNCIL APPROVED DESIGN LEVEL	22.185	20.997	18.249	11.472	10	10	10	10	7.341	4.265	2.939	0.584	-1.935	-0.995	0.498	0.426	-0.122	0.169	0.169	-0.712	-0.861	-0.819	-0.776	-0.418	0.502	-1.103	-1.038	-0.941	-0.561	0.542	1	1	1	5.755	6.915	6.646
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

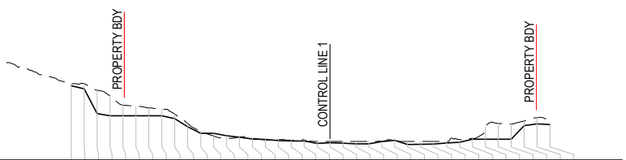
CH 55



DATUM R.L. -7.00

DEPTH CUT - / FILL +	2.57	-5.22	-5.07	-3.89	-2.71	-1.42	-0.43	0.16	0.99	1.41	1.55	1.78	1.47	1.46	1.41	1.47	1.2	-0.68	-0.43	-0.14	-0.03	0.5	-0.19	-0.87	-0.31	-0.91	-1.03	-1.01	-0.8	-0.69	-3.42	-8.16	-6.42	-6.12	-6.96	-7.56	-2.8
EXISTING QUARRY SURFACE LEVEL	19.82	17.95	15.07	13.89	12.71	11.42	10.43	9.84	9.01	8.59	8.45	7.86	7.11	6.04	5.1	4.2	3.32	2.32	1.5	1.18	1.03	1.11	0.17	0.19	0.23	0.07	0.08	0.08	0.38	1.42	4.42	9.16	7.42	7.12	7.96	8.79	9.65
COUNCIL APPROVED DESIGN LEVEL	22.396	12.726	10	10	10	10	10	10	10	10	10	9.633	5.979	5.502	5.514	5.515	1.115	0.821	0.752	0.89	1.086	0.664	0.002	-0.637	0.71	-0.834	-0.951	-0.924	-0.418	0.727	1	1	1	1	1	1.232	6.855
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80

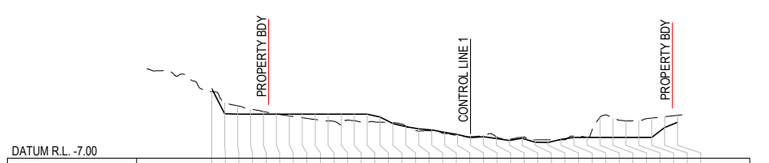
CH 35



DATUM R.L. -7.00

DEPTH CUT - / FILL +	-0.85	-2.03	-9.02	-7.76	-3.79	-3.07	-2.62	-1.79	-1.31	-0.81	1.02	0.99	-0.19	-0.29	0.18	-0.25	-0.23	-0.47	-0.76	-0.5	-0.68	-0.92	-0.89	-0.2	-0.44	-1.16	-1.13	-1.06	-0.63	-1.09	-0.28	-4.71	-6.1	-5.86	-1.75	-2.43
EXISTING QUARRY SURFACE LEVEL	22.49	22.43	19.92	17.76	13.79	13.07	12.62	10.67	7.09	4.08	2.23	1.33	1.88	1.34	0.72	0.73	0.51	0.75	0.14	0.13	0.1	0.1	0.11	0.22	1.01	0.09	0.12	0.12	0.12	0.12	1.28	1	7.1	6.96	7.39	9.32
COUNCIL APPROVED DESIGN LEVEL	21.641	20.401	10.898	10	10	10	10	8.884	5.781	3.269	3.254	2.316	1.685	1.054	0.903	0.482	0.279	0.276	-0.621	-0.368	-0.582	-0.82	-0.778	0.012	0.573	-1.063	-1.009	-0.938	-0.514	-0.225	1	1	1	1	6.24	6.893	6.623
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

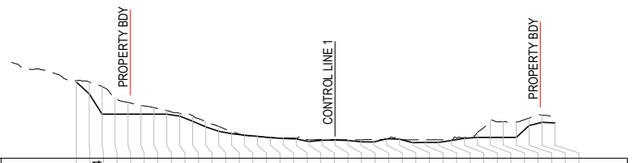
CH 50



DATUM R.L. -7.00

DEPTH CUT - / FILL +	1.13	-4.24	-3.22	-1.94	-0.97	-0.1	0.71	1.39	2.08	2.69	3.25	4.25	2.53	3.05	1.98	0.41	-0.17	0.66	0.44	0.4	0.37	-0.37	-0.66	-0.6	-0.53	-0.43	-0.95	-1.01	-0.47	-0.18	-7.78	-7.45	-6.37	-6.56	-7.47	-4.2	-2.69
EXISTING QUARRY SURFACE LEVEL	18.71	14.41	13.22	11.94	10.97	10.1	9.29	8.61	7.92	7.31	5.75	7.47	6.93	6.89	6.72	5.72	4.33	3.47	3.48	2.52	1.73	1.31	1.93	1.21	0.36	1.09	0.1	0.11	1.47	1	8.78	8.45	7.37	7.56	8.47	9.02	9.53
COUNCIL APPROVED DESIGN LEVEL	19.837	10.167	10	10	10	10	10	10	10	10	10	9.973	8.976	8.976	6.372	5.4	4.333	3.918	2.923	2.103	0.937	1.271	0.611	0.66	-0.173	-0.856	-0.906	0.24	1	1	1	1	1	1	1	4.82	6.842
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80

CH 30



DATUM R.L. -7.00

DEPTH CUT - / FILL +	-0.54	-4.61	-10.64	-6.18	-4.56	-3.38	-2.49	-1.17	-2.12	-2.08	-1.96	-0.86	0.1	0.08	-0.03	-0.27	-0.32	-0.76	-0.23	-0.16	-0.28	-0.81	-0.91	0.22	-0.77	-1.13	-1.08	-1.03	-0.27	-0.32	-1.94	-6.38	-6.08	-5.95	-2.92	-2.78
EXISTING QUARRY SURFACE LEVEL	22.95	22.446	20.64	16.18	14.56	13.48	12.49	11.37	10.28	9.42	7.13	5.33	3.28	1.78	1.32	0.98	0.81	0.71	0.12	0.12	0.12	0.13	0.26	1.09	0.1	0.11	0.11	0.12	0.12	0.96	2.94	7.08	7.38	6.95	8.48	9.65
COUNCIL APPROVED DESIGN LEVEL	22.41	17.843	10	10	10	10	10	9.185	7.297	5.048	3.372	2.419	1.876	1.397	0.944	0.547	0.392	-0.633	-0.095	-0.024	-0.167	-0.688	-0.78	0.323	-1.024	-0.97	-0.914	-0.154	0.634	1	1	1	1	5.558	6.871	6.609
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

CH 45

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
A	ISSUE FOR INFORMATION		B.C	S.L	A.O	04/03/22

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

GHD

Level 13 The Rocket
203 Robina Town Centre Drive
QLD 4226 Australia
T 61 7 5557 1000 F 61 7 5557 1099
E goldcoastmail@ghd.com W www.ghd.com

Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client BYRON SHIRE COUNCIL
Project MYOCUM QUARRY SURVEY AND REHAB PLAN
Title CROSS SECTIONS - CONTROL LINE 1 SHEET 2 OF 10

Original Size A1 Drawing No: 22-12554185-C007 Rev: A

Plot Date: 3 March 2022 - 12:05 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C007.dwg

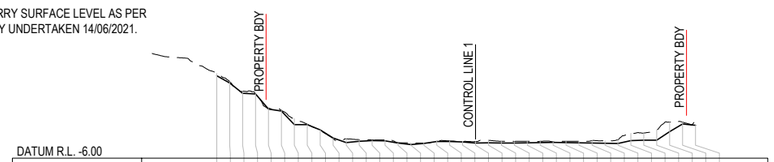
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

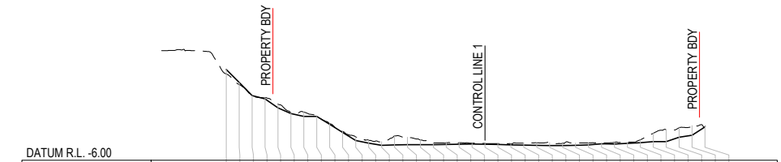
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -6.00

DEPTH CUT - / FILL +	-0.81	-0.51	-0.69	-0.12	-0.36	-0.24	-2.27	-0.11	0.21	0.32	-1.48	-0.59	-0.33	-0.12	-0.22	-0.37	-0.19	-0.21	-0.57	-0.91	-0.63	-0.64	-0.5	-0.18	-0.48	-0.59	-0.94	-0.9	-1.45	-2.73	-3.9	-3.69	-0.69
EXISTING QUARRY SURFACE LEVEL	26.69	23.56	19.83	18.94	13.38	12.51	9.29	7.13	4.79	1.52	1.53	1.18	1.11	1.08	1.03	1.09	0.83	0.65	0.54	0.48	0.87	0.52	0.51	0.58	0.53	0.3	0.56	0.57	0.82	0.7	1.16	3.57	4.9	7.99	7.94
COUNCIL APPROVED DESIGN LEVEL	25.887	23.048	19.14	18.818	13.019	12.264	7.022	7.022	4.998	1.84	0.046	0.591	0.775	0.749	0.093	-0.043	-0.316	0.458	0.462	0.332	-0.082	-0.04	-0.107	-0.09	-0.054	0.122	0.078	-0.018	-0.125	-0.199	-0.288	0.822	1	4.299	7.247	6.707
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

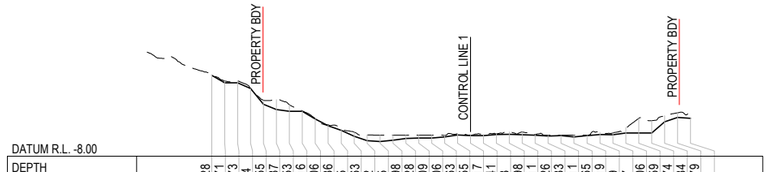
CH 70



DATUM R.L. -6.00

DEPTH CUT - / FILL +	1.71	0.84	0.51	-0.44	-1.53	-1.72	-0.23	-0.32	-1.37	-1.11	-1.36	-3.5	-2.89	-1.84	-0.68	-0.67	-0.65	-0.33	-0.31	-0.38	-0.41	-0.78	-0.95	-1.2	-0.9	-0.97	-0.77	-0.42	-0.6	-0.51	-1.1	-3.2	-4.51	-3.7	-3.69	-0.16
EXISTING QUARRY SURFACE LEVEL	27.36	23.19	18.49	18.11	15.71	11.67	8.12	5.08	2.99	1.73	1.14	3.37	2.86	1.83	0.69	0.72	0.78	0.57	0.46	0.42	0.35	0.63	0.71	0.85	0.53	0.67	0.7	0.7	0.85	1.02	1.86	4.4	5.71	6.55	7.35	6.99
COUNCIL APPROVED DESIGN LEVEL	29.068	24.031	18.993	17.668	14.164	10.864	7.888	4.758	1.628	0.616	-0.224	-0.13	-0.031	-0.012	0.003	0.054	0.131	0.241	0.15	0.044	-0.053	-0.15	-0.248	-0.345	-0.362	-0.298	-0.072	0.288	0.254	0.51	0.765	1.201	1.201	2.644	3.865	6.633
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

