



Appendices

(Total No. of pages including blank pages = 108)

- | | |
|------------|--|
| Appendix 1 | Landowner Consent for the Application (4 pages) |
| Appendix 2 | Estimate of Capital Investment Value for the Project (6 pages) |
| Appendix 3 | Secretary's Environmental Assessment Requirements and Matters Identified for Consideration (32 pages) |
| Appendix 4 | Coverage of Secretary's Environmental Assessment Requirements and Requirements of Consulted Government Agencies (12 pages) |
| Appendix 5 | Consultation Materials – prepared by Advanced Environmental Systems (4 pages) |
| Appendix 6 | Resource Assessment – February 2018 Prepared by Hanson Construction Materials (6 pages) |
| Appendix 7 | Structure Assessment of the Black Swan Anabranh Bridge – prepared by S.J. Street & Associates (30 pages) |
| Appendix 8 | Environmental Risk Assessment (12 pages) |



ENVIRONMENTAL IMPACT STATEMENT

Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

This page has intentionally been left blank



Appendix 1

Landowner Consent for the Application

(Total No. of pages including blank pages = 4)



ENVIRONMENTAL IMPACT STATEMENT

Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

This page has intentionally been left blank



Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

Nangunia Pastoral Pty Ltd
ABN 41 269 568 295
Table Top Holdings Pty Ltd
ABN 53 889 334 126
Suite 4 Level 1
576 Kiewa Street
Albury NSW 2640

1 May 2019

The Secretary
Department of Planning and Heritage
GPO Box 39
Sydney NSW 2001

Dear Sir

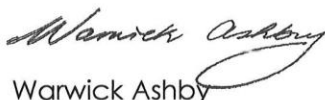
Re: SSD 17_8804
Quarry Extension – Riverina Highway, Howlong NSW 2643

I have been asked to write and confirm my understanding and to affirm my consent in respect of the Application referred to above in my Capacity as Director of each of the abovenamed Companies.

In respect of both of the above named Companies being the Landowner and Current License Holder I confirm that arrangements are in place to allow the Applicant full and unfettered access and control of this Project and that the Application/EIS has been reviewed by me and has my consent and full and unconditional support.

If you require any further information or comment, please do not hesitate to contact me.

Yours faithfully


Warwick Ashby
Director



ENVIRONMENTAL IMPACT STATEMENT

Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

This page has intentionally been left blank



Appendix 2

Estimate of Capital Investment Value for the Project

(Total No. of pages including blank pages = 6)



ENVIRONMENTAL IMPACT STATEMENT

Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

This page has intentionally been left blank



Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project



The Secretary
Department of Planning & Environment
GPO Box 39
Sydney NSW 2001

Warwick Ashby M.AgrBus B.Com FCA

Level 1, 576 Kiewa Street
Albury NSW 2640
PO Box 732
Albury NSW 2640
02 6021 3222
02 6021 3444
office@ashbyca.com.au
ABN 55 486 035 485

28 February 2019

Dear Sir/Madam,

RE: CAPITAL INVESTMENT VALUE - SSD 17_8804
PROPOSED QUARRY EXTENSION
Riverina Highway Howlong NSW 2643

Please find attached our Capital Investment Value estimate in the amount of \$5,099,000 (five million and ninety nine thousand dollars) *excluding* GST for the above development.

The Capital Investment Value has been calculated in accordance with the definition contained in the Environmental Planning and Assessment Regulation being:

"capital investment value of a development or project includes all costs necessary to establish and operate the project, including the design and construction of buildings, structures, associated infrastructure and fixed or mobile plant and equipment, other than the following costs:

- a) Amounts payable, or the cost of land dedicated or any other benefit provided, under a condition imposed under Division 6 or 6A of Part 4 of the *Environmental Planning and Assessment Act* or a planning agreement under that Division;
- b) Costs relating to any part of the development or project that is the subject of a separate development consent or project approval;
- c) Land costs (including any costs of marketing and selling land);

www.ashbyca.com.au



Chartered Accountants

Liability limited by a scheme approved
under Professional Standards Legislation



page



Tax agent
53727008



- d) GST (as defined by A New Tax System (Goods and Services Tax) Act 1999 of the Commonwealth)".

I confirm that in my opinion all of the information provided is accurate as of the date of this letter.

I trust that this information is sufficient for your purposes, however should you require any further information or clarification, please do not hesitate to contact the writer as required.

Yours faithfully

Warwick T Ashby

Relevant qualifications:

Bachelor of Commerce (UNSW)
Fellow – Chartered Accountants Australia & New Zealand
Master of AgriBusiness (Melbourne)
Registered Company Auditor



Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

Capital Value Estimate

Project: Tarcoola
 Quarry
Client's Name: Fraser Quarry
 Services

Project:
 Proposed Quarry Extension
 Riverina Highway Howlong
 NSW

Action		%	Total
1	Earthworks, roadworks and other civil works + revegetation	7.75	395,000
2	RMS works	4.31	220,000
3	Building Works	2.35	120,000
4	Fencing	4.31	220,000
5	External Services	8.24	420,000
6	Mobile plant	26.87	1,370,000
7	Fixed plant	39.01	1,989,000
8	Water control	2.41	123,000
9	Subtotal		4,582,000
10	Consultants Fees Allowance	4.75	242,000
11	GST exclusive "Capital Investment Value" as defined	100.00	5,099,000

Final Sum: \$ 5,099,000



ENVIRONMENTAL IMPACT STATEMENT

Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

This page has intentionally been left blank



Appendix 3

Secretary's Environmental Assessment Requirements and Matters Identified for Consideration

(Total No. of pages including blank pages = 32)



ENVIRONMENTAL IMPACT STATEMENT

Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

This page has intentionally been left blank



Secretary's Environmental Assessment Requirements

State Significant Development

Section 78A(8A) of the *Environmental Planning and Assessment Act 1979*
Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*

Application Number	SSD 17_8804
Proposal	The Howlong Sand and Gravel Quarry Expansion Project, which involves: - expanding the existing quarry to extract and process up to 300,000 tonnes per annum of sand and gravel, for up to 30 years; - constructing associated site infrastructure and amenities; - transporting material off-site via public roads; and - progressively rehabilitating the site.
Location	4343 Riverina Highway, Howlong, NSW, 2643 (Lot 173 DP 753744, Lot 174 DP 753744, Lot 174A DP 753744, Lot 231 DP 753744, Lot 1 DP 1039973, Lot 1 DP 798291, Lot 3 DP 113703)
Applicant	Fraser Earthmoving Construction Pty Ltd
Date of Issue	7 November 2017
General Requirements	The Environmental Impact Statement (EIS) for the development must comply with the requirements in Clauses 6 and 7 of Schedule 2 of the <i>Environmental Planning and Assessment Regulation 2000</i>. In particular, the EIS must include: - a stand-alone executive summary; - a full description of the development, including: - the resource to be extracted, including the amount, type and composition; - the site layout and extraction plan, including cross-sectional plans; - the production process and processing activities, including the in-flow and out-flow of materials and points of discharge to the environment; - surface infrastructure and facilities (including any infrastructure that would be required for the development, but the subject of a separate approvals process); - a waste (overburden, rejects, tailings etc) management strategy; - a water management strategy; - a rehabilitation strategy to apply during, and after completion of, extraction operations, and proposed final use of site; and - the likely interactions between the development and any existing, approved or proposed development in the vicinity of the site; - a strategic justification of the development focusing on site selection and the suitability of the proposed site; - a list of any approvals that must be obtained before the development may commence; - an assessment of the likely impacts of the development on the environment, focussing on the key issues identified below, including: - a description of the existing environment likely to be affected by the development, using sufficient baseline data; - an assessment of the likely impacts of all stages of the development, including any cumulative impacts, taking into consideration any relevant laws, environmental planning instruments, guidelines, policies, plans and industry codes of practice; - a description of the measures that would be implemented to avoid, minimise, mitigate and/or offset the likely impacts of the development, and an assessment of:



	○ whether these measures are consistent with industry best practice, and represent the full range of reasonable and feasible mitigation measures that could be implemented; ○ the likely effectiveness of these measures; and ○ whether contingency measures would be necessary to manage any residual risks; and – a description of the measures that would be implemented to monitor and report on the environmental performance of the development; • a consolidated summary of all the proposed environmental management and monitoring measures, identifying all the commitments in the EIS; • consideration of the development against all relevant environmental planning instruments (including Part 3 of the <i>State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007</i>); • the reasons why the development should be approved, having regard to: – relevant matters for consideration under the <i>Environmental Planning and Assessment Act 1979</i>, including the objects of the Act; – the biophysical, economic and social impacts of the project, including the principles of ecologically sustainable development; – the suitability of the site with respect to potential land use conflicts with existing and future surrounding land uses; – feasible alternatives to the development (and its key components), including the consequences of not carrying out the development; • a signed declaration from the author of the EIS, certifying that the information contained within the document is neither false nor misleading. While not exhaustive, Attachment 1 contains a list of some of the environmental planning instruments, guidelines, policies, and plans that may be relevant to the environmental assessment of this development. In addition to the matters set out in Schedule 1 of the <i>Environmental Planning and Assessment Regulation 2000</i>, the development application must be accompanied by a signed report from a suitably qualified expert that includes an accurate estimate of the capital investment value (as defined in Clause 3 of the <i>Environmental Planning and Assessment Regulation 2000</i>) of the development, including details of all the assumptions and components from which the capital investment value calculation is derived.
Key Issues	The EIS must address the following key issues: • Water – including: - a detailed site water balance, including a description of site water demands, water disposal methods (inclusive of volume and frequency of any water discharges), water supply infrastructure and water storage structures; - identification of any licensing requirements or other approvals under the <i>Water Act 1912</i> and/or <i>Water Management Act 2000</i>; - demonstration that water for the construction and operation of the development can be obtained from an appropriately authorised and reliable supply in accordance with the operating rules of any relevant Water Sharing Plan (WSP); - a description of the measures proposed to ensure the development can operate in accordance with the requirements of any relevant WSP or water source embargo; - an assessment of any likely flooding impacts of the development; - a detailed consideration of maintenance of an adequate buffer between all excavations at the highest predicted regional groundwater table; - an assessment of the likely impacts on the quality and quantity of existing surface and ground water resources, including a detailed assessment of proposed water discharge quantities and quality against receiving water quality and flow objectives; - an assessment of the likely impacts of the development on aquifers, watercourses, riparian land, water-related infrastructure, and other water users; and - a detailed description of the proposed water management system (including sewage), water monitoring program and other measures to



	mitigate surface and groundwater impacts; • Noise – including: - a detailed assessment of the likely construction, operational and off-site transport noise impacts of the development in accordance with the <i>Interim Construction Noise Guideline</i>, <i>NSW Noise Policy for Industry</i> and the <i>NSW Road Noise Policy</i> respectively, and having regard to the <i>Voluntary Land Acquisition and Mitigation Policy</i>; - if a claim is made for specific construction noise criteria for certain activities, then this claim must be justified and accompanied by an assessment of the likely construction noise impacts of these activities under the <i>Interim Construction Noise Guideline</i>; - reasonable and feasible mitigation measures to minimise noise emissions; and - monitoring and management measures, in particular real-time and attended noise monitoring; • Air Quality – including: - a detailed assessment of potential construction and operational impacts, in accordance with the <i>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW</i>, and with a particular focus on dust emissions including PM_{2.5} and PM₁₀, and having regard to the <i>Voluntary Land Acquisition and Mitigation Policy</i>; - an assessment of potential dust and other emissions generated from processing, operational activities and transportation of quarry products; - reasonable and feasible mitigation measures to minimise dust and emissions; and - monitoring and management measures, in particular, real-time air quality monitoring; • Biodiversity – including: - accurate predictions of any vegetation clearing on site; - a detailed assessment of the likely biodiversity impacts of the development, paying particular attention to threatened species, populations and ecological communities and groundwater dependent ecosystems, and having regard to the <i>NSW Biodiversity Offsets Policy for Major Projects</i> and the <i>Biodiversity Assessment Method</i>; and - a strategy to offset any residual impacts of the development in accordance with the <i>NSW Biodiversity Offsets Policy for Major Projects</i>, including evidence that the appropriate type and quantum of offsets will be available; • Heritage – including: - an assessment of the potential impacts on Aboriginal heritage (cultural and archaeological), including evidence of appropriate consultation with relevant Aboriginal communities/parties and documentation of the views of these stakeholders regarding the likely impact of the development on their cultural heritage; and - identification of historic heritage in the vicinity of the development and an assessment of the likelihood and significance of impacts on heritage items, having regard to the relevant policies and guidelines listed in Attachment 1; • Traffic & Transport – including: - accurate predictions of the road traffic generated by the construction and operation of the development, including a description of the types of vehicles likely to be used for transportation of quarry products; - a detailed assessment of potential traffic impacts on the capacity, condition, safety and efficiency of the local and State road network (as identified above); and - a description of the measures that would be implemented to mitigate any impacts, including concept plans of any proposed upgrades, developed in consultation with the relevant road and rail authorities (if required); • Land Resources – including a detailed assessment of: - potential impacts on soils and land capability (including potential erosion and land contamination) and the proposed mitigation, management and remedial measures (as appropriate); - potential impacts on landforms (topography), paying particular attention to
--	---



	the long term geotechnical stability of any new landforms (such as overburden dumps, bunds etc); and - the compatibility of the development with other land uses in the vicinity of the development in accordance with the requirements in Clause 12 of <i>State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries)</i> 2007, paying particular attention to the agricultural land use in the region; • Waste – including estimates of the quantity and nature of the waste streams that would be generated or received by the development and any measures that would be implemented to minimise, manage or dispose of these waste streams; • Hazards – including an assessment of the likely risks to public safety, paying particular attention to potential bushfire risks and the transport, handling and use of any hazardous or dangerous goods; • Visual – including a detailed assessment of the likely visual impacts of the development on private landowners in the vicinity of the development and key vantage points in the public domain, paying particular attention to any new landforms, and to minimising the lighting impacts of the development; • Social & Economic – including: - a detailed assessment of the likely social impacts of the development on the local and regional community in accordance with the <i>Social impact assessment guideline for State significant mining, petroleum production and extractive industry development</i>; and - a detailed assessment of the likely economic impacts of the development, paying particular attention to: - o the significance of the resource; - o the costs and benefits of the project; identifying whether the development as a whole would result in a net benefit to NSW, including consideration of fluctuation in commodity markets and exchange rates; and - o the demand for the provision of local infrastructure and services; and • Rehabilitation – including the proposed rehabilitation strategy for the site having regard to the key principles in the <i>Strategic Framework for Mine Closure</i>, including: - rehabilitation objectives, methodology, monitoring programs, performance standards and proposed completion criteria; - nominated final land use, having regard to any relevant strategic land use planning or resource management plans or policies; and - the potential for integrating this strategy with any other rehabilitation and/or offset strategies in the region.
Consultation	During the preparation of the EIS, you must consult with relevant local, State and Commonwealth Government authorities, service providers, Aboriginal stakeholders, community groups and affected landowners. You must: • consult with: - affected landowners; - community groups; - Federation Council; - Office of Environment and Heritage (including the Heritage Branch); - Environment Protection Authority; - Division of Resources and Geoscience within the Department; - Department of Primary Industries (including Crown Lands and Water, NSW Forestry, Agriculture and Fisheries); - Murray Local Land Services; - Roads and Maritime Services; and - NSW Rural Fire Service. The EIS must: • describe the consultation process used and demonstrate that effective consultation has occurred; • describe the issues raised by public authorities, service providers, community



Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

	groups and landowners; • identify where the design of the development has been amended in response to issues raised; and otherwise demonstrate that issues raised have been appropriately addressed in the assessment.
Further consultation after 2 years	If you do not lodge a development application and EIS for the development within 2 years of the issue date of these requirements, you must consult further with the Secretary in relation to the preparation of the EIS.



ATTACHMENT 1

Environmental Planning Instruments, Policies, Guidelines & Plans**Air**

Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Developments (DP&E)

Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA)

Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (EPA)

Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into the 'Approved Methods for the Modelling and Assessments of Air Pollutants in NSW, Australia'

National Greenhouse Accounts Factors (Commonwealth)

Noise

Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Developments (DP&E)

NSW Noise Policy for Industry (EPA)

Interim Construction Noise Guideline (DECC)

NSW Road Noise Policy (EPA)

Water

Groundwater

NSW State Groundwater Policy Framework Document (NOW)

NSW State Groundwater Quality Protection Policy (NOW)

NSW State Groundwater Quantity Management Policy (NOW)

NSW Aquifer Interference Policy 2012 (NOW)

Office of Water Guidelines for Controlled Activities (2012)

Groundwater Monitoring and Modelling Plans – Information for prospective mining and petroleum exploration activities (NOW)

Australian Groundwater Modelling Guidelines 2012 (Commonwealth)

National Water Quality Management Strategy Guidelines for Groundwater Protection in Australia (ARMCANZ/ANZECC)

Guidelines for the Assessment & Management of Groundwater Contamination (EPA)

Surface Water

NSW Government Water Quality and River Flow Objectives (EPA)

Using the ANZECC Guideline and Water Quality Objectives in NSW (EPA)

National Water Quality Management Strategy: Australian Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ)

National Water Quality Management Strategy: Australian Guidelines for Water Quality Monitoring and Reporting (ANZECC/ARMCANZ)

National Water Quality Management Strategy: Guidelines for Sewerage Systems – Effluent Management (ARMCANZ/ANZECC)

NSW Water Conservation Strategy (2000)

State Water Management Outcomes Plan

NSW State Rivers and Estuary Policy (1993)

Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (EPA)

Managing Urban Stormwater: Soils & Construction (Landcom) and associated Volume 2E: Mines and Quarries (EPA)

Managing Urban Stormwater: Treatment Techniques (EPA)

Managing Urban Stormwater: Source Control (EPA)

Technical Guidelines: Bunding & Spill Management (EPA)

Environmental Guidelines: Use of Effluent by Irrigation (EPA)