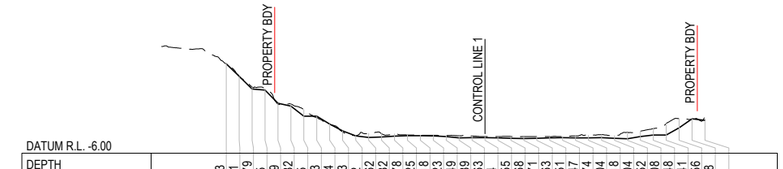
CH 85



DATUM R.L. -8.00

DEPTH CUT - / FILL +	-0.66	-0.77	-0.72	-0.22	0.01	-0.85	-1.9	-0.27	-0.27	1.15	-0.99	-0.88	-0.43	-2.31	-2.19	-1.79	-1.61	-0.1	-0.26	-0.16	-1.2	-0.81	-1.05	-0.15	-0.38	-0.36	-0.89	-0.45	-0.47	-0.79	-0.92	-2.41	-4.49	-4.11	-3.26	-1.5
EXISTING QUARRY SURFACE LEVEL	24.93	21.91	20.42	18.98	13.34	12.96	10.08	8.44		2	1.78	1.61	0.05	0.07	0.04	0.02	0	0.01	0.53	0.48	1.45	0.79	1.25	0.38	0.65	0.67	1.17	0.68	0.64	0.84	0.91	3.41	5.49	5.11	8.04	8.65
COUNCIL APPROVED DESIGN LEVEL	24.263	21.137	19.701	18.762	13.356	12.014	8.176	8.176	5.724	3.149	0.788	0.735	-0.36	-2.263	-2.149	-1.79	-1.618	-0.129	0.263	0.326	0.254	-0.015	0.197	0.23	0.266	0.302	0.28	0.231	0.172	0.053	-0.008	1	1	4.765	7.149	6.694
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

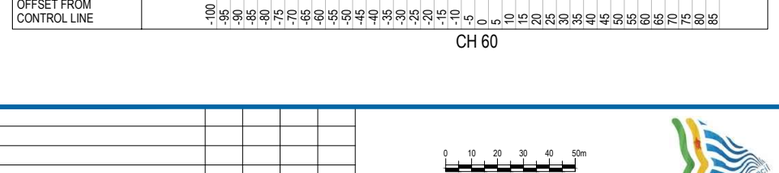
CH 65



DATUM R.L. -6.00

DEPTH CUT - / FILL +	1.36	0.38	-0.07	-0.65	-0.18	-0.28	0.38	0.26	-0.9	-0.69	-0.84	-0.98	-1.15	-0.9	-1.27	-1.6	-1.37	-0.95	-0.44	-0.55	-0.54	-0.78	-1.06	-0.81	-0.84	-0.72	-0.85	-0.73	-0.99	-1.2	-3.3	-2.6	-2.92	-3.88	0.57
EXISTING QUARRY SURFACE LEVEL	27.57	23.93	23.51	20.81	18.93	13.8	12.36	9.22	7.62	3.8	2.02	1	0.99	0.8	1.14	1.45	1.29	0.98	0.57	0.52	0.4	0.54	0.72	0.63	0.63	0.47	0.71	0.71	0.88	1.32	3.88	4.28	4.6	7.21	6.74	
COUNCIL APPROVED DESIGN LEVEL	28.93	23.893	18.855	17.964	13.615	12.077	9.596	6.719	4.06	1.328	0.634	0.02	-0.154	-0.101	-0.128	-0.144	-0.085	0.024	0.134	0.075	-0.038	-0.14	-0.237	-0.335	-0.289	-0.201	-0.253	-0.135	-0.101	0.126	0.371	1.686	4.06	3.329	7.312	6.721
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

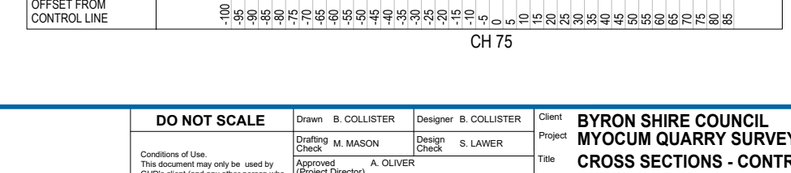
CH 80



DATUM R.L. -8.00

DEPTH CUT - / FILL +	-0.28	-0.71	-0.73	-1.55	-3.87	-2.53	-0.16	-0.06	-0.36	-0.5	-1.63	-2.2	-2.58	-1.98	-1.09	-1.06	-0.63	-0.55	-0.17	-0.41	-0.3	-0.98	-1.11	-0.26	-0.33	-0.11	-0.65	-0.19	-0.9	-0.7	-2.06	-5.59	-4.74	-2.34	-1.79	
EXISTING QUARRY SURFACE LEVEL	23.51	21.1	21.08	18.14	13.87	11.88	9.5	6.48	4.15	2.46	1.3	0.16	0.15	0.13	0.12	0.11	0.09	0.07	0.71	0.34	0.64	1.41	0.39	0.19	0.11	0.1	0.11	0.11	0.23	0.97	3.06	6.59	5.74	7.61	8.76	
COUNCIL APPROVED DESIGN LEVEL	23.224	20.388	20.352	18.18	12.053	13.6	10	9.347	6.418	3.791	1.961	-0.327	-2.039	-2.357	-1.461	-0.988	-0.978	-0.561	0.162	-0.036	-0.072	0.34	0.424	0.288	0.135	-0.218	-0.014	-0.542	-0.085	0.332	0.272	1	1	5.27	6.978	6.67
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

CH 60



DATUM R.L. -6.00

DEPTH CUT - / FILL +	0.03	0.11	-0.79	-0.5	0.39	-0.62	0.53	0.04	0.43	-0.2	-1.62	-0.78	-0.25	-0.18	-0.23	-0.49	-0.89	-0.63	-0.4	-0.55	-0.68	-0.71	-0.63	-0.51	-0.47	-0.74	-1.04	-1.18	-1.04	-2.52	-2.08	-2.48	-4.41	-3.56	0.18	
EXISTING QUARRY SURFACE LEVEL	28.49	23.58	19.59	18.99	12.99	11.88	7.78	5.18	2.2	1.7	1.53	1.41	0.95	0.91	0.87	0.76	0.66	0.4	0.66	0.43	0.46	0.41	0.41	0.38	0.43	0.64	0.94	1.15	0.79	2.12	2.51	5.41	7.37	7.09		
COUNCIL APPROVED DESIGN LEVEL	28.523	23.693	18.799	18.391	13.317	12.209	8.309	5.221	2.637	0.869	0.08	0.216	0.629	0.795	0.768	0.678	0.38	-0.128	0.027	-0	-0.112	-0.225	-0.303	-0.215	-0.127	-0.039	-0.09	-0.029	-0.258	-0.403	0.434	1	3.814	7.272	6.714	
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

CH 75

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
A	ISSUE FOR INFORMATION		B.C	S.L	A.O	04/03/22

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Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client BYRON SHIRE COUNCIL
Project MYOCUM QUARRY SURVEY AND REHAB PLAN
Title CROSS SECTIONS - CONTROL LINE 1 SHEET 3 OF 10

Original Size A1 Drawing No: 22-12554185-C008 Rev: A

Plot Date: 3 March 2022 - 12:05 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C008.dwg

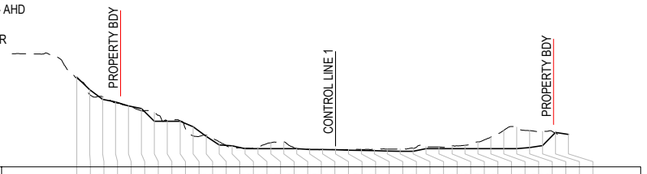
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

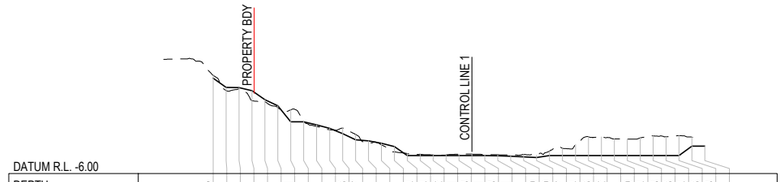
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	0.33	28.24	28.575
-95	1.87	21.91	23.777
-90	-1.03	21.1	20.07
-85	0.35	18.71	19.057
-80	0.05	17.47	17.527
-75	0.9	15.62	16.519
-70	-3.4	15.01	11.612
-65	0.12	11.49	11.612
-60	-0.2	11.77	11.567
-55	3.58	5.88	9.461
-50	-0.52	6.25	5.728
-45	-1.2	3.65	2.45
-40	0.84	1.29	2.725
-35	-0.16	1.16	1
-30	-0.58	1.58	1
-25	-2.65	3.65	1
-20	-0.01	1.01	1
-15	-0.09	0.71	0.619
-10	-0.02	0.64	0.62
-5	-0.11	0.66	0.542
0	-0.19	0.62	0.43
5	-0.36	0.67	0.317
10	-0.72	0.81	0.092
15	-0.51	0.71	0.205
20	-0.95	0.93	-0.02
25	-1.13	1.13	0.005
30	-0.83	1.83	1
35	-0.66	1.66	1
40	-1.16	2.16	1
45	-1.29	2.29	1
50	-2.58	3.58	1
55	-4.44	5.44	1
60	-7.06	8.06	1
65	-8.25	9.25	1
70	-6.56	7.95	1.388
75	-5.4	7.61	2.21
80	0.3	6.94	7.236
85			6.475
90			

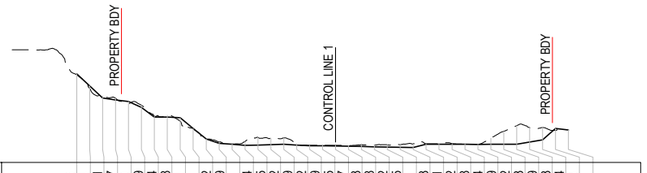
CH 100



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-1.05	31.92	30.875
-95	1.22	26.08	27.293
-90	1.51	26.72	27.234
-85	0.83	21.76	25.589
-80	0.78	21.42	20.202
-75	-4.61	18.64	14.031
-70	-0.4	14.43	14.031
-65	0.57	12.24	12.814
-60	0.59	10.89	11.485
-55	-2.16	11.57	9.401
-50	-2.07	9.16	7.094
-45	0.73	5.89	6.62
-40	0.58	5.14	5.725
-35	2.07	2.37	4.446
-30	-0.74	1.74	1
-25	-0.44	1.44	1
-20	-0.22	1.22	1
-15	-0.21	1.21	1
-10	-0.53	1.53	1
-5	-0.51	1.51	1
0	-0.33	1.33	1
5	-0.41	1.26	0.855
10	-0.5	1.2	0.704
15	-0.89	1.35	0.466
20	-0.89	1.12	0.226
25	-1.67	2.67	1
30	-2.74	3.74	1
35	-4.26	5.26	1
40	-7.22	8.22	1
45	-7.2	8.2	1
50	-6.39	7.39	1
55	-6.34	7.34	1
60	-6.78	7.78	1
65	-7.56	8.56	1
70	-7.24	8.24	1
75	-7.66	8.66	1
80	-3.43	8.07	4.641
85			4.641
90			

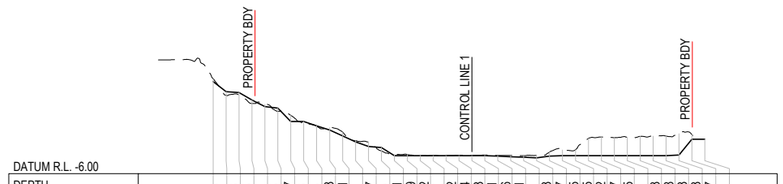
CH 115



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	0.36	27.82	28.188
-95	0.94	22.54	23.482
-90	-0.71	19.59	18.881
-85	-0.67	18.75	18.079
-80	0.59	16.9	17.492
-75	-0.89	16.1	15.213
-70	-0.34	12.2	11.527
-65	-0.68	11.87	11.527
-60	1.34	9.86	11.204
-55	0.11	7.01	7.123
-50	-0.02	3.06	3.042
-45	-0.59	1.9	1.315
-40	-0.1	1.06	0.963
-35	-1.44	2.06	0.615
-30	-2.95	3.63	0.679
-25	-2.49	3.49	0.812
-20	-0.52	1.16	0.633
-15	-0.19	0.59	0.407
-10	-0.15	0.56	0.413
-5	-0.27	0.58	0.314
0	-0.33	0.54	0.213
5	-0.68	0.79	0.112
10	-0.72	0.73	0.011
15	-0.85	0.76	-0.09
20	-1	0.81	-0.191
25	-1.43	1.14	-0.291
30	-0.21	1.21	1
35	-0.12	1.12	1
40	-0.28	1.28	1
45	-0.04	1.07	1.021
50	-0.09	1	0.913
55	-2.32	3.32	1
60	-5.03	6.03	1
65	-7.19	8.19	1
70	-5.53	7.4	1.874
75	-4.74	7.44	2.695
80	0.78	6.32	7.102
85			6.501
90			

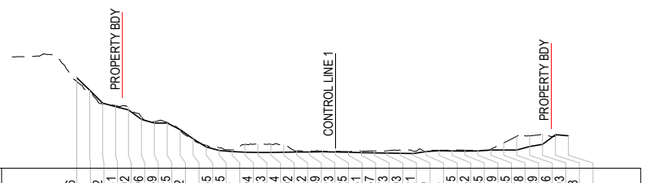
CH 95



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-1	30.62	29.62
-95	1.37	24.28	25.649
-90	0.96	24.41	25.367
-85	0.55	21.71	22.894
-80	-0.9	18.09	19.344
-75	1.25	16.88	14.209
-70	-2.37	12.95	14.209
-65	1.26	12.33	12.514
-60	0.18	11.84	10.906
-55	-0.93	10.11	8.599
-50	-1.51	6.69	6.291
-45	-0.4	6.18	4.508
-40	-1.67	2.79	4.125
-35	1.33	1.41	1
-30	-0.41	1.39	1.02
-25	-0.39	1.02	0.93
-20	-0.02	1.02	1
-15	0.07	1.14	1
-10	-0.02	1.13	1
-5	-0.14	1.19	0.972
0	-0.13	1.05	0.792
5	-0.21	1.07	0.569
10	-0.26	0.95	0.345
15	-0.51	1.06	0.122
20	-0.6	0.95	0.828
25	-0.93	2.4	1
30	-1.57	3.25	1
35	-2.15	3.15	1
40	-2.25	7.62	1
45	-6.62	8.17	1
50	-7.17	7.95	1
55	-6.95	8.1	1
60	-7.1	8.43	1
65	-7.43	8.48	1
70	-7.48	8.53	1
75	-7.53	8.47	1
80	-8.23	9.12	1
85	-7.77		
90			

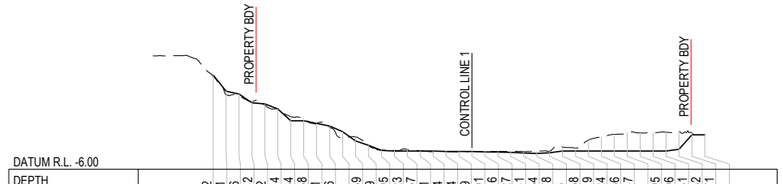
CH 110



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	1.46	27.5	28.961
-95	0.7	23.46	24.16
-90	0.22	18.91	19.131
-85	-0.41	18.18	17.774
-80	-0.92	17.44	16.52
-75	-0.96	13.84	12.881
-70	-0.59	12.03	11.439
-65	-0.25	11.69	11.439
-60	0.32	8.54	8.866
-55	0.5	4.82	5.323
-50	-0.65	2.84	2.194
-45	-1.15	1.96	0.869
-40	-0.7	1.08	0.38
-35	-3.04	3.18	0.133
-30	-3.23	3.27	0.04
-25	-2.92	3.08	0.16
-20	-0.42	0.64	0.22
-15	-0.39	0.63	0.241
-10	-0.23	0.57	0.337
-5	-0.25	0.48	0.229
0	-0.31	0.45	0.131
5	-0.57	0.61	0.034
10	-0.73	0.67	-0.063
15	-0.93	0.77	-0.162
20	-1.21	0.95	-0.263
25	-0.4	0.83	0.426
30	-0.9	0.54	-0.364
35	-0.15	0.9	0.756
40	-0.32	1.04	0.713
45	-0.35	0.96	0.613
50	-0.19	0.9	0.705
55	-0.35	1	
60	-2.78	3.78	
65	-5.29	6.29	
70	-4.16	6.52	2.359
75	-4.03	7.21	3.18
80	0.58	6.39	6.967
85			6.527
90			

CH 90



DATUM R.L. -6.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	0.52	29.88	30.394
-95	1.31	22.61	24.118
-90	0.56	22.49	23.056
-85	0.52	20.24	19.257
-80	-0.14	17.45	17.312
-75	-1.64	14.35	12.71
-70	-0.58	13.29	11.705
-65	0.11	11.6	10.66
-60	0.46	10.2	8.473
-55	2.4	6.07	4.887
-50	-1.59	6.48	3.247
-45	0.09	3.15	1.301
-40	-0.05	1.35	
-35	-0.23	1.23	
-30	-0.57	1.57	
-25	0.01	0.99	
-20	0.24	0.76	
-15	0.04	0.8	0.843
-10	0.09	0.73	0.82
-5	-0.01	0.83	0.812
0	-0.16	0.86	0.699
5	-0.27	0.86	0.587
10	-0.41	0.88	0.476
15	-0.54	0.82	0.282
20	-0.78	0.84	0.059
25	-0.6	0.96	0.357
30	-1.58	2.58	
35	-1.19	2.19	
40	-4.24	5.24	
45	-5.36	6.36	
50	-6.47	7.47	
55	-7.1	8.1	
60	-7.05	8.05	
65	-7.06	8.06	
70	-7.31	8.31	
75	-6.92	8.54	1.725
80	-7.11	8.01	1.302
85			
90			

CH 105

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUE FOR INFORMATION	B.C	S.L	A.O	04/03/22

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

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Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client BYRON SHIRE COUNCIL
Project MYOCUM QUARRY SURVEY AND REHAB PLAN
Title CROSS SECTIONS - CONTROL LINE 1
SHEET 4 OF 10

Original Size A1 Drawing No: 22-12554185-C009 Rev: A

Plot Date: 3 March 2022 - 12:05 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C009.dwg

NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

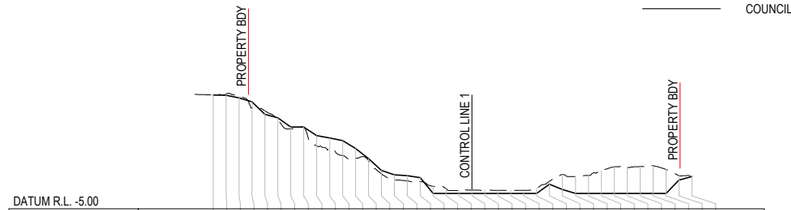
EXISTING QUARRY SURFACE LEVEL

COUNCIL APPROVED DESIGN LEVEL

DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-1.18	39.07	37.888
-95	-0.5	35.82	35.324
-90	1.99	29.99	31.985
-85	-1.48	30.86	29.381
-80	3.14	24.34	27.484
-75	1.84	24.44	26.286
-70	0.68	20.6	21.287
-65	2.77	18.51	21.287
-60	2.05	16.66	18.911
-55	3.36	12.96	16.323
-50	2.76	11.39	14.152
-45	1.07	10.22	11.288
-40	-0.02	8.83	8.806
-35	-0.83	8.38	7.545
-30	0.92	5.86	6.861
-25	0.99	5.86	6.44
-20	-0.84	3.57	2.73
-15	-1.04	2.04	
-10	-0.87	1.87	1
-5	-0.93	1.93	1
0	-0.86	1.86	1
5	-0.78	1.78	1
10	-0.77	1.77	1
15	-0.64	1.63	0.991
20	-0.79	1.47	0.688
25	-3.61	4.61	1
30	-4.62	5.62	1
35	-6.91	7.91	1
40	-6.47	7.47	1
45	-6.41	7.41	1
50	-6.43	7.43	1
55	-7.41	8.41	1
60	-9.71	10.71	1
65	-9.89	10.89	1
70	-9.75	10.75	1
75			1
80			6.937
85			6.561
90			

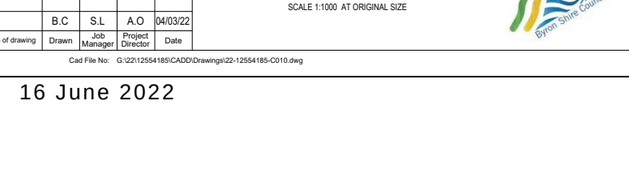
CH 130



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-0.04	39.01	38.979
-95	-0.42	39.33	39.908
-90	-0.58	38.49	37.916
-85	2.41	31.01	31.507
-80	0.75	29.41	29.166
-75	0.67	25.94	26.606
-70	0.1	26.5	26.606
-65	4.02	19.31	23.325
-60	4.01	18.41	22.419
-55	5.75	15.63	21.385
-50	3.78	14.51	18.294
-45	0.84	13.62	14.462
-40	1.27	8.57	9.835
-35	1.74	6.4	8.14
-30	1.97	5.8	7.778
-25	1.51	5.55	7.06
-20	-2.71	3.71	1
-15	-1.87	2.87	1
-10	-1.21	2.21	1
-5	-1.07	2.07	1
0	-1.21	2.21	1
5	-1.16	2.16	1
10	-1.15	2.15	1
15	-1.19	2.19	1
20	-2.02	3.02	1
25	-1.17	5.69	4.523
30	-5.81	8.27	2.463
35	-6.46	7.46	1
40	-6.93	7.93	1
45	-8.69	9.69	1
50	-10.27	11.27	1
55	-10.07	11.07	1
60	-10.36	11.36	1
65	-10.73	11.73	1
70	-9.24	10.24	1
75	-1.73	7.81	6.084
80			7.438
85			

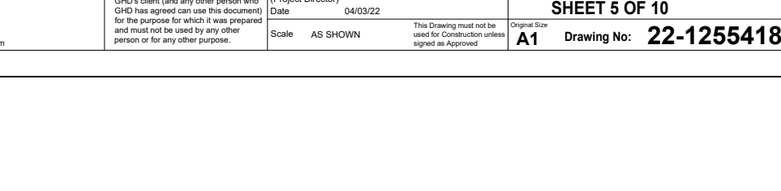
CH 145



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-1.56	37.32	35.756
-95	-0.31	32.73	32.418
-90	1.91	29.08	29.079
-85	3.44	26.91	26.828
-80	2.59	22.34	26.833
-75	-0.38	19.71	24.93
-70	1.09	18.23	19.327
-65	0.65	15.83	19.327
-60	2.26	11.78	16.474
-55	0.97	10.66	14.036
-50	-0.22	9.77	11.633
-45	-2.33	10.5	9.55
-40	-0.53	6.42	8.168
-35	-2.34	5.63	6.957
-30	-1.78	3.28	5.629
-25	-1.05	2.05	1
-20	-0.65	1.65	1
-15	-0.75	1.75	1
-10	-0.73	1.73	1
-5	-0.74	1.74	1
0	-0.58	1.58	1
5	-0.58	1.58	1
10	-0.83	1.38	0.546
15	-0.58	1.43	0.845
20	-1.36	1.67	0.311
25	-2.47	3.47	1
30	-4.01	5.01	1
35	-4.84	5.84	1
40	-6.88	7.88	1
45	-6.92	7.92	1
50	-6.89	7.89	1
55	-7.29	8.29	1
60	-6.99	7.99	1
65	-7.69	8.69	1
70	-8.15	9.15	1
75	-7.54	8.54	1
80			1
85			5.728
90			6.559