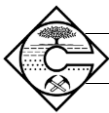
A Rehabilitation Manual for Australian Streams (LWRRDC and CRCCH)

NSW Guidelines for Controlled Activities on Waterfront Land (NOW)

Land



	Soil and Landscape Issues in Environmental Impact Assessment (NOW)
	Agfact AC.25: Agricultural Land Classification (NSW Agriculture)
	Agricultural Issues for Extractive Industries (NSW Trade and Investment)
	State Environmental Planning Policy No. 55 – Remediation of Land
	Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (ANZECC)
Traffic	
	Guide to Traffic Generating Development (RMS)
	Road Design Guide (RMS) & relevant Austroads Standards
Biodiversity	
	Biodiversity Assessment Method (OEH)
	NSW Biodiversity Offsets Policy for Major Projects (OEH)
	Guidelines for Threatened Species Assessment (DP&E)
	NSW State Groundwater Dependent Ecosystem Policy (NOW)
	Risk Assessment Guidelines for Groundwater Dependent Ecosystems (NOW)
	State Environmental Planning Policy No. 44 – Koala Habitat Protection
Heritage	
	The Burra Charter (The Australia ICOMOS charter for places of cultural significance)
	Draft Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation (DP&E)
	Aboriginal Cultural Heritage Consultation Requirements for Proponents (OEH)
	Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (OEH)
	Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH)
	NSW Heritage Manual (OEH)
	Statements of Heritage Impact (OEH)
	Corowa LEP 2012
Hazards	
	State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
	Hazardous and Offensive Development Application Guidelines – Applying SEPP 33
	Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis
Waste	
	Waste Classification Guidelines (EPA)
Rehabilitation	
	Mine Rehabilitation – Leading Practice Sustainable Development Program for the Mining Industry (Commonwealth)
	Mine Closure and Completion – Leading Practice Sustainable Development Program for the Mining Industry (Commonwealth)
	Strategic Framework for Mine Closure (ANZMEC-MCA)
Social & Economic	
	Social impact assessment guideline for State significant mining, petroleum production and extractive industry development (DP&E)
Environmental Planning Instruments - General	
	State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007
	State Environmental Planning Policy (State and Regional Development) 2011
	State Environmental Planning Policy (Infrastructure) 2007
	Corowa LEP 2012



Department of Industry

OUT17/41485

Mr Tertius Greyling
Industry Assessments
NSW Department of Planning and Environment

Tertius.greyling@planning.nsw.gov.au

Dear Mr Greyling

Howlong Sand and Gravel Quarry Expansion (SSD 8804) Comment on the Secretary's Environmental Assessment Requirements (SEARs)

I refer to your email of 12 October 2017 to the Department of Industry in respect to the above matter. Comment has been sought from relevant branches of Crown Lands & Water and Department of Primary Industries.

Any further referrals to Department of Industry can be sent by email to landuse.enquiries@dpi.nsw.gov.au.

The department has reviewed the Preliminary Environmental Assessment and advises that the Environmental Impact Statement (EIS) for the project should be required to address the following:

Biodiversity

- Specific assessment of impacts to aquatic biodiversity, ecosystems, and listed threatened species.
- Identification of any key fish habitats, and proposed measures to mitigate any impacts in accordance with the [Policy and guidelines for fish habitat conservation and management \(2013\)](#).

Land

- Assessment of all impacts to current and potential agricultural resources, and proposed measures to avoid or mitigate these impacts.
- The proponent should refer to the [Guidelines Agricultural Issues for Extraction Industry Development \(2012\)](#).
- Identification of any Crown land or waterways affected by the proposal, assessment of potential impacts, and proposed measures to address these. Any works on Crown land require tenure before commencement of works; the proponent should make the necessary applications for tenure at the earliest convenience to avoid delays.

Water

- The identification of an adequate and secure water supply for the life of the project. Confirmation that water can be sourced from an appropriately authorised and reliable supply. This is to include an assessment of the current market depth where water entitlement is required to be purchased.

NSW Department of Industry Crown Lands and Water Division
Level 49 | 19 Martin Place | Sydney NSW 2000
Tel: 02 9934 0805 landuse.enquiries@dpi.nsw.gov.au ABN: 72 189 919 072



Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

- A detailed and consolidated site water balance.
- Assessment of impacts on surface and ground water sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian land, and groundwater dependent ecosystems, and measures proposed to reduce and mitigate these impacts.
- Proposed surface and groundwater monitoring activities and methodologies.
- Detail final landscape and drainage.
- Consideration of relevant policies and guidelines.

Yours sincerely

Alison Collaros
A/Director, Planning Policy & Assessment Advice
26 October 2017

*Planning Policy and Assessment Advice appreciates your help to improve our advice to you.
Please complete this three minute survey about the advice we have provided to you, here:*
<https://goo.gl/o8TXWz>



25 October 2017

Tertius Greyling
Senior Environmental Assessment Officer
Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Emailed: tertius.greyling@planning.nsw.gov.au

Your Reference: SSD17_8804
Our Reference: OUT17/41817

Dear Mr Greyling,

**Re: Request for Secretary's Environmental Assessment Requirements
Howlong Sand & Gravel Quarry Expansion – SSD17_8804**

Thank you for the opportunity to provide advice on issues concerning the preparation of the Secretary's Environmental Assessment Requirements (SEARs) for the proposed expansion of the Howlong Sand and Gravel Quarry lodged by CAF Consulting Services Pty Ltd on behalf of Fraser Earthmoving Construction (SSD17_8804). This is a response from NSW Department of Planning & Environment – Division of Resources & Geoscience, Geological Survey of New South Wales (GSNSW).

The building and construction industries in NSW require ongoing replacement of supplies as sources are exhausted. The expansion of existing quarries, subject to environmental assessment, helps to ensure a continued supply of material for a range of building and construction uses in NSW. The resource in the subject area represents an important source of sand and gravel for the Albury area.

The proponent currently operates the Howlong Sand and Gravel Quarry at 4343 Riverina Highway, Howlong. The proposal includes the replacement of existing on-site processing plant, increasing the extraction of sand and gravel across the site from 30,000 tonnes per annum (tpa) to a rate of up to 300,000 tonnes per annum (tpa) over 30 years, upgrade of access roads and rehabilitation of the existing site.

It is in the best interests of both the proponent and the community to fully assess the resources which are to be extracted. This means that a thorough geological assessment should be undertaken to determine the nature, quality and extent of the resource. Failure to undertake such an assessment could lead to operational problems and possibly even failure of the proposal.

Sand and gravel is not a prescribed mineral under the *Mining Act 1992*. Therefore, the Department has no statutory role in authorising or regulating the extraction of this commodity, apart from its role under the *Work Health and Safety Act 2011* and associated regulations and the *Work Health and Safety (Mine and Petroleum Sites) Act 2013* and associated regulations,

NSW Department of Planning and Environment
DIVISION of RESOURCES & GEOSCIENCE
PO Box 344 Hunter Region Mail Centre NSW 2310
Tel: 02 4931 6666 Fax: 02 4931 6726
ABN 38 755 709 681



Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

for ensuring the safe operation of mines and quarries. However, the Department is the principal government authority responsible for assessing the State's resources of construction materials and for advising State and local government on their planning and management.

All environmental reports (EIS or similar) accompanying Development Applications for extractive industry lodged under the *Environmental Planning & Assessment Act 1979* should include a resource assessment (as detailed in Attachment A) which:

- **Documents the size and quality of the resource and demonstrates that both have been adequately assessed; and**
- **Documents the methods used to assess the resource and its suitability for the intended applications.**

The above information should be summarised in the EIS, with full documentation appended. If deemed commercial-in-confidence, the resource assessment summary included in the EIS should commit to providing DRG with full resource assessment documentation separately. Applications to modify, expand, extend or intensify an existing consent that has already been adequately reported using the above protocol in publicly available documents, may restrict detailed documentation to the additional resources to be used, if accompanied by a summary of past resource assessments and of past production.

DRG collects data on the quantity of construction materials produced annually throughout the State. Forms are sent to all operating quarries at the end of each financial year for this purpose. The statistical data collected is of great value to Government and industry in planning and resource management, particularly as a basis for analysing trends in production and for estimating future demand for particular commodities or in particular regions. Production data may be published in aggregated form, however production data for individual operations is kept strictly confidential.

- **In order to assist in the collection of construction material production data, the proponent should be required to provide annual production data for the subject site to the DRG as a condition of any new or amended development consent.**

Queries regarding the above information, and future requests for advice in relation to this matter, should be directed to the Division of Resources & Geoscience - Land Use team at landuse.minerals@industry.nsw.gov.au.

Yours sincerely

Cressida Gilmore
Manager - Land Use

Encl. Attachments "A"

**ATTACHMENT A****NSW Department of Planning & Environment
RESOURCES & GEOSCIENCE DIVISION****ENVIRONMENTAL and WORK HEALTH & SAFETY
ASSESSMENT REQUIREMENTS FOR
CONSTRUCTION MATERIAL QUARRY PROPOSALS**

It is in the best interests of both the proponent and the community to fully assess the resources which are to be extracted. This means that a thorough geological assessment should be undertaken to determine the nature, quality and extent of the resource. Failure to undertake such an assessment could lead to operational problems and possibly even failure of the proposal.