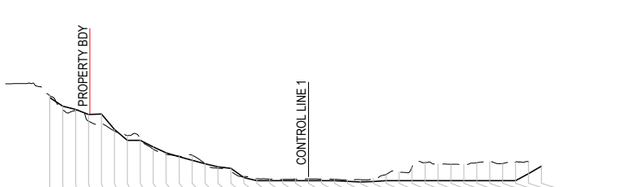
CH 125



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-0.3	39.21	38.91
-95	-0.74	39.13	39.338
-90	-0.57	37.9	37.228
-85	1.35	32.93	33.462
-80	0.67	31.33	29.877
-75	0.75	25.43	24.324
-70	-1.11	24.91	24.324
-65	3.48	20.85	24.324
-60	3.88	18.44	22.325
-55	5.98	15.57	21.548
-50	5.94	13.25	19.191
-45	3.11	13.14	16.248
-40	1.89	11.26	13.147
-35	1.03	7.77	8.797
-30	1.36	6.59	7.953
-25	1.18	6.42	7.6
-20	1.05	6.2	7.248
-15	-2.29	3.29	1
-10	-1.03	2.03	1
-5	-1.14	2.14	1
0	-1.12	2.12	1
5	-1.07	2.07	1
10	-0.99	1.99	1
15	-0.96	1.96	1
20	-0.88	1.88	1
25	-1.25	2.25	1
30	-4.19	5.19	1
35	-6.48	7.48	1
40	-5.73	6.73	1
45	-6.68	7.68	1
50	-6.8	7.8	1
55	-6.66	7.66	1
60	-7.05	8.05	1
65	-8.36	9.36	1
70	-10.52	11.52	1
75	-9.99	10.99	1
80	-4.71	9.28	3.574
85			7.307
90			

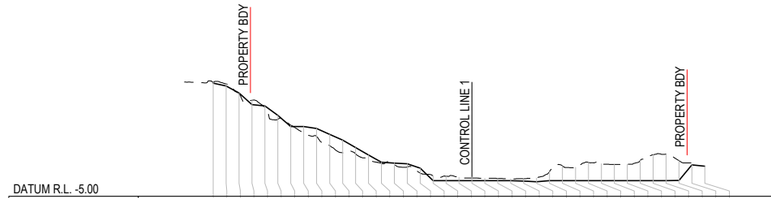
CH 140



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-0.68	33.81	33.129
-95	1.55	28.27	29.825
-90	0.42	28.07	28.49
-85	2.55	24.02	26.568
-80	3.53	23.21	26.745
-75	0.64	20.14	20.778
-70	-1.87	16.45	16.588
-65	-0.36	16.94	16.588
-60	0.88	13.15	14.033
-55	0.62	11.14	11.767
-50	-0.24	10.45	10.203
-45	-1.94	10.85	9.912
-40	-0.09	7.92	7.53
-35	0.59	5.78	6.37
-30	1.19	4.55	5.706
-25	-0.75	1.75	2.168
-20	-0.61	1.61	1
-15	-0.45	1.45	1
-10	-0.56	1.56	1
-5	-0.66	1.66	1
0	-0.62	1.62	1
5	-0.52	1.51	0.989
10	-0.7	1.4	0.701
15	-0.94	1.41	0.472
20	-1.26	1.88	0.626
25	-2.4	3.4	1
30	-3.41	4.41	1
35	-5.26	6.26	1
40	-6.98	7.98	1
45	-6.43	7.43	1
50	-6.28	7.28	1
55	-6.36	7.36	1
60	-6.94	7.94	1
65	-7.49	8.49	1
70	-6.63	7.63	1
75	-7.17	8.17	1
80	-4.6	8.29	3.681
85			6.545
90			

CH 120



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-0.44	39.08	38.637
-95	-0.82	38.36	37.942
-90	-0.68	34.57	34.991
-85	1.62	29.05	29.887
-80	0.67	24.75	26.205
-75	1.46	22.44	21.913
-70	-0.53	19.29	21.913
-65	2.62	18.06	21.127
-60	3.07	14.51	18.903
-55	4.39	11.77	16.672
-50	4.9	11.39	13.807
-45	2.41	9.36	10.943
-40	1.58	7.68	8.127
-35	0.45	7.2	7.808
-30	0.61	6.33	7.497
-25	1.16	3.94	5.848
-20	1.91	2.84	1
-15	-1.84	2.24	1
-10	-1.68	2.68	1
-5	-1.24	1.98	1
0	-0.98	1.93	1
5	-0.93	1.86	1
10	-0.86	1.71	1
15	-0.71	1.71	1
20	-0.86	1.71	0.845
25	-1.52	2.05	0.532
30	-3.55	4.55	1
35	-5.72	6.72	1
40	-5.18	6.18	1
45	-7.01	8.01	1
50	-6.53	7.53	1
55	-6.27	7.27	1
60	-6.3	7.3	1
65	-7.76	8.76	1
70	-10.01	11.01	1
75	-10.27	11.27	1
80	-7.64	8.7	1.064
85			7.12
90			6.57

CH 135

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
A	ISSUE FOR INFORMATION		B.C	S.L	A.O	04/03/22

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

Byron Shire Council

GHD

Level 13 The Rocket
203 Robina Town Centre Drive
QLD 4226 Australia
T 61 7 5557 1000 F 61 7 5557 1099
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Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client BYRON SHIRE COUNCIL
Project MYOCUM QUARRY SURVEY AND REHAB PLAN
Title CROSS SECTIONS - CONTROL LINE 1 SHEET 5 OF 10

Original Size A1 Drawing No: 22-12554185-C010 Rev: A

Plot Date: 3 March 2022 - 12:05 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C010.dwg

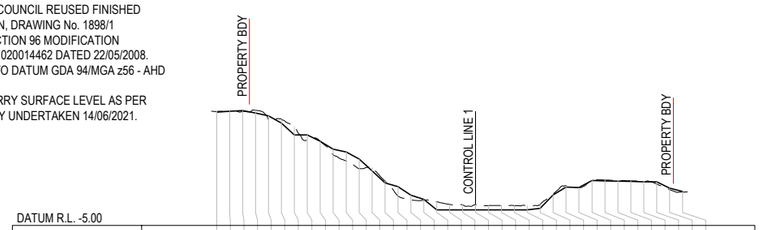
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

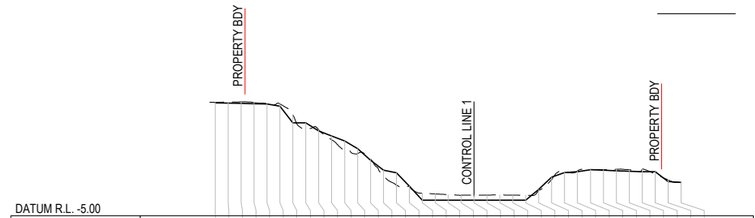
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.29	0.15	0.4	-1.14	1.5	-1.48	-2.97	2.03	0.06	2.18	3.43	3.72	-1.21	-0.71	3.65	1.82	0.32	-3.13	-2.1	3.1	-1.88	-1.92	-1.63	-1.69	-1.63	-1.59	-1.53	-0.4	0.07	-0.13	-0.29	-0.29	-0.24	-0.26	0.58	0.26
EXISTING QUARRY SURFACE LEVEL	39.02	38.9	38.95	39.52	35.82	36.01	32.91	27.91	27.44	22.22	19.89	16.94	17.27	12.14	9.84	6.82	4.74	4.13	3.1		2.88	2.92	2.63	2.69	2.63	2.59	1.571	7.11	10.39	9.58	12.43	12.48	12.36	12.06	10.98	8.8	7.84
COUNCIL APPROVED DESIGN LEVEL	38.731	39.042	39.355	38.375	37.313	34.53	29.935	29.935	27.5	24.395	23.317	20.659	16.058	11.43	9.941	6.636	5.055	1	1	1	1	1	1	1	1	1	1	6.704	9.799	9.652	12.299	12.183	12.071	11.941	11.802	11.802	9.382	8.108
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80

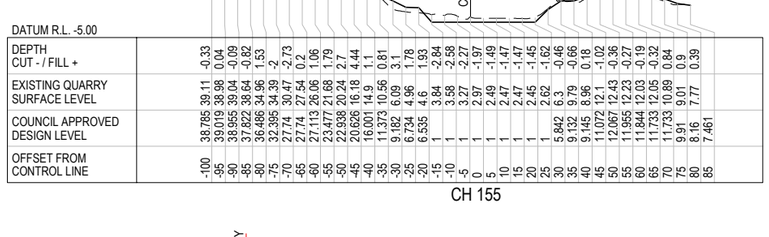
CH 160



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.23	-0.39	-0.59	-0.38	0.05	-0.88	-3.1	2.37	-0.46	1.5	3.29	1.93	2.25	0.2	-2.67	-2.4	-2.12	-1.89	-1.9	-1.93	-2.02	-1.91	-1.85	0.46	0.93	-0.12	-0.3	-0.08	-0.15	-0.57	-0.65	-1.05	-0.65			
EXISTING QUARRY SURFACE LEVEL	38.85	38.9	38.97	38.63	38.11	38.17	34	30.899	28.53	24.33	20.55	18.94	16.87	10.34	6.19	3.67	3.12	2.89	2.9	2.93	3.02	2.91	2.85	5.123	9.842	11.648	11.976	12.79	12.59	12.349	12.132	11.993	11.993	8.156	7.87	
COUNCIL APPROVED DESIGN LEVEL	38.616	38.507	38.383	38.256	38.162	37.294	30.899	30.899	27.705	25.829	23.836	20.873	16.425	12.591	11.531	6.391	1	1	1	1	1	1	1	5.123	9.842	11.648	11.976	12.79	12.59	12.349	12.132	11.993	11.993	8.156	7.87	
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80

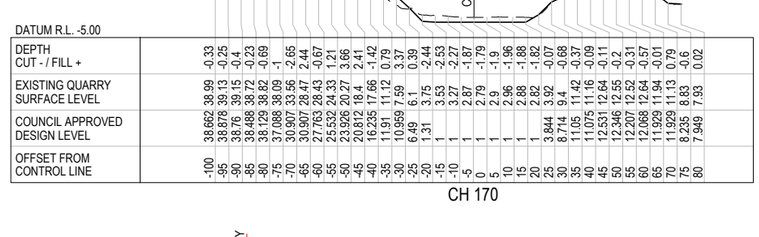
CH 175



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.33	0.04	-0.09	-0.82	1.53	-2	-2.73	0.2	1.06	1.79	2.7	4.44	1.1	0.81	3.78	1.93	-2.84	-2.58	-2.27	-1.97	-1.49	-1.47	-1.47	-1.45	-1.62	-0.46	-0.66	0.18	-1.02	-0.36	-0.27	-0.19	-0.32	0.84	0.9	0.39
EXISTING QUARRY SURFACE LEVEL	39.11	38.98	39.04	38.64	34.96	34.39	30.47	27.54	26.06	21.88	20.24	16.18	14.9	10.56	6.98	4.6				3.27	2.97	2.47	2.47	2.45	2.62	6.3	9.79	9.96	11.072	12.067	11.955	11.844	11.733	11.733	9.91	8.16	7.461
COUNCIL APPROVED DESIGN LEVEL	38.785	39.019	38.955	37.822	36.486	32.395	27.74	27.74	27.113	23.477	22.938	20.626	16.001	11.373	9.124	6.534	4.6	1	1	1	1	1	1	1	1	5.842	9.132	9.145	11.072	12.067	11.955	11.844	11.733	10.89	9.91	8.16	7.461
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

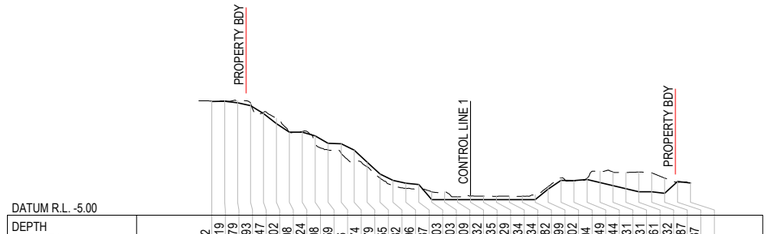
CH 155



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.33	-0.25	-0.4	-0.23	-0.69	-2.65	-2.44	-0.67	1.21	3.66	2.41	-1.42	0.79	3.37	0.39	-2.44	-2.53	-2.27	-1.87	-1.79	-1.9	-1.96	-1.88	-1.82	-0.07	-0.68	-0.37	-0.09	-0.11	-0.2	-0.31	-0.57	-0.01	0.79	-0.6	0.02
EXISTING QUARRY SURFACE LEVEL	38.89	39.13	39.15	38.72	38.09	38.09	36.97	34.43	33.33	30.27	28.4	25.42	23.66	17.66	11.12	7.59	6.1	3.75	3.53	3.27	2.87	2.79	2.9	2.88	2.82	3.92	9.4	11.42	11.16	12.55	12.64	12.52	12.64	12.68	11.94	11.13	8.83	7.93
COUNCIL APPROVED DESIGN LEVEL	38.662	38.878	38.76	38.488	38.129	37.089	30.907	27.763	25.532	23.926	20.812	16.235	11.91	10.959	6.49	1.31	1	1	1	1	1	1	1	1	3.844	8.714	11.05	11.075	12.531	12.207	12.068	11.929	11.929	11.886	8.563	8.028
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80

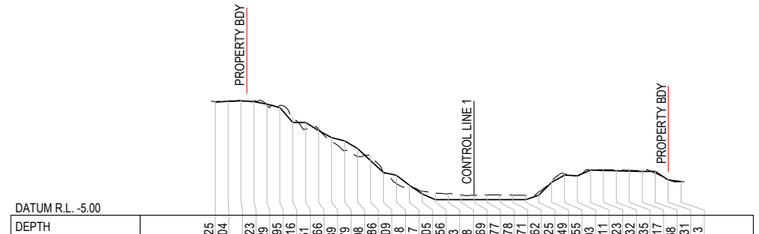
CH 170



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.2	-0.19	-0.79	-0.93	-0.47	-2.02	0.08	-0.24	3.08	2.59	3.6	4.74	1.79	1.55	2.32	1.96	1.87	-3.03	-3.03	-1.09	-1.32	-1.35	-1.29	-1.34	-1.34	-1.82	-0.99	-1.02	0.04	-0.49	-4.44	-5.31	-6.31	-7.61	-7.32	-5.87	0.37
EXISTING QUARRY SURFACE LEVEL	39.09	39.15	39.23	38.2	34.69	32.38	26.99	27.31	22.57	20.17	18.93	15.38	13.71	9.32	6.69	5.45	4.96	4.03	4.03	2.09	2.32	2.35	2.29	2.34	2.34	2.82	6.03	9.43	8.27	9.24	12	11.69	11.5	11.61	11.32	9.34	7.66
COUNCIL APPROVED DESIGN LEVEL	38.89	38.963	38.435	37.268	34.222	30.361	27.07	27.07	25.646	22.759	22.531	20.126	15.499	10.672	9.416	7.304	6.861	1	1	1	1	1	1	1	1	1	5.037	8.406	8.307	8.748	7.562	6.375	5.188	4.002	4.002	3.467	8.031
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85

CH 150



DATUM R.L. -5.00

DEPTH CUT - / FILL +	-0.25	-0.04	-0	-0.23	-0.95	-0.16	-2.51	-0.66	1.39	3.79	2.98	-1.86	-0.09	3.18	1.17	-1.05	-2.56	-2.3	-1.8	-1.69	-1.77	-1.78	-1.71	-1.62	-1.25	-0.49	-0.55	0.03	-0.11	-0.23	-0.32	-0.35	-0.17	0.08	-0.31	0.13
EXISTING QUARRY SURFACE LEVEL	38.94	39.03	39.14	38.96	37.43	37.59	34.29	28.27	28.3	23.57	19.91	17.71	11.57	7.21	5.43	4.24	3.56	3.3	2.8	2.69	2.77	2.78	2.71	2.62	3.96	8.15	10.97	10.19	12.52	12.64	12.46	12.36	12.04	11.19	9.87	7.9
COUNCIL APPROVED DESIGN LEVEL	38.696	38.996	39.137	38.836	37.808	36.585	30.784	27.635	24.964	23.694	20.692	16.091	11.488	10.386	6.601	3.182	1	1	1	1	1	1	1	1	2.707	7.66	10.425	10.219	12.41	12.283	12.144	12.005	11.886	8.563	8.028
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80

CH 165

A	ISSUE FOR INFORMATION	B.C	S.L	A.O	04/03/22
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

GHD
Level 13 The Rocket
203 Robina Town Centre Drive
QLD 4226 Australia
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E goldcoastmail@ghd.com W www.ghd.com

DO NOT SCALE

Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client BYRON SHIRE COUNCIL
Project MYOCUM QUARRY SURVEY AND REHAB PLAN
Title CROSS SECTIONS - CONTROL LINE 1 SHEET 6 OF 10

Original Size A1 Drawing No: 22-12554185-C011 Rev: A

Plot Date: 3 March 2022 - 12:06 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C011.dwg

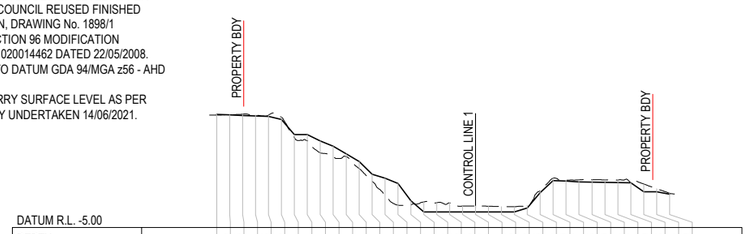
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

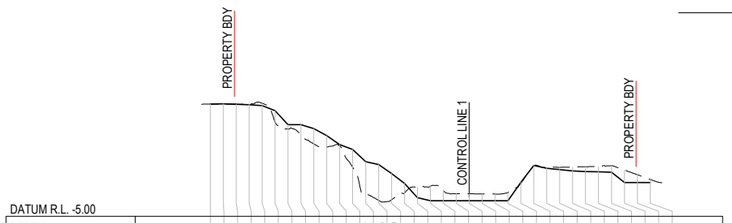
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL	DEPTH CUT - / FILL +
-100	38.687	38.45	0.24
-95	38.509	38.54	-0.03
-90	38.286	38.75	-0.46
-85	38.112	38.41	-0.3
-80	37.938	38.42	-0.48
-75	36.716	37.55	-0.83
-70	30.89	29.71	1.18
-65	30.89	28.5	2.39
-60	28.462	23.84	4.62
-55	26.386	22.31	4.05
-50	23.451	22.39	1.06
-45	20.474	17.74	2.73
-40	15.574	12.92	2.66
-35	14.044	7.4	6.64
-30	13.071	5.62	8.4
-25	5.301	3.77	1.59
-20	1	4.87	-3.87
-15	1	4.54	-3.54
-10	1	4.46	-3.46
-5	1	3.25	-2.25
0	1	3.32	-2.32
5	1	3.2	-2.2
10	1	3.05	-2.05
15	1	3.03	-2.03
20	2.508	3.49	-0.98
25	8.428	9.17	-0.74
30	13.077	14.06	-0.99
35	12.939	13.31	-0.37
40	12.56	13.42	-0.86
45	12.485	13.47	-0.99
50	12.404	13.35	-0.94
55	12.323	13.3	-0.97
60	12.264	12.35	-0.09
65	8.808	11.79	-2.98
70	8.808	9.95	-1.14
75	7.838	8.23	-0.39

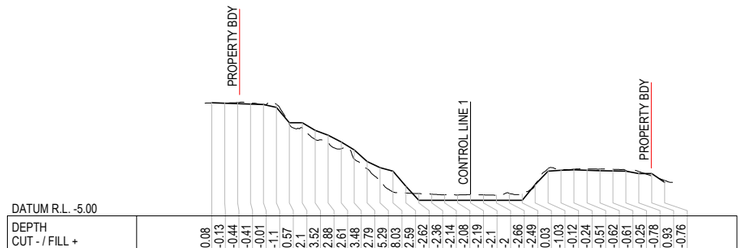
CH 190



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL	DEPTH CUT - / FILL +
-100	38.37	38.37	0
-95	38.446	38.4	0.05
-90	38.279	38.32	-0.04
-85	38.088	38.47	-0.38
-80	37.805	38.65	-0.85
-75	35.841	31.36	4.48
-70	30.387	28.73	1.66
-65	30.387	26.46	3.92
-60	28.873	22.98	5.89
-55	26.2	21.8	4.4
-50	22.679	22.2	0.48
-45	26.094	13.67	12.42
-40	15.016	1.19	13.83
-35	11.565	1.37	10.19
-30	7.692	3.99	3.7
-25	2.204	6.14	-3.93
-20	1	6.58	-5.58
-15	1	5.15	-4.15
-10	1	3.71	-2.71
-5	1	3.7	-2.7
0	1	3.62	-2.62
5	1	3.6	-2.6
10	1	4.2	-3.2
15	1	7.74	0.39
20	8.123	13.86	-0.3
25	14.681	13.93	-0.9
30	13.553	14.02	-1.5
35	13.035	14.17	-1.9
40	12.516	14.31	-2.11
45	12.271	14.57	-2.56
50	12.205	12.89	-4.85
55	12.012	11.07	-3.03
60	8.04	9.25	-1.21
65	8.041		
70	8.041		

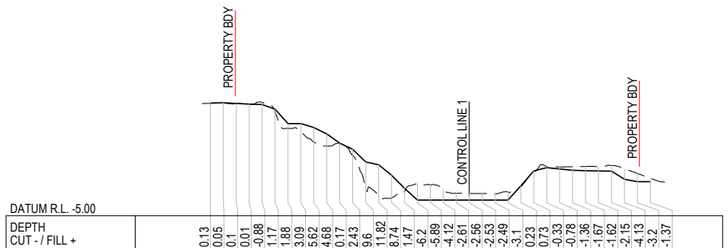
CH 205



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL	DEPTH CUT - / FILL +
-100	38.665	38.58	0.08
-95	38.485	38.62	-0.13
-90	38.316	38.76	-0.44
-85	38.146	38.56	-0.41
-80	38.011	38.02	-0.01
-75	36.912	38.01	-1.1
-70	30.981	30.41	0.57
-65	30.981	28.88	2.1
-60	28.003	24.48	3.52
-55	26.167	23.29	2.88
-50	23.549	20.94	2.61
-45	20.482	17	3.48
-40	15.958	13.17	2.79
-35	13.606	8.32	5.29
-30	12.309	3.84	8.93
-25	6.428	3.62	2.62
-20	1	3.36	-2.36
-15	1	3.14	-2.14
-10	1	3.08	-2.08
-5	1	3.19	-2.19
0	1	3.1	-2.1
5	1	3	-2
10	1	3.66	-2.66
15	1	3.49	-2.49
20	1	3.49	-2.49
25	7.114	7.08	0.03
30	12.235	13.26	-1.03
35	12.618	12.74	-0.12
40	12.776	13.02	-0.24
45	12.62	13.13	-0.51
50	12.465	13.09	-0.62
55	12.384	12.99	-0.61
60	12.303	12.55	-0.25
65	11.338	12.12	-0.78
70	11.338	10.41	0.93
75	7.938	8.7	-0.76