The following issues need to be addressed when preparing an environmental assessment (EA) or environmental impact statement (EIS) for a proposed construction materials (extractive materials) quarry:

Resource Assessment

1. A summary of the regional and local geology including information on the stratigraphic unit or units within which the resource is located.
2. The amount of material to be extracted and the method or methods used to determine the size of the resource (e.g. drilling, trenching, geophysical methods). Plans and cross-sections summarising this data, at a standard scale, showing location of drillholes and/or trenches, and the area proposed for extraction, should be included in the EA or EIS. Relevant supporting documentation such as drill logs should be included or appended. Major resource proposals should be subject to extensive drilling programs to identify the nature and extent of the resource.
3. Characteristics of the material or materials to be produced:
 - a) For structural clay/shale extraction proposals, ceramic properties such as plasticity, drying characteristics (e.g. dry green strength, linear drying shrinkage), and firing characteristics (e.g. shrinkage, water absorption, fired colour) should be described.
 - b) For sand extraction proposals, properties such as composition, grainsize, grading, clay content and contaminants should be indicated. The inclusion of indicative grading curves for all anticipated products as well as the overall deposit is recommended.
 - c) For hard rock aggregate proposals, information should be provided on properties such as grainsize and mineralogy, nature and extent of weathering or alteration, and amount and type of deleterious minerals, if any.
 - d) For other proposals, properties relevant to the range of intended uses for the particular material should be indicated.

**Fraser Earthmoving Construction Pty Ltd**
Howlong Sand and Gravel Expansion Project

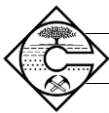
Details of tests carried out to determine the characteristics of the material should be included or appended. Such tests should be undertaken by NATA registered testing laboratories.

4. An assessment of the quality of the material and its suitability for the anticipated range of applications should be given.
5. The amount of material anticipated to be produced annually should be indicated. If the proposal includes a staged extraction sequence, details of the staging sequence needs to be provided. The intended life of the operation should be indicated.
6. If the proposal is an extension to an existing operation, details of history and past production should be provided.
7. An assessment of alternative sources to the proposal and the availability of these sources. The impact of not proceeding with the proposal should be addressed.
8. Justification for the proposal in terms of the local and, if appropriate, the regional context.
9. Information on the location and size of markets to be supplied from the site.
10. Route(s) used to transport quarry products to market.
11. Disposal of waste products and the location and size of stockpiles.
12. Assessment of noise, vibration, dust and visual impacts, and proposed measures to minimise these impacts.
13. Proposed rehabilitation procedures during, and after completion of, extraction operations, and proposed final use of site.
14. Assessment of the ecological sustainability of the proposal.

Health and Safety Issues

In relation to the health and safety of mining and quarrying operations, the following must be addressed:

1. All mining operations are to comply with the following legislation:
 - a. *Work Health and Safety Act 2011*
 - b. *Work Health and Safety Regulation 2017*
 - c. *Work Health and Safety (Mine and Petroleum Sites) Act 2013*
 - d. *Work Health and Safety (Mine and Petroleum Sites) Regulation 2014*
 - e. *Explosives Act 2003*
 - f. *Explosives Regulation 2013.*
2. The mine holder must appoint a mine operator and notify the Department in writing as required by clause 7 of the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014* before commencing any mining operations.



3. Other duties and notification and reporting requirements exist under the WHS laws and duty holders must ensure they understand and comply with these requirements.

Mineral Ownership

The *Mining Act 1992* applies to those commodities prescribed by the regulations of the Act (Schedule 2, *Mining Regulation 2016*). Most construction materials are not prescribed minerals under the *Mining Act 1992*. In general terms, this means these materials are owned by the Crown where they occur on Crown land and by the landowner in the case of freehold land. A Mining Title is not required for their extraction although a Crown Lands licence is required where they occur on Crown land.

Construction materials such as *sand (other than marine aggregate), loam, river gravel, and coarse aggregate materials such as basalt, sandstone, and granite* are not prescribed minerals under the *Mining Act 1992*. Therefore, NSW Department of Planning & Environment has no statutory responsibility for authorising or regulating the extraction of these commodities, apart from its role under the WHS laws with respect to the safe operation of mines and quarries. However, the Department is the principal government authority responsible for assessing the State's resources of construction materials and for advising State and local government on their planning and management.

Some commodities, notably *structural clay (ie clay for brick, tile and pipe manufacture), dimension stone (except for sandstone), quartzite, kaolin, limestone and marine aggregate* are prescribed minerals under the *Mining Act 1992*. Minerals which are prescribed as minerals under the terms of the Mining Act may, in some cases belong either to the Crown or to an individual, depending on a number of factors including the date on which the mineral was proclaimed and the date of alienation of the land.

The proponent needs to determine whether the material is privately owned or Crown mineral (publicly owned). If it is privately owned, then either a mining lease or mining (mineral owner) lease would be required. If it is a Crown mineral, an application for a mining lease will have to be lodged.

If you are unsure whether a mining title is required for your proposal you should contact NSW Department of Planning & Environment, Resources & Geoscience Division.



Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project



DOC17/511395-01

The Senior Environmental Assessment Officer
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

By email: tertius.greying@planning.nsw.gov.au

Dear Mr Greyling

Re SSD 17_8804

I refer to your email of 12 October 2017 to the Environment Protection Authority (EPA) seeking our requirements for the Environmental Impact Statement (EIS) for the expansion of a sand and gravel quarry at 4343 Riverina Highway Howlong.

The specific issues we consider critical to an assessment of the proposed development include noise, water management, air emissions (dust) and waste management. Details of our specific requirements and guidance documents are provided at Attachments A and B respectively.

We note the proponent intends to discharge to the Murray River. Where a discharge is proposed the proponent should provide the rationale as to why it cannot be avoided through application of available technology and management practices and why it represents the best environmental outcome and what measures are proposed to reduce its environmental impact.

We also recommend that during the preparation of the EIS that the proponent consult with us to ensure the specific issues identified in the attachments are adequately addressed, particularly for the noise and dust assessments to ensure they are assessed in accordance with our requirements.

If you have any further enquiries about this matter please contact Chris Burton by telephoning 02 6022 0600.

Yours sincerely

 24.10.2017

CRAIG BRETHERTON
Manager Regional Operations South West
Environment Protection Authority

Phone +61 2 6969 0700 Fax +61 2 6969 0710 PO Box 397
Phone 131 555 TTY 133 677 Griffith
(from outside NSW) ABN 43 692 285 758 NSW 2680 Australia

Suite 7
130-140 Banna Ave www.epa.nsw.gov.au
Griffith NSW southwest.region@epa.nsw.gov.au
2680 Australia

**ATTACHMENT A****Potential environmental impacts of the project**

The objectives of the proposal should be clearly stated and refer to and include the following.

- The size of the operation, the nature of the production process and the products, by-products and wastes produced.
- Details of any earthworks or site clearing; re-use and disposal of cleared material;
- Details of the staging of the extraction; hours of operation; proposed methods for extraction and screening of material; any plans for future expansion and the proposal's relationship to any other industry or facility
- Environment protection measures, including noise mitigation measures, dust control measures and erosion and sediment control measures.
- Mitigation and management options that will be used to prevent, control, abate or mitigate identified potential environmental impacts associated with the project and to reduce risks to human health and prevent the degradation of the environment. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.

Potential impacts on air quality

The goals of the project in relation to air quality should include mitigation of air quality impacts such that potential impacts on sensitive receptors are minimised in accordance with Environment Protection Authority (EPA) particulate matter and deposited dust criteria.

Dust is a concern with potential emissions including but not necessarily limited to construction, traffic movements, open exposed areas, material processing and handling, transfer points, and loading facilities. Details would need to be provided on the proposed measures to manage dust from these activities and their performance.

An assessment for dust as detailed in the Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales in conjunction with analysis of local meteorologic and terrain data would be sufficient to inform decisions about design and management options for the proposed development.

The EIS should identify any other existing impacts on air quality within the area and if necessary provide an assessment and commentary on the predicted cumulative impacts that may arise.

Potential impacts of noise

The goals of the project should include design, construction, operation and maintenance of the facility in accordance with relevant policies, guidelines and criteria, and in order to minimise potential impacts from noise.

Any potential noise sources should be assessed in accordance with the Industrial Noise Policy (INP) (EPA, 2000), and where required mitigation measures are proposed (e.g. appropriate equipment chosen to minimise noise levels). All residential or noise sensitive premises likely to be impacted by the development must be identified and included in the assessment.

The proposed development may see an increase in traffic movements associated with the transport of material. The number of traffic movements associated with the proposal should be quantified and potential noise impacts associated with these traffic movements need to be assessed in accordance with the NSW Road Noise Policy (DECCW, 2011).

**Potential impacts on water quantity and quality**

The EIS should provide details of the project that are essential for predicting and assessing impacts to waters including (but not limited to the following).

- The site layout with details of site drainage and any natural or artificial waters within or adjacent to the development.
- Drainage works and associated infrastructure showing areas of modification to contours and drainage, land-forming and excavations, working capacity of structures, and water resource requirements of the proposal. Total water cycle considerations are to be addressed showing total water balances for the development including water requirements (quantity, quality and source(s)) and proposed storm and wastewater disposal, including type, volumes, proposed treatment and management methods and re-use options.
- The quantity and physio-chemical properties of all potential water pollutants and the risks they pose to the environment and human health.
- The identification of any proposed water pollution control measures and their performance including how the proposal will avoid proximity to water resources and how materials will be stored to avoid the possibility of accidental spills.
- How containment of spills and leaks or discharges with potential for water or land impacts shall be managed in accordance with industry technical guidance and relevant Australian Standards in order to achieve project goals.
- Provide details of any proposed water storage ponds or basins proposed to be constructed or utilised during the whole mine operational life. Provide the location of the proposed storage(s), estimated volume capacities and expected water quality. Where the discharge requires the use of flocculants, the assessment should include information about the type, toxicity and management of flocculants proposed to treat captured water before discharge.
- A characterisation of potential water pollutants at the site should also be undertaken including the identification of any proposed water pollution controls and their performance. This should include details of the design and location of overburden disposal sites and any other wastewater treatment ponds.

Waste and chemicals

The goals of the project should address the following.

- It is in accordance with the principles of the waste hierarchy and cleaner production;
- Where potential impacts associated with the handling, processing and storage of all materials used at the premises are identified, these be mitigated by the development;
- The beneficial reuse of all wastes generated at the premises are maximised where it is safe and practical to do so; and
- No waste disposal occurs on site.



ATTACHMENT B

Guidance Material

Title	Web address
<u>Relevant Legislation</u>	
<i>Environmental Planning and Assessment Act 1979</i>	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+203+1979+cd+0+N
<i>Protection of the Environment Operations Act 1997</i>	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+156+1997+cd+0+N
<i>Water Management Act 2000</i>	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+92+2000+cd+0+N
<u>Licensing</u>	
Guide to Licensing	http://www.epa.nsw.gov.au/licensing/licenceguide.htm
<u>Air Issues</u>	
Air Quality	
Approved methods for modelling and assessment of air pollutants in NSW (2005)	http://www.environment.nsw.gov.au/resources/air/ammodelling05361.pdf
Assessment and management of odour from stationary sources in NSW (DEC, 2006)	Technical framework: http://www.environment.nsw.gov.au/resources/air/20060440framework.pdf Technical notes: http://www.environment.nsw.gov.au/resources/air/20060441notes.pdf
POEO (Clean Air) Regulation 2010	http://www.legislation.nsw.gov.au/maintop/view/inforce/subordleg+428+2010+cd+0+N
<u>Noise and Vibration</u>	
Interim Construction Noise Guideline (DECC, 2009)	http://www.epa.nsw.gov.au/noise/constructnoise.htm
Assessing Vibration: a technical guideline (DEC, 2006)	http://www.epa.nsw.gov.au/noise/vibrationguide.htm
Industrial Noise Policy (EPA, 2000)	http://www.epa.nsw.gov.au/noise/industrial.htm
Industrial Noise Policy Application Notes	http://www.epa.nsw.gov.au/noise/applicnotesindustnoise.htm
NSW Road Noise Policy (DECCW, 2011)	http://www.epa.nsw.gov.au/noise/traffic.htm
Road Noise Policy Application Notes	http://www.epa.nsw.gov.au/noise/roadnoiseappnotes.htm
<u>Waste</u>	
Waste	
Waste Classification Guidelines (EPA, 2014)	http://www.epa.nsw.gov.au/resources/wasteregulation/140796-classify-waste.pdf
Resource recovery orders and exemptions	http://www.epa.nsw.gov.au/wasteregulation/recovery-exemptions.htm
<u>Water and Soils</u>	
Soils – general	



Title	Web address
Soil and Landscape Issues in Environmental Impact Assessment (DLWC 2000)	Available for purchase at http://www.shop.nsw.gov.au/pubdetails.jsp?publication=839
Managing urban stormwater: soils and construction, vol. 1 (Landcom 2004) and vol. 2 (A. Installation of services; B Waste landfills; C. Unsealed roads; D. Main Roads; E. Mines and quarries) (DECC 2008)	Vol 1 and 2- http://www.environment.nsw.gov.au/stormwater/publications.htm
Water	
Water Quality Objectives	http://www.environment.nsw.gov.au/ieo/index.htm
ANZECC (2000) Guidelines for Fresh and Marine Water Quality	http://www.environment.gov.au/water/policy-programs/nwqms/
Approved Methods for the Sampling and Analysis of Water Pollutant in NSW (2004)	http://www.environment.nsw.gov.au/resources/legislation/approvedmethods-water.pdf
NSW Groundwater Quality Protection Policy (DLWC, 1998)	http://www.water.nsw.gov.au/Water-Management/Water-quality/Groundwater/Groundwater/default.aspx
NSW Water Quality and River Flow Objectives (DEC 2006)	http://environment.nsw.gov.au/ieo/catchlist.htm
Managing Urban Stormwater: Soils and Construction – Volume 2C Unsealed roads	http://www.environment.nsw.gov.au/stormwater/publications.htm



Office of
Environment
& Heritage

Your reference: SSD 17_8804
Our reference: DOC17/511539
Contact: Miranda Kerr
02 6022 0607

Mr Tertius Greyling
Senior Environmental Assessment Officer
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Mr Greyling,

**RE: Request for SEARs – Howlong Sand and Gravel Quarry Expansion
4343 Riverina Highway, Howlong (SSD 17_8804)**

I refer to your email dated 12 October 2017 the Office of Environment and Heritage (OEH) seeking input into the Department of Planning and Environment (DPE) Secretary's Environmental Assessment Requirements (SEARs) for the preparation of an Environmental Impact Statement (EIS) for the proposed Howlong Sand and Gravel Quarry Expansion State significant development (SSD).

OEH has reviewed the available supporting documentation and provides SEARs for the proposed development in **Attachments A** and **B** and guidance material in **Attachment C**. The assessment must include all ancillary infrastructure, such as transmission lines, pipelines, parking facilities, equipment sheds and widening of existing or new vehicle tracks.

OEH recommends the EIS needs to appropriately address the following:

1. Biodiversity and offsetting
2. Aboriginal cultural heritage
3. Flooding

Please note that the *Biodiversity Conservation Act 2016* (BC Act) commenced in August 2017 and that all Major Projects must now be assessed in accordance with this legislation, including the preparation of a Biodiversity Development Assessment Report (BDAR). The BC Act provides a standard method for assessing impacts of Major Projects on biodiversity and determining offsetting arrangements. Unless the Planning Agency Head and the Environment Agency Head determine that it is not likely to have any significant impact on biodiversity values, the Biodiversity Assessment Method (BAM) www.environment.nsw.gov.au/resources/bcact/biodiversity-assessment-method-170206.pdf must be used by a proponent to assess all biodiversity values on the development site. The avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts must be addressed in the EIS. A range of options are now available to offset the impacts of the proposal, as identified in **Attachment A**.

Our initial review of the Preliminary Environmental Assessment identifies that the proposal site has been highly modified through agriculture and quarrying. The proposal has avoided most remnant River Red Gums (*Eucalyptus camaldulensis*) by buffering vegetation along watercourses. The assessment requirements set out in the BAM enable the survey and assessment effort to be scaled depending on the level of risk posed by the development impact. Aerial imagery for the site shows individual trees growing around the existing quarry pits that may have grown since operation of the quarry. The proposed development footprint does not appear to contain native vegetation other than the individual trees that may provide habitat for threatened species, particularly hollow-dependent fauna. If this is the case, we recommend further discussion with OEH and DPE to confirm whether a BDAR is needed as part of the EIS.

PO Box 1040 Albury NSW 2640
Second Floor, Government Offices
512 Dean Street Albury NSW 2640
Tel: (02) 6022 0624 Fax: (02) 6022 0610
ABN 30 841 387 271
www.environment.nsw.gov.au



Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

Page 2

The native vegetation present may also be habitat for a threatened species listed on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The assessment should identify any relevant Matters of National Environmental Significance and whether the proposal has been referred to the Commonwealth or already determined to be a controlled action.

The proposed activity is within 200 metres of the Murray River, indicating that Aboriginal cultural heritage (ACH) may be present. The nature of the activity is sand extraction, which necessitates extensive sedimentary disturbance of sand bodies; landforms and geological units with known propensity to contain Aboriginal human remains. Similar operations within south west NSW have encountered unexpected ACH so project-specific requirements have been added to our standard SEARs (**Attachment B**). OEH notes that the *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DECC 2005) is identified as a policy document that will be used in the EIS; this document is redundant and should not be used, current policy documents as identified within **Attachments A and C** of this letter should be used.

If you require further information about this matter please contact Miranda Kerr on (02) 6022 0607 or at miranda.kerr@environment.nsw.gov.au.