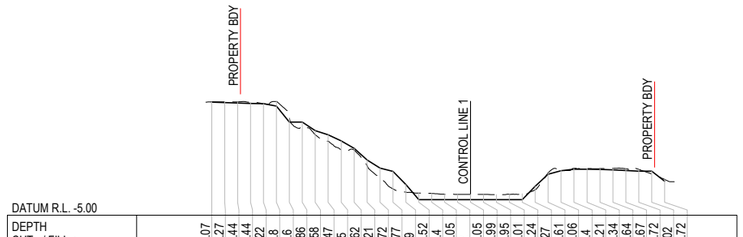
CH 185



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL	DEPTH CUT - / FILL +
-100	38.507	38.38	0.13
-95	38.566	38.51	0.05
-90	38.337	38.24	0.1
-85	38.108	38.09	0.01
-80	37.886	38.76	-0.88
-75	36.17	35	1.17
-70	30.556	28.68	1.88
-65	30.556	27.47	3.09
-60	28.997	23.37	5.62
-55	26.53	21.85	4.68
-50	22.889	23.06	-0.17
-45	21.726	6.12	15.61
-40	14.668	2.85	11.82
-35	10.564	1.82	8.74
-30	5.562	4.09	1.47
-25	1	7.2	-6.2
-20	1	6.89	-5.89
-15	1	5.12	-4.12
-10	1	3.61	-2.61
-5	1	3.56	-2.56
0	1	3.53	-2.53
5	1	3.49	-2.49
10	1	4.1	-3.1
15	1	6.481	0.23
20	6.25	12.247	11.52
25	0.73	13.538	13.87
30	-0.33	13.019	13.8
35	-0.78	12.501	13.96
40	-1.36	12.346	14.01
45	-1.67	12.279	13.9
50	-1.62	12.2	14.35
55	-2.15	12.261	13.95
60	-4.13	11.626	13.42
65	-3.2	8.152	11.55
70	-1.37	8.152	9.67

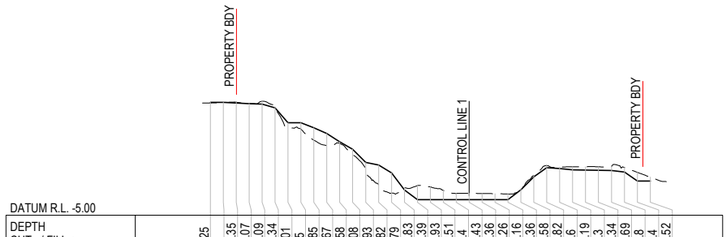
CH 200



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL	DEPTH CUT - / FILL +
-100	38.64	38.71	-0.07
-95	38.481	38.75	-0.27
-90	38.343	38.79	-0.44
-85	38.181	38.62	-0.44
-80	38.087	37.87	0.22
-75	37.098	38.9	-1.8
-70	30.955	32.56	-1.6
-65	30.955	29.09	1.86
-60	27.619	26.04	1.58
-55	26.013	23.54	2.47
-50	23.688	20.19	3.5
-45	20.794	20.18	0.62
-40	16.342	14.13	2.21
-35	13.166	9.45	3.72
-30	11.515	7.45	4.07
-25	6.785	3.89	2.9
-20	1	3.52	-2.52
-15	1	3.4	-2.4
-10	1	3.05	-2.05
-5	1	3	-2.05
0	1	3.05	-2.05
5	1	2.99	-1.99
10	1	2.95	-1.95
15	1	3.01	-2.01
20	1	3.24	-2.24
25	6.124	4.85	1.27
30	10.796	11.4	-0.61
35	12.194	12.25	-0.06
40	12.74	13.14	-0.4
45	12.78	12.99	-0.21
50	12.631	12.97	-0.34
55	12.468	13.11	-0.64
60	12.266	12.94	-0.67
65	11.957	12.68	-0.72
70	11.957	10.93	1.02
75	8.077	8.8	-0.72

CH 180



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL	DEPTH CUT - / FILL +
-100	38.6	38.35	0.25
-95	38.537	38.53	0
-90	38.307	38.65	-0.35
-85	38.104	38.18	-0.07
-80	37.92	39.01	-1.09
-75	36.505	36.84	-0.34
-70	30.723	28.71	2.01
-65	30.723	28.22	2.5
-60	28.799	23.95	4.85
-55	26.393	21.92	4.67
-50	23.3	22.13	0.58
-45	25.356	12.42	2.93
-40	14.362	6.54	7.82
-35	11.293	3.51	7.79
-30	4.746	5.57	-0.83
-25	1	6.39	-5.39
-20	1	5.93	-4.93
-15	1	4.51	-3.51
-10	1	3.4	-2.4
-5	1	3.43	-2.43
0	1	3.36	-2.36
5	1	3.26	-2.26
10	1	3.16	-2.16
15	1	5.19	-0.36
20	4.83	10.39	-0.58
25	9.813	14.17	-0.82
30	13.351	13.67	-0.6
35	13.004	13.61	-0.6
40	12.466	13.67	-1.19
45	12.42	13.72	-1.3
50	12.342	13.68	-1.34
55	12.261	13.95	-1.69
60	11.626	13.42	-1.8
65	8.152	11.55	-3.4
70	8.152	9.67	-1.52

CH 195

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUE FOR INFORMATION	B.C	S.L	A.O	04/03/22

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

GHD
Level 13 The Rocket
203 Robina Town Centre Drive
QLD 4226 Australia
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E goldcoastmail@ghd.com W www.ghd.com

DO NOT SCALE

Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client	BYRON SHIRE COUNCIL
Project	MYOCUM QUARRY SURVEY AND REHAB PLAN
Title	CROSS SECTIONS - CONTROL LINE 1 SHEET 7 OF 10
Original Size	A1
Drawing No:	22-12554185-C012
Rev:	A

Plot Date: 3 March 2022 - 12:06 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C012.dwg

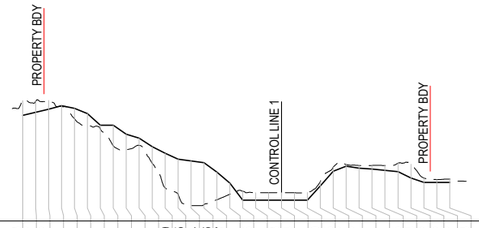
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

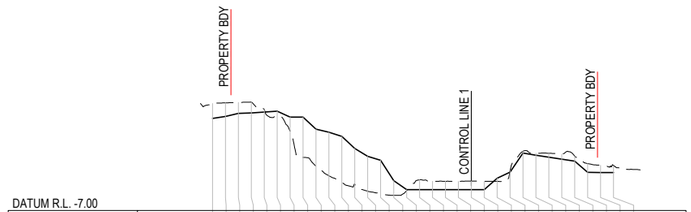
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-5.63	39.45	33.82
-95	-4.27	39.23	34.965
-90	-3.32	39.5	36.18
-85	0.26	37.22	37.487
-80	4.04	32.46	36.501
-75	4.73	29.7	34.44
-70	1.4	29.54	29.938
-65	7.92	22.01	29.938
-60	6.08	20.44	26.52
-55	2.83	22.17	25.004
-50	6.39	15.29	21.68
-45	13.39	5.78	19.17
-40	13.45	3.44	16.886
-35	16.26	1.08	16.16
-30	10.67	0.77	11.447
-25	4.26	1.18	7.585
-20	-3.46	3.33	
-15	-2.91	4.46	
-10	-2.93	3.91	
-5	-2.94	3.93	
0	-2.9	3.94	
5	-2.99	3.99	
10	-1.65	6.556	
15	-1.57	8.2	
20	-0.57	12.232	13.8
25		14.184	14.76
30	-1	13.414	14.41
35	-1.41	13.024	14.444
40	-1.85	12.562	14.41
45	-3.24	12.048	15.29
50	-5.32	9.601	14.92
55	-1.72	7.871	9.59
60	-1.07	7.872	8.95
65	-1.28	7.874	9.16

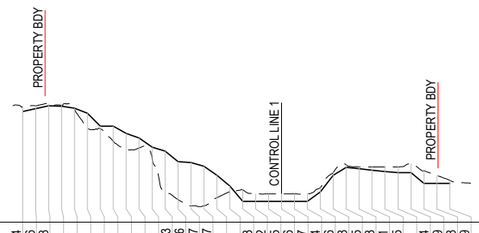
CH 220



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-5.81	34.32	28.508
-95	-5.25	34.54	29.298
-90	-4.27	34.72	30.443
-85	-4.14	34.77	30.627
-80	-1.06	32.02	30.961
-75	1.65	29.65	31.295
-70	5.52	23.56	29.085
-65	15.6	13.48	29.085
-60	16.82	6.36	24.427
-55	14.45	9.98	24.427
-50	17.8	3.79	21.594
-45	13.6	3.1	16.905
-40	13.44	0.41	13.847
-35	12.75	-0.42	12.331
-30	5.71	-1.19	4.511
-25	0.34	0.66	1
-20	-3.01	4.61	1
-15	-3.23	4.23	1
-10	-3.23	4.22	1
-5	-3.34	4.34	1
0	-3.26	4.26	1
5	-0.7	5.398	4.2
10	1.2	7.804	8.5
15	-0.71	15.118	15.83
20	-0.7	14.345	15.04
25	-1.52	13.56	15.08
30	-1.99	12.775	14.77
35	-2.01	11.99	14
40	-3.35	7.716	11.06
45	-2.86	7.586	10.44
50	-2.72	7.586	10.31
55			

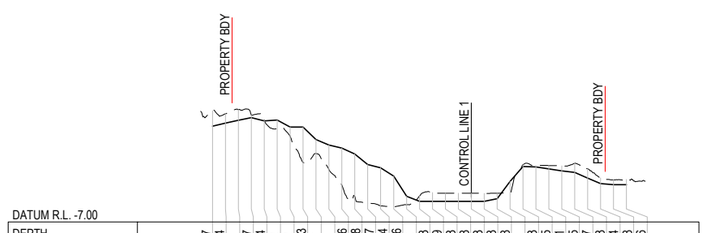
CH 235



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-1.94	37.64	35.696
-95	-1.06	37.92	36.854
-90	-0.68	38.6	37.926
-85	-0.4	38.13	37.733
-80	0.43	36.57	36.999
-75	5.9	29.14	35.041
-70	1.05	29.04	30.087
-65	5.98	24.11	30.087
-60	6.33	20.96	27.295
-55	3.78	21.68	25.465
-50	4.25	17.69	21.939
-45	15.63	4.72	20.353
-40	14.66	1.66	16.34
-35	16.77	0.76	16.005
-30	15.27	0.73	14.54
-25	8.69	4.62	6.944
-20	2.29		
-15	-4.43	5.43	1
-10	-2.92	3.92	1
-5	-2.85	3.85	1
0	-2.86	3.86	1
5	-2.87	3.87	1
10	-2.84	3.84	1
15	-1.66	6.29	4.629
20	-1.08	12.14	11.062
25	-0.95	15.08	14.13
30	-0.73	14.35	13.616
35	-1.21	14.28	13.065
40	-1.75	14.3	12.547
45	-2.2	14.32	12.122
50	-3.54	15.59	12.056
55	-4.89	12.82	7.927
60	-3.08	11.01	7.928
65	-1.19	9.12	7.93