Yours sincerely

 26/10/17

PETER EWIN
Senior Team Leader Planning
South West Region
Regional Operations
Office of Environment and Heritage

Enclosure: ATTACHMENT A – Standard Environmental Assessment Requirements for Howlong Sand and Gravel Quarry Expansion, 4343 Riverina Highway, Howlong (SSD 17_8804)
ATTACHMENT B - Project Specific Environmental Assessment Requirements for Howlong Sand and Gravel Quarry Expansion, 4343 Riverina Highway, Howlong (SSD 17_8804)
ATTACHMENT C – Guidance material

**Attachment A – Standard Environmental Assessment Requirements**

Biodiversity
1. Biodiversity impacts related to the proposed development are to be assessed in accordance with the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR), unless the Planning Agency Head and the Environment Agency Head determine that it is not likely to have any significant impact on biodiversity values. The BDAR must include information in the form detailed in the <i>Biodiversity Conservation Act 2016</i> (s6.12), <i>Biodiversity Conservation Regulation 2017</i> (s6.8) and Biodiversity Assessment Method. 2. The BDAR must document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the Biodiversity Assessment Method. 3. The BDAR must include details of the measures proposed to address the offset obligation as follows; • The total number and classes of biodiversity credits required to be retired for the development/project; • The number and classes of like-for-like biodiversity credits proposed to be retired; • The number and classes of biodiversity credits proposed to be retired in accordance with the variation rules; • Any proposal to fund a biodiversity conservation action; • Any proposal to conduct ecological rehabilitation (if a mining project); • Any proposal to make a payment to the Biodiversity Conservation Fund. If seeking approval to use the variation rules, the BDAR must contain details of the reasonable steps that have been taken to obtain requisite like-for-like biodiversity credits. 4. The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the <i>Biodiversity Conservation Act 2016</i>.
Aboriginal cultural heritage
5. The EIS must identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the proposed development and document these in the EIS. This may include the need for surface survey and test excavation. The identification of cultural heritage values must be conducted in accordance with the Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (OEH 2010), and should also be guided by the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011) and consultation with OEH regional officers. 6. Where Aboriginal cultural heritage values are identified, consultation with Aboriginal people must be undertaken and documented in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the EIS.



7. Impacts on Aboriginal cultural heritage values are to be assessed and documented in the EIS. The EIS must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.

Historic heritage

8. The EIS must provide a heritage assessment including but not limited to an assessment of impacts to *State and local heritage* including conservation areas, natural heritage areas, places of Aboriginal heritage value, buildings, works, relics, gardens, landscapes, views, trees should be assessed. Where impacts to State or locally significant heritage items are identified, the assessment shall:
- outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures) generally consistent with the NSW Heritage Manual (1996),
 - be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council's Excavation Director criteria),
 - include a statement of heritage impact for all heritage items (including significance assessment),
 - consider impacts including, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, landscape and vistas, and architectural noise treatment (as relevant), and
 - where potential archaeological impacts have been identified develop an appropriate archaeological assessment methodology, including research design, to guide physical archaeological test excavations (terrestrial and maritime as relevant) and include the results of these test excavations.

Flooding

9. The EIS must map the following features relevant to flooding as described in the Floodplain Development Manual 2005 (NSW Government 2005) including:
- Flood prone land.
 - Flood planning area, the area below the flood planning level.
 - Hydraulic categorisation (floodways and flood storage areas).
10. The EIS must describe flood assessment and modelling undertaken in determining the design flood levels for events, including a minimum of the 5% Annual Exceedance Probability (AEP), 1% AEP flood levels and the probable maximum flood, or an equivalent extreme event.
11. The EIS must model the effect of the proposed development (including fill) on the flood behaviour under the following scenarios:
- Current flood behaviour for a range of design events as identified in 11 above. This includes the 0.5% and 0.2% AEP year flood events as proxies for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change.



12. Modelling in the EIS must consider and document:
 - a. The impact on existing flood behaviour for a full range of flood events including up to the probable maximum flood.
 - b. Impacts of the development on flood behaviour resulting in detrimental changes in potential flood affection of other developments or land. This may include redirection of flow, flow velocities, flood levels, hazards and hydraulic categories.
 - c. Relevant provisions of the NSW Floodplain Development Manual 2005.
13. The EIS must assess the impacts on the proposed development on flood behaviour, including:
 - a. Whether there will be detrimental increases in the potential flood affectation of other properties, assets and infrastructure.
 - b. Consistency with Council floodplain risk management plans.
 - c. Consistency with any Rural Floodplain Management Plans.
 - d. Compatibility with the flood hazard of the land.
 - e. Compatibility with the hydraulic functions of flow conveyance in floodways and storage in flood storage areas of the land.
 - f. Whether there will be adverse effect to beneficial inundation of the floodplain environment, on, adjacent to or downstream of the site.
 - g. Whether there will be direct or indirect increase in erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.
 - h. Any impacts the development may have upon existing community emergency management arrangements for flooding. These matters are to be discussed with the SES and Council.
 - i. Whether the proposal incorporates specific measures to manage risk to life from flood. These matters are to be discussed with the SES and Council.
 - j. Emergency management, evacuation and access, and contingency measures for the development considering the full range of flood risk (based upon the probable maximum flood or an equivalent extreme flood event). These matters are to be discussed with and have the support of Council and the SES.
 - k. Any impacts the development may have on the social and economic costs to the community as consequence of flooding.



Attachment B – Project Specific Environmental Assessment Requirements

Aboriginal cultural heritage
1. The assessment of cultural heritage values must include a surface survey undertaken by a qualified archaeologist in areas with potential for subsurface Aboriginal deposits. The result of the surface survey is to inform the need for targeted test excavation to better assess the integrity, extent, distribution, nature and overall significance of the archaeological record. This programme of archaeological testing should be developed in consultation with OEH. The results of the assessment are to be documented in the EIS.
2. The project is likely to encounter ACH during the lifespan of the mine operation, particularly Aboriginal human remains. A cultural heritage management plan must be developed as part of the EIS with a clear contingency plan for unexpected finds.
3. The EIS must contain a protocol in the event that human remains, or suspected human remains, are encountered during operation that is compliant with the <i>Coroners Act 2009</i> and the <i>National Parks and Wildlife Act 1974</i>



Attachment C – Guidance material

Title	Web address
Relevant Legislation	
<i>Biodiversity Conservation Act 2016</i>	www.legislation.nsw.gov.au/#/view/act/2016/63/full
<i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i>	www.austlii.edu.au/au/legis/cth/consol_act/epabca1999588/
<i>National Parks and Wildlife Act 1974</i>	www.legislation.nsw.gov.au/#/view/act/1974/80
<i>Environmental Planning and Assessment Act 1979</i>	www.legislation.nsw.gov.au/#/view/act/1979/203
<i>Fisheries Management Act 1994</i>	www.legislation.nsw.gov.au/#/view/act/1994/38
<i>Water Management Act 2000</i>	www.legislation.nsw.gov.au/#/view/act/2000/92
Biodiversity	
Biodiversity Assessment Method (OEH 2017)	www.environment.nsw.gov.au/resources/bcact/biodiversity-assessment-method-170206.pdf
Guidance and Criteria to assist a decision maker to determine a serious and irreversible impact (OEH 2017)	www.environment.nsw.gov.au/resources/bcact/guidance-decision-makers-determine-serious-irreversible-impact-170204.pdf
Ancillary rules: Biodiversity conservation actions	www.environment.nsw.gov.au/resources/bcact/ancillary-rules-biodiversity-actions-170496.pdf
Ancillary rules: Reasonable steps to seek like-for-like biodiversity credits for the purpose of applying the variation rules	www.environment.nsw.gov.au/resources/bcact/ancillary-rules-reasonable-steps-170498.pdf
OEH Threatened Species Profiles	www.environment.nsw.gov.au/threatenedspecies/
NSW BioNet (Atlas of NSW Wildlife)	www.bionet.nsw.gov.au/
NSW guide to surveying threatened plants (OEH 2016)	www.environment.nsw.gov.au/resources/threatenedspecies/160129-threatened-plants-survey-guide.pdf
OEH threatened species survey and assessment guideline information	www.environment.nsw.gov.au/threatenedspecies/surveyassessmentguidelines.htm
BioNet Vegetation Classification - NSW Plant Community Type (PCT) database	http://www.environment.nsw.gov.au/NSWVCA20PRapp/LoginPR.aspx
Interim Vegetation Mapping Standard and VIS Plot	www.environment.nsw.gov.au/research/VISplot.htm
OEH Data Portal (access to online spatial data)	http://data.environment.nsw.gov.au/
Fisheries NSW policies and guidelines	www.dpi.nsw.gov.au/fisheries/habitat/publications/policies-guidelines-and-manuals/fish-habitat-conservation
List of national parks	www.environment.nsw.gov.au/NationalParks/parksearchatoz.aspx
Revocation, recategorisation and road adjustment policy (OEH 2012)	www.environment.nsw.gov.au/policies/RevocationOfLandPolicy.htm
Guidelines for developments adjoining land and water managed by the Department of Environment, Climate Change and Water (DECCW 2010)	www.environment.nsw.gov.au/protectedareas/developmentadjoiningdecc.htm