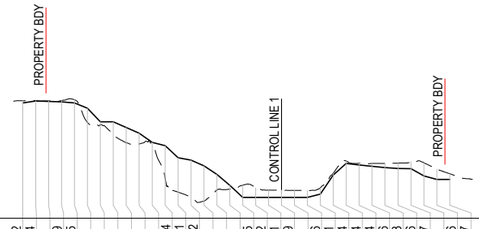
CH 215



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-5.87	35.92	30.043
-95	-3.64	34.83	31.187
-90	-4.1	36.44	32.336
-85	-0.97	34.27	33.308
-80	-0.34	32.42	32.084
-75	3.33	29.08	32.411
-70	3.63	26.02	29.647
-65	13.63	16.02	29.647
-60	5.47	19.42	24.889
-55	9.5	13.24	22.742
-50	14.36	7.21	21.578
-45	16.38	2.87	19.248
-40	14.87	0.34	15.202
-35	14.74	4.79	13.948
-30	11.86	1.11	10.749
-25	3.29	0.37	2.929
-20	2.93	1.03	1
-15	3.13	4.03	1
-10	3.08	4.13	1
-5	3.13	4.08	1
0	3.03	4.03	1
5	2.08	4.13	1
10	4.31	4.09	2.014
15	0.73	4.37	8.671
20	0.45	15.14	14.407
25	1.31	14.74	14.291
30	1.95	14.81	13.506
35	3.47	14.67	12.721
40	3.63	15.65	12.187
45	2.24	13.55	9.925
50	1.88	10.07	7.838
55	2.06	9.27	7.388
60		9.45	7.388

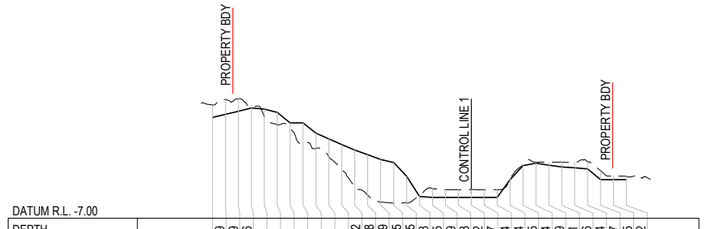
CH 230



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-0.82	38.33	37.509
-95	-0.04	38.28	38.238
-90	-0.2	38.32	38.123
-85	-0.49	38.44	37.946
-80	-1.25	38.74	37.493
-75	5.54	29.97	35.51
-70	1.07	29.16	30.232
-65	4.85	25.38	30.232
-60	5.9	22.13	28.026
-55	4.15	21.68	25.832
-50	1.02	21.24	22.26
-45	12.54	8.45	20.986
-40	13.31	3.04	16.351
-35	14.42	0.99	15.41
-30	13.7	0.48	14.214
-25	6.09	4.84	9.938
-20	1.41	4.22	5.631
-15	-4.75	5.75	1
-10	-3.62	4.62	1
-5	-2.81	3.81	1
0	-2.79	3.79	1
5	-2.7	3.7	1
10	-2.76	3.76	1
15	-2.41	4.67	2.261
20	-0.74	10.37	9.629
25	-0.94	15.05	14.114
30	-0.64	14.21	13.568
35	-1.06	14.11	13.05
40	-1.63	14.17	12.531
45	-2.06	14.25	12.197
50	-2.57	14.7	12.131
55	-5.1	14.39	9.292
60	-3.96	11.95	7.984
65	-2.17	10.15	7.985

CH 210



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-4.8	36.73	31.932
-95	-5.79	38.86	33.076
-90	-4.89	39.15	34.258
-85	-0.86	36.46	35.599
-80	2.92	32.23	35.154
-75	4.77	29.09	33.865
-70	2.12	27.67	29.792
-65	8.11	21.68	29.792
-60	6.94	15.83	25.798
-55	9.77	13.72	23.661
-50	15.88	5.55	21.437
-45	16.49	1.88	19.275
-40	15.65	0.83	17.565
-35	10.25	-1.19	15.665
-30	3.45	1.73	14.455
-25	2.99	4.45	9.167
-20	2.98	3.98	1.347
-15	3.02	4.02	1
-10	2.97	3.97	1
-5	2.94	3.94	1
0	-0.14	7.853	8
5	-0.35	13.319	13.67
10	-0.44	14.238	14.67
15	-1.19	13.452	14.64
20	-1.81	12.801	14.61
25	-2.16	12.41	14.57
30	-2.74	12.02	14.76
35	-3.47	7.836	11.3
40	-1.55	7.871	9.42
45	-1.22	7.885	9.11

CH 225

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
A	ISSUE FOR INFORMATION		B.C	S.L	A.O	04/03/22

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

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Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client: BYRON SHIRE COUNCIL
Project: MYOCUM QUARRY SURVEY AND REHAB PLAN
Title: CROSS SECTIONS - CONTROL LINE 1 SHEET 8 OF 10

Original Size: A1
Drawing No: 22-12554185-C013
Rev: A

Plot Date: 3 March 2022 - 12:06 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C013.dwg

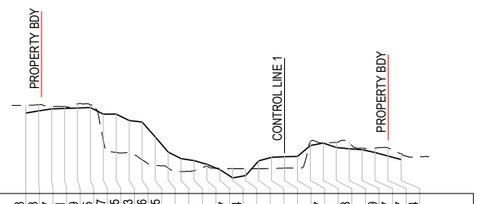
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD
2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

EXISTING QUARRY SURFACE LEVEL

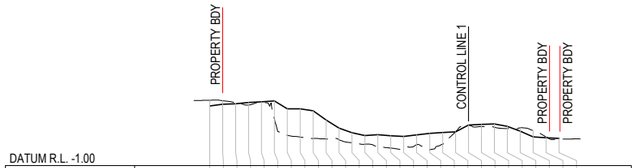
COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-2.98	29.12	26.139
-95	-2.43	29.36	26.922
-90	-0.97	28.66	27.692
-85	-0.71	28.62	27.91
-80	-1.59	29.64	28.055
-75	-0.95	29.14	28.19
-70	10.17	15.49	25.664
-65	14.75	10.91	25.664
-60	12.73	10.5	23.227
-55	14.96	8.06	22.621
-50	10.95	5.92	16.872
-45	6.17	4.69	11.051
-40	4.97	3.53	8.493
-35	3.93	3.84	7.781
-30	0.76	4.52	6.284
-25	-0.47	4.75	4.272
-20	-3.64	4.64	1
-15	-2.6	4.57	1.974
-10	3.01	4.6	7.614
-5	4.34	4.69	9.027
0	4.41	4.84	9.246
5	4.49	4.82	9.312
10	-1.57	15.18	13.612
15	0.13	14.37	14.502
20	-1.93	14.78	12.851
25	-2.9	15.2	12.298
30	-0.59	12.56	11.969
35	-1.67	12.57	10.893
40	-3.17	12.64	9.473
45	-2.24	10.43	8.19

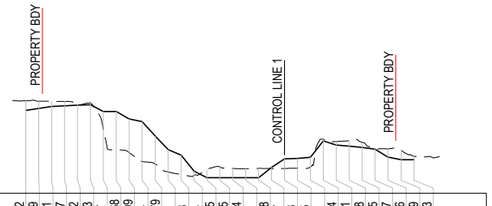
CH 250



DATUM R.L. -1.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-2.23	24.28	22.055
-95	-1.4	24.11	22.714
-90	-0.27	23.21	22.945
-85	0.96	22.41	23.375
-80	0.21	23.44	23.652
-75	6.86	17.14	24
-70	10.17	10.74	20.917
-65	10.84	10.07	20.917
-60	10.7	9.49	20.191
-55	7.3	9.31	16.603
-50	4.46	9.02	13.482
-45	3.8	7.93	11.728
-40	3.34	7.28	10.616
-35	4.43	6.55	10.983
-30	4.72	5.78	10.506
-25	4.58	5.74	10.321
-20	3.94	6.92	10.855
-15	6.35	5.15	11.497
-10	4.68	7.15	11.833
-5	-0	12.06	12.075
0	0.79	14.13	14.914
5	1.29	13.96	15.152
10	0.78	14.15	14.933
15	-2.42	12.54	10.119
20	-0.26	10.09	9.812
25	0.31	9.19	9.505

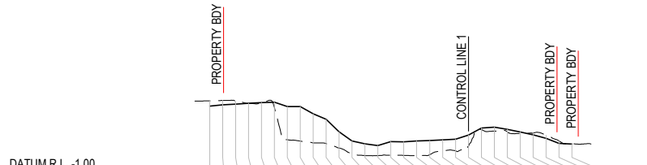
CH 265



DATUM R.L. -5.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-3.72	30.74	27.019
-95	-2.79	30.55	27.763
-90	-2.01	30.51	28.507
-85	-1.67	30.47	28.801
-80	-0.52	29.52	29.002
-75	-0.73	29.93	29.202
-70	6.97	19.66	26.627
-65	11.95	14.68	26.627
-60	10.66	13.09	23.748
-55	7.28	15.4	22.688
-50	10.79	6.28	17.073
-45	8.61	3.24	11.851
-40	7.48	2.23	9.711
-35	1.64	2.89	3.53
-30	-2.95	3.95	1
-25	-3.54	4.54	1
-20	-3.5	4.5	1
-15	-3.68	4.68	1
-10	0.47	4.53	4.993
-5	3.78	4.55	8.329
0	3.85	4.63	8.47
5	3.7	5.22	8.919
10	-0.64	15.88	15.239
15	-1.41	15	13.588
20	-2.28	15.44	13.167
25	-1.85	14.53	12.687
30	-0.17	12.2	12.025
35	-3.16	12.09	8.933
40	-3.69	11.64	7.953
45	-1.33	9.28	7.953

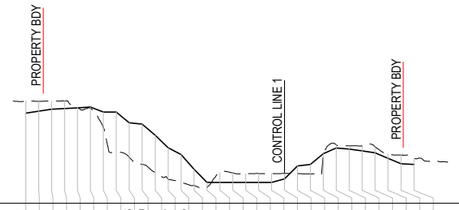
CH 245



DATUM R.L. -1.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-2.09	25.9	23.817
-95	-1.67	26.03	24.358
-90	-1.03	25.67	24.636
-85	0.07	24.85	24.914
-80	0.14	25.02	25.17
-75	1.94	23.4	25.34
-70	12.75	10.9	23.649
-65	13.32	10.33	23.649
-60	11.29	9.62	20.916
-55	9.32	9.41	18.735
-50	6.27	7.65	13.916
-45	5.12	5.31	10.427
-40	4.5	4.76	9.253
-35	3.91	4.72	8.632
-30	5.25	4.89	10.148
-25	5.49	4.92	10.062
-20	5.47	5.1	10.571
-15	4.15	6.65	10.8
-10	4.48	6.56	11.034
-5	4.35	8.33	12.678
0	0.65	14.77	15.42
5	1	14.22	15.718
10	0.98	13.98	14.878
15	0.91	13.26	13.675
20	-0.77	13.51	12.743
25	-1.17	12.56	11.394
30	-0.99	10.42	9.429
35	-0.19	9.36	9.166

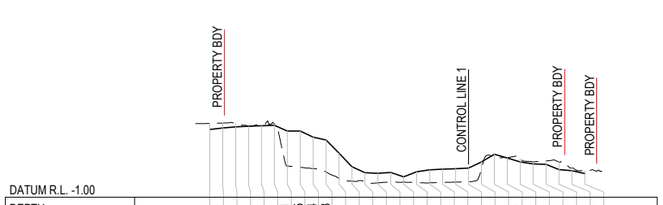
CH 260



DATUM R.L. -7.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-4.73	32.53	27.795
-95	-3.84	32.38	28.539
-90	-3.14	32.42	29.283
-85	-2.92	32.51	29.594
-80	-0.35	30.2	29.845
-75	0.46	29.71	30.179
-70	6.02	22.16	28.188
-65	15.51	12.67	28.188
-60	13.36	10.7	24.064
-55	15.59	7.99	23.582
-50	14.4	4.8	19.202
-45	12.07	2.32	14.391
-40	10.63	1.11	11.742
-35	6.29	0.19	6.693
-30	3.87	4.87	1
-25	-3.75	4.75	1
-20	-3.4	4.4	1
-15	-3.47	4.47	1
-10	-3.41	4.41	1
-5	-2.1	4.47	2.371
0	2.93	4.47	7.397
5	3.64	4.29	7.936
10	1.06	11.08	12.149
15	-1.29	15.61	14.325
20	-1.28	15.18	13.905
25	-1.93	15.12	13.188
30	-2.41	14.83	12.421
35	-1.6	11.94	10.336
40	-3.4	11.59	8.189
45	-2.44	10.4	7.966