Title	Web address
Aboriginal Cultural Heritage	
Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010)	www.environment.nsw.gov.au/resources/cultureheritage/commconsultation/09781ACHconsultreq.pdf
Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010)	www.environment.nsw.gov.au/resources/cultureheritage/10783FinalArchCoP.pdf
Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011)	www.environment.nsw.gov.au/resources/cultureheritage/20110263ACHguide.pdf
Aboriginal Site Recording Form	www.environment.nsw.gov.au/resources/parks/SiteCardMainV1_1.pdf
Aboriginal Site Impact Recording Form	www.environment.nsw.gov.au/resources/cultureheritage/120558asirf.pdf
Aboriginal Heritage Information Management System (AHIMS) Registrar	www.environment.nsw.gov.au/contact/AHIMSRegistrar.htm
Care Agreement Application form	www.environment.nsw.gov.au/resources/cultureheritage/20110914TransferObject.pdf
Heritage	
The Burra Charter (The Australia ICOMOS charter for places of cultural significance)	http://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf
Statements of Heritage Impact 2002 (HO & DUAP)	www.environment.nsw.gov.au/resources/heritagebranch/heritage/hmstatementsofhi.pdf
NSW Heritage Manual (DUAP) (scroll through alphabetical list to 'N')	www.environment.nsw.gov.au/Heritage/publications/
Flooding	
Floodplain development manual	www.environment.nsw.gov.au/floodplains/manual.htm
NSW Climate Impact Profile	http://climatechange.environment.nsw.gov.au/
Climate Change Impacts and Risk Management	Climate Change Impacts and Risk Management: A Guide for Business and Government, AGIC Guidelines for Climate Change Adaptation



NSW RURAL FIRE SERVICE



Tertius Greyling
NSW Dept. of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Your reference SSD 17_8804
Our reference D17/3661

1 November 2017

Dear Tertius

**Request for Secretary's Environmental Impact Statement – Howland Sand and Gravel
Quarry Expansion**

I refer to your email dated 12 October 2017 seeking the requirements for the preparation of an Environmental Impact Statement in accordance with the *Environmental Planning and Assessment Act 1979*.

The NSW Rural Fire Service provides advice that the Environmental Impact Statement will need to address any bush fire protection measures adopted to ensure compliance with the Aims and Objectives identified in Clause 1.2 of *Planning for Bushfire Protection 2006*. It is also noted that consideration should be given to the risk of activities occurring on the site becoming a potential ignition point for fire escaping from the site.

Should you require any further information, please contact Deborah Dawson, Development Assessment and Planning Officer, on 02 4472 0600.

Yours sincerely

Amanda Moylan
Team Leader Development Assessment & Planning
Planning & Environment Service Centre South

Postal address

NSW Rural Fire Service
Records Management
Locked Bag 17
GRANVILLE NSW 2141

Street address

NSW Rural Fire Service
Batemans Bay Customer Service Centre
Unit 2, 63 Cranbrook Road
BATEMANS BAY NSW

T (02) 4472 0600
F (02) 4472 0690

www.rfs.nsw.gov.au

Email: csc@rfs.nsw.gov.au



Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project



Transport
**Roads & Maritime
 Services**

25 October 2017

SWT17/00141
 SF2017/238975
 MM

The Manager
 Department of Planning & Environment
 GPO Box 39
 SYDNEY NSW 2001

Attention: Tertius Greyling

SSD-8804 – PROPOSED EXTRACTIVE INDUSTRY – EXPANSION OF SAND & GRAVEL QUARRY, 4343 RIVERINA HIGHWAY, HOWLONG,- LOTS 173, 174, 174A & 231 DP753744, LOT 1 DP1039973, LOT 1 DP798291 & LOT 3 DP113703.

I refer to correspondence forwarded to Roads and Maritime Services requesting the provision of key issues and assessment requirements to be included in the Secretary's Environmental Assessment Requirements.

Roads and Maritime Services has reviewed the Preliminary Environmental Assessment dated 9 October 2017. From the information provided it is understood that the proposed development is for the expansion of the existing sand and gravel quarry from an extraction rate of up to 30,000 tonnes per annum to 300,000 tonnes per annum. The subject site currently has access to the Riverina Highway to the east of Howlong within a 100 km/h speed zone.

Roads and Maritime is interested in the characteristics of the traffic generated by the development and in the impact of the development on the safety and efficiency of the road network. The Preliminary Environmental Assessment indicates that a Traffic Impact Assessment is to be commissioned as part of the Environmental Impact Statement for the project. This is supported for a development of the scale proposed.

The TIA is to address the potential impacts on the road network, particularly intersections, associated with the development during the lifetime of the project and outline mitigation measures, such as intersection upgrades, to be implemented to maintain the standard and safety of the road network and the procedures to monitor and ensure compliance. Consideration of the cumulative impacts of the potential traffic generation when added to existing traffic volumes upon the surrounding road network shall be undertaken. For this development a transport management plan, including a driver code of conduct, may also be appropriate to outline measures to manage traffic related issues related to the haulage of material from the site.

For guidance in the preparation of a Traffic Impact Assessment for the proposal and the statement of commitment/management plans the applicant is referred to the "Guide to Traffic Generating Developments" and the Austroads publications, particularly Austroads Guide to Traffic Management Part 12: Traffic Impacts Of Development and the "Guide to Traffic Generating Developments" prepared by the RTA and similar documentation.

Roads and Maritime Services

193-195 Morgan Street Wagga Wagga NSW 2650 |
 PO Box 484 Wagga Wagga NSW 2650 |

www.rms.nsw.gov.au | 13 17 82



Roads and Maritime emphasises the need to appropriately consider and minimise the impacts of the traffic generation due to the development on the existing road infrastructure and maintain the safety, efficiency and standard of maintenance along the existing road network through the design, construction and operation of the development and any road works required to support the operation of the development.

Any enquiries regarding this correspondence may be referred to the Manager, Land Use for Roads and Maritime Services (South West Region), Maurice Morgan, phone (02) 69236611.

Yours faithfully


Per:
Mitch Judd
Acting Director
South West NSW



Appendix 4

Coverage of Secretary's Environmental Assessment Requirements and Requirements of Consulted Government Agencies

(Total No. of pages including blank pages = 12)



ENVIRONMENTAL IMPACT STATEMENT

Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

This page has intentionally been left blank



Table A4.1
Coverage of Secretary's Environmental Assessment Requirements in the EIS

Page 1 of 5

Paraphrased Relevant Requirement	Relevant EIS Section(s)
GENERAL REQUIREMENTS	
The EIS must include:	
• a stand-alone executive summary;	Executive Summary
• a full description of the development, including:	
– the resource to be extracted, including the amount, type and composition;	2.2.2 and Appendix 6
– the site layout and extraction plan, including cross-sectional plans;	Figures 2.3 and 2.4
– the production process and processing activities, including the in-flow and out-flow of materials and points of discharge to the environment;	2.5 and 2.6
– surface infrastructure and facilities (including any infrastructure that would be required for the development, but the subject of a separate approvals process);	2.4
– a waste (overburden, rejects, tailings etc) management strategy;	2.11
– a water management strategy;	2.11
– a rehabilitation strategy to apply during, and after completion of, extraction operations, and proposed final use of site; and	2.13 and Figure 2.4
– the likely interactions between the development and any existing, approved or proposed development in the vicinity of the site;	5.3.1
• a strategic justification of the development focusing on site selection and the suitability of the proposed site;	8.2
• a list of any approvals that must be obtained before the development may commence;	1.2
• an assessment of the likely impacts of the development on the environment, focussing on the key issues identified below, including:	
– a description of the existing environment likely to be affected by the development, using sufficient baseline data;	5 and 6 (various)
– an assessment of the likely impacts of all stages of the development, including any cumulative impacts, taking into consideration any relevant laws, environmental planning instruments, guidelines, policies, plans and industry codes of practice;	6
– a description of the measures that would be implemented to avoid, minimise, mitigate and/or offset the likely impacts of the development, and an assessment of:	7
○ whether these measures are consistent with industry best practice, and represent the full range of reasonable and feasible mitigation measures that could be implemented;	6
○ the likely effectiveness of these measures; and	6
○ whether contingency measures would be necessary to manage any residual risks; and	6
– a description of the measures that would be implemented to monitor and report on the environmental performance of the development;	7
• a consolidated summary of all the proposed environmental management and monitoring measures, identifying all the commitments in the EIS;	7
• consideration of the development against all relevant environmental planning instruments (including Part 3 of the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007);	4



Table A4.1 (Cont'd)
Coverage of Secretary's Environmental Assessment Requirements in the EIS

Page 2 of 5

Paraphrased Relevant Requirement	Relevant EIS Section(s)
GENERAL REQUIREMENTS (Cont'd)	
- the reasons why the development should be approved, having regard to: - relevant matters for consideration under the <i>Environmental Planning and Assessment Act 1979</i>, including the objects of the Act; - the biophysical, economic and social impacts of the project, including the principles of ecologically sustainable development; - the suitability of the site with respect to potential land use conflicts with existing and future surrounding land uses; - feasible alternatives to the development (and its key components), including the consequences of not carrying out the development;	8
a signed declaration from the author of the EIS, certifying that the information contained within the document is neither false nor misleading.	Page v
KEY ISSUES	
The EIS must address the following specific issues.	
Noise	
a detailed assessment of the likely construction, operational and off-site transport noise impacts of the development in accordance with the <i>Interim Construction Noise Guideline</i>, <i>NSW Noise Policy for Industry</i> and the <i>NSW Road Noise Policy</i> respectively, and having regard to the <i>Voluntary Land Acquisition and Mitigation Policy</i>;	6.5, SCSC Part 5
if a claim is made for specific construction noise criteria for certain activities, then this claim must be justified and accompanied by an assessment of the likely construction noise impacts of these activities under the <i>Interim Construction Noise Guideline</i>;	Not relevant
reasonable and feasible mitigation measures to minimise noise emissions; and	6.5.5
monitoring and management measures, in particular real-time and attended noise monitoring;	6.5.5 and 6.5.8
Air Quality	
a detailed assessment of potential construction and operational impacts, in accordance with the <i>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW</i>, and with a particular focus on dust emissions including PM_{2.5} and PM₁₀, and having regard to the <i>Voluntary Land Acquisition and Mitigation Policy</i>;	6.6 and SCSC Part 6
an assessment of potential dust and other emissions generated from processing, operational activities and transportation of quarry products;	6.6.8
reasonable and feasible mitigation measures to minimise dust and emissions; and	6.6.7
monitoring and management measures, in particular, real-time air quality monitoring;	6.6.7 and 6.6.10
Water	
a detailed site water balance, including a description of site water demands, water disposal methods (inclusive of volume and frequency of any water discharges), water supply infrastructure and water storage structures;	2.7
identification of any licensing requirements or other approvals under the <i>Water Act 1912</i> and/or <i>Water Management Act 2000</i>;	6.3.6
demonstration that water for the construction and operation of the development can be obtained from an appropriately authorised and reliable supply in accordance with the operating rules of any relevant <i>Water Sharing Plan (WSP)</i>;	2.7 and 6.3.5.2



Table A4.1 (Cont'd)
Coverage of Secretary's Environmental Assessment Requirements in the EIS

Page 3 of 5

Paraphrased Relevant Requirement	Relevant EIS Section(s)
Water (Cont'd)	
a description of the measures proposed to ensure the development can operate in accordance with the requirements of any relevant WSP or water source embargo;	2.7, 6.3.5, 6.3.6, 6.4.4 and 6.4.5
an assessment of any likely flooding impacts of the development;	
a detailed consideration of maintenance of an adequate buffer between all excavations at the highest predicted regional groundwater table;	
an assessment of the likely impacts on the quality and quantity of existing surface and ground water resources, including a detailed assessment of proposed water discharge quantities and quality against receiving water quality and flow objectives;	6.3 and 6.4
an assessment of the likely impacts of the development on aquifers, watercourses, riparian land, water-related infrastructure, and other water users; and	6.3.5
a detailed description of the proposed water management system (including sewage), water monitoring program and other measures to mitigate surface and groundwater impacts;	6.3.4 and 6.4.6
Biodiversity	
accurate predictions of any vegetation clearing on site;	Figure 6.11
a detailed assessment of the likely biodiversity impacts of the development, paying particular attention to threatened species, populations and ecological communities and groundwater dependent ecosystems, and having regard to the <i>NSW Biodiversity Offsets Policy for Major Projects</i> and the <i>Biodiversity Assessment Method</i>; and	6.8
a strategy to offset any residual impacts of the development in accordance with the <i>NSW Biodiversity Offsets Policy for Major Projects</i>, including evidence that the appropriate type and quantum of offsets will be available;	6.8.6
Heritage	
an assessment of the potential impacts on Aboriginal heritage (cultural and archaeological), including evidence of appropriate consultation with relevant Aboriginal communities/parties and documentation of the views of these stakeholders regarding the likely impact of the development on their cultural heritage; and	6.9.2 and 6.9.5
identification of historic heritage in the vicinity of the development and an assessment of the likelihood and significance of impacts on heritage items, having regard to the relevant policies and guidelines listed in Attachment 1;	6.9.3 and 6.9.5
Traffic and Transport	
accurate predictions of the road traffic generated by the construction and operation of the development, including a description of the types of vehicles likely to be used for transportation of quarry products;	6.2.5
a detailed assessment of potential traffic impacts on the capacity, condition, safety and efficiency of the local and State road network (as identified above); and	6.2
a description of the measures that would be implemented to mitigate any impacts, including concept plans of any proposed upgrades, developed in consultation with the relevant road and rail authorities (if required);	6.2.4



Table A4.1 (Cont'd)
Coverage of Secretary's Environmental Assessment Requirements in the EIS

Page 4 of 5

Paraphrased Relevant Requirement	Relevant EIS Section(s)
Land Resources	
potential impacts on soils and land capability (including potential erosion and land contamination) and the proposed mitigation, management and remedial measures (as appropriate);	6.7
potential impacts on landforms (topography), paying particular attention to the long term geotechnical stability of any new landforms (such as overburden dumps, bunds etc); and	6.7.5
the compatibility of the development with other land uses in the vicinity of the development in accordance with the requirements in Clause 12 of <i>State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries)</i> 2007, paying particular attention to the agricultural land use in the region;	4.4.2
Waste	
include estimates of the quantity and nature of the waste streams that would be generated or received by the development and any measures that would be implemented to minimise, manage or dispose of these waste streams;	2.11
Hazards	
include an assessment of the likely risks to public safety, paying particular attention to potential bushfire risks and the transport, handling and use of any hazardous or dangerous goods;	6.11
Visual	
include a detailed assessment of the likely visual impacts of the development on private landowners in the vicinity of the development and key vantage points in the public domain, paying particular attention to any new landforms, and to minimising the lighting impacts of the development;	6.10 and SCSC Part 10
Social and Economic	
a detailed assessment of the likely social impacts of the development on the local and regional community in accordance with the <i>Social impact assessment guideline for State significant mining, petroleum production and extractive industry development</i>; and	6.12 and 6.13
- a detailed assessment of the likely economic impacts of the development, paying particular attention to: - the significance of the resource;	6.12.2
the costs and benefits of the project; identifying whether the development as a whole would result in a net benefit to NSW, including consideration of fluctuation in commodity markets and exchange rates; and	6.12.3
the demand for the provision of local infrastructure and services; and	6.12.4
Rehabilitation	
- include the proposed rehabilitation strategy for the site having regard to the key principles in the Strategic Framework for Mine Closure, including: - rehabilitation objectives, methodology, monitoring programs, performance standards and proposed completion criteria;	2.13
nominated final land use, having regard to any relevant strategic land use planning or resource management plans or policies; and	
the potential for integrating this strategy with any other rehabilitation and/or offset strategies in the region.	Not Relevant



Table A4.1 (Cont'd)
Coverage of Secretary's Environmental Assessment Requirements in the EIS

Page 5 of 5

Paraphrased Relevant Requirement	Relevant EIS Section(s)
Consultation	
You must consult with:	
• affected landowners;	5.3
• community groups;	3.2
• Federation Council;	Appendix 5
• Office of Environment and Heritage (including the Heritage Branch);	3.4
• Environment Protection Authority;	3.4
• Division of Resources and Geoscience within the Department;	3.4
• Department of Primary Industries (including Crown Lands and Water, NSW Forestry, Agriculture and Fisheries);	3.4
• Murray Local Land Services;	Appendix 5
• Roads and Maritime Services; and	3.4
• NSW Rural Fire Service.	3.4
The EIS must:	
• describe the consultation process used and demonstrate that effective consultation has occurred;	3
• describe the issues raised by public authorities, service providers, community groups and landowners;	3 and Appendix 3
• identify where the design of the development has been amended in response to issues raised; and	8.2.1
• otherwise demonstrate that issues raised have been appropriately addressed in the assessment.	6



Table A4.2
Coverage of Issues Identified by Other Government Agencies for Consideration in the EIS

Page 1 of 5

Agency / Organisation	Paraphrased Relevant Requirement	Relevant EIS Section(s)
BIODIVERSITY		
Department of Industry – Crown Lands and Water 26 October 2017	• Specific assessment of impacts to aquatic biodiversity, ecosystems, and listed threatened species.	6.8
	• Identification of any key fish habitats, and proposed measures to mitigate any impacts in accordance with the <u>Policy and guidelines for fish habitat conservation and management (2013)</u> .	Not relevant
NSW DPE – Resources and Geoscience 25 October 2017	• Assess the ecological sustainability of the proposal.	8.2.3
Office of Environment and Heritage 26 October 2017	• Document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the Biodiversity Assessment Method.	6.8 and SCSC Part 8
	• The BDAR must include details of the measures proposed to address the offset obligation.	6.8.6
	• The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.1 0 of the Biodiversity Conservation Act 2016.	SCSC Part 8
LAND RESOURCES		
Department of Industry – Crown Lands and Water 26 October 2017	• Assessment of all impacts to current and potential agricultural resources, and