CH 240



DATUM R.L. -1.00

OFFSET FROM CONTROL LINE	DEPTH CUT - / FILL +	EXISTING QUARRY SURFACE LEVEL	COUNCIL APPROVED DESIGN LEVEL
-100	-2.33	27.51	25.181
-95	-1.89	27.64	25.755
-90	-1.26	27.44	26.175
-85	0.08	26.37	26.453
-80	-0.32	26.94	26.625
-75	-0.46	27.26	26.796
-70	13.51	11.02	24.53
-65	13.95	10.58	24.53
-60	12.14	10.06	22.202
-55	12.38	8.73	21.111
-50	9.72	6.29	16.009
-45	5.61	5.18	10.793
-40	3.37	5.12	8.497
-35	3.72	4.51	8.235
-30	3.7	4.83	8.525
-25	2.08	4.8	6.878
-20	4.17	4.68	8.845
-15	5.04	4.54	9.572
-10	5.09	4.7	9.791
-5	5.21	4.81	10.024
0	5.26	5.98	10.235
5	2.39	10.25	12.637
10	1.28	14.32	15.605
15	-0.19	14.41	14.219
20	-0.62	13.87	13.249
25	-1.28	12.68	11.859
30	-2.97	12.58	11.729
35	-1.03	10.3	9.273
40	-0.97	9.14	8.169

CH 255

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUE FOR INFORMATION	B.C	S.L	A.O	04/03/22

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

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Drawn	B. COLLISTER	Designer	B. COLLISTER
Drafting Check	M. MASON	Design Check	S. LAWER
Approved (Project Director)	A. OLIVER		
Date	04/03/22		
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client: BYRON SHIRE COUNCIL
Project: MYOCUM QUARRY SURVEY AND REHAB PLAN
Title: CROSS SECTIONS - CONTROL LINE 1
SHEET 9 OF 10

Original Size: A1 **Drawing No: 22-12554185-C014** **Rev: A**

Plot Date: 3 March 2022 - 12:06 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C014.dwg

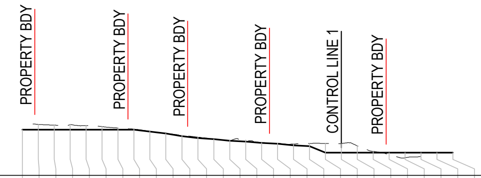
NOTE

1. COUNCIL APPROVED DESIGN LEVEL AS PER BYRON SHIRE COUNCIL REUSED FINISHED CONTOUR PLAN, DRAWING No. 1898/1 02/11/2007. SECTION 96 MODIFICATION CONSENT No. 1020014462 DATED 22/05/2008. TRANSLATED TO DATUM GDA 94/MGA z56 - AHD

2. EXISTING QUARRY SURFACE LEVEL AS PER AERIAL SURVEY UNDERTAKEN 14/06/2021.

LEGEND

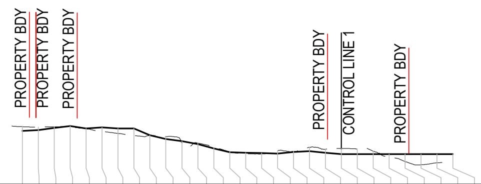
- – – – – EXISTING QUARRY SURFACE LEVEL
- ——— COUNCIL APPROVED DESIGN LEVEL



DATUM R.L. 4.00

DEPTH CUT - / FILL +		-1.67	-1.45	-1.61	-1.3	-1	-0.55	-0.2	-0.09	-0.02	-0.3	-0.27	-0.04	-0.13	-0.53	-0.06	-0.13	-0.41	-0.86	-2.85	-2.82	-2.1	-0.41	0.64	1.61			
EXISTING QUARRY SURFACE LEVEL		19.95	19.73	19.89	19.57	19.28	18.83	18.48	17.78	17.11	16.57	15.97	15.37	14.96	15.08	14.24	14.05	13.84	14.01	13.98	13.95	13.23	11.54	10.49	9.52			
COUNCIL APPROVED DESIGN LEVEL	18.276	18.276	18.276	18.276	18.276	18.276	18.276	18.276	17.692	17.099	16.275	15.697	15.333	14.832	14.55	14.175	13.92	13.425	13.156	11.129	11.129	11.129	11.129	11.129	11.129	11.129	11.129	
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35

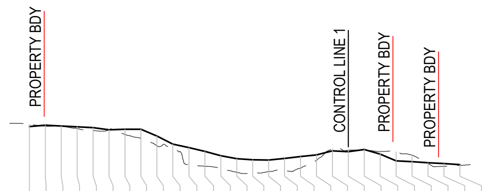
CH 280



DATUM R.L. 3.00

DEPTH CUT - / FILL +	-1.28	-0.91	-0.36	0.28	0.12	1.21	1.59	2.24	0.16	-0.76	0.53	-0.33	-0.26	-0.13	0.3	0.23	-0.87	-0.15	-1.19	-1.11	-1.75	-1.59	-0.92	0.92	2.35	3.35	2.73	
EXISTING QUARRY SURFACE LEVEL	20.99	20.82	20.92	20.93	20.33	19.55	18.88	18.23	18.18	17.86	15.93	15.84	14.44	13.13	12.54	12.48	13.46	13.19	14.52	13.95	14.16	14	13.32	11.48	10.05	9.05	9.68	
COUNCIL APPROVED DESIGN LEVEL	19.703	19.906	20.558	21.212	20.451	20.764	20.469	20.469	18.349	17.099	16.463	15.518	14.178	13.002	12.839	12.716	12.592	13.048	13.335	12.841	12.405	12.405	12.405	12.405	12.405	12.405	12.405	12.405
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35

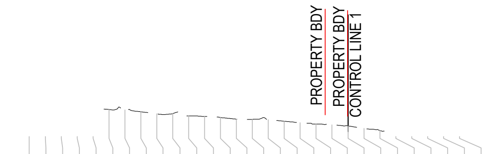
CH 275



DATUM R.L. 1.00

DEPTH CUT - / FILL +	-0.7	0.24	0.2	0.5	0.91	-0.04	1.62	2.9	3.06	1.51	5.32	4.59	3.93	4.29	4.12	3.63	3.91	3.66	1.74	-0.67	-0.45	0.24	-0.85	-2.76	-2.09	0.3	0.81	0.24
EXISTING QUARRY SURFACE LEVEL	22.23	21.69	21.47	20.92	20.26	20.57	19.08	17.8	15.55	14.56	9.62	9.12	8.43	7.2	6.97	7.45	7.68	8.51	10.92	14.56	14.13	14.11	13.79	13.59	12.62	9.92	9.1	9.36
COUNCIL APPROVED DESIGN LEVEL	21.535	21.933	21.676	21.419	21.17	20.526	20.7	20.7	18.609	16.067	14.94	13.716	12.363	11.489	11.088	11.076	11.589	12.17	12.661	13.891	13.68	14.356	12.945	10.829	10.522	10.215	9.909	9.602
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35

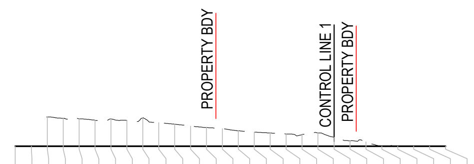
CH 270



DATUM R.L. 3.00

DEPTH CUT - / FILL +						-8.46	-8.31	-7.73	-7.1	-7.16	-6.47	-6.31	-5.97	-5.44	-5.38	-5.25	-4.79	-4.29	-3.92	-3.65	-3.35	-2.54	-1.91					
EXISTING QUARRY SURFACE LEVEL						17.03	16.89	16.31	15.68	15.74	15.05	14.88	14.55	14.02	13.96	13.83	13.37	12.87	12.5	12.23	11.93	11.12	10.49					
COUNCIL APPROVED DESIGN LEVEL	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579	8.579
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35

CH 290



DATUM R.L. 4.00

DEPTH CUT - / FILL +			-9.2	-8.77	-8.63	-8.15	-8.6	-8.06	-8.89	-7.37	-6.93	-6.33	-5.85	-5.51	-4.84	-4.48	-4.2	-3.87	-3.68	-4.21	-2.8	-1.74	-1.39	0.01				
EXISTING QUARRY SURFACE LEVEL			19.05	18.63	18.48	18.01	18.45	17.92	18.75	17.23	16.78	16.18	15.7	15.37	14.69	14.34	14.06	13.72	13.54	14.06	12.65	11.59	11.24	9.85				
COUNCIL APPROVED DESIGN LEVEL	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854
OFFSET FROM CONTROL LINE	-100	-95	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0	5	10	15	20	25	30	35

CH 285

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUE FOR INFORMATION	B.C	S.L	A.O	04/03/22

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

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Drawn: B. COLLISTER | Designer: B. COLLISTER
Drafting Check: M. MASON | Design Check: S. LAWER
Approved (Project Director): A. OLIVER
Date: 04/03/22
Scale: AS SHOWN
This Drawing must not be used for Construction unless signed as Approved

Client: **BYRON SHIRE COUNCIL**
Project: **MYOCUM QUARRY SURVEY AND REHAB PLAN**
Title: **CROSS SECTIONS - CONTROL LINE 1 SHEET 10 OF 10**
Original Size: **A1** Drawing No: **22-12554185-C015** Rev: **A**

Plot Date: 3 March 2022 - 12:06 PM Plotted by: Michael Mason Cad File No: G:\22\12554185\CADD\Drawings\22-12554185-C015.dwg

Bourke, Nikki

From: Larkin, Chris
Sent: Thursday, February 3, 2022 3:20 PM
To: Bourke, Nikki; Smith, Greg
Cc: Scott, Noreen
Subject: RE: Myocum Quarry DA rgregeview

Hi Nikki

None of my team really have any history on this site or the previous DA's for the quarry as far as I know.

I see GHD have though undertaken a thorough review of the DA approval and provided you with options moving forward.

....

Notwithstanding, the following brief comments are provided:

1. There are issues with non-compliance with conditions of consent as identified under Section 5.3.4 of the report.
   These need to be addressed by either complying with the conditions in a timely manner or amending the consent so you can get the timeframes for the rehabilitation extended.
2. Agree with GHD – Do nothing option leaves Council open to commencing compliance action against itself.
3. Amending the consent to increase extraction maybe an option as also highlighted under Section 6.1.3 – however the development needs to satisfy Section 4.55 of the EPA Act 1979 and be substantially the same development as approved.
   In this regard the increase in extraction area and volume need to be similar to what is approved. I see 30,000 m3 discussed – not sure as a percentage if this is a 5% increase or a 50% in volumes overall. I also note you have approval for 30,000 tonnes per annum for extraction under condition 13 of the consent. A 5% increase would be within the realm of substantially the same development 10% maybe, but anymore than that – probably needs to go down a new DA path.
   This also needs to be considered in terms of what is the extra area that is now to be quarried. A 5-10% increase in quarried area may be Ok but again an increase in area beyond that becomes questionable as a S4.55 Application.
4. A clear and simple plan showing the property boundaries, areas of approved extraction, areas of unapproved extraction and future areas of extra extractions would assist greatly in understanding what has happened onsite to date and what is proposed in the future. This may also assist ET understand what is proposed going forward
5. Any new DA or S4.55 amending application to increase the extraction area and volumes could then come up with a new rehab plan with a timeframe for completion.
6. A new DA if approved can include a new Rehab plan which affectively replaces what has been approved under the 2001 consent.
7. If there are extraction areas on the site that have been exhausted already and can be rehabilitated it would be prudent, and my recommendation, **to commence those works now as a show of good faith in terms or rehabilitating the site.**

Hope these comments on the run will suffice – let me know

Cheers

Chris

Chris Larkin | Manager Sustainable Development | BYRON SHIRE COUNCIL

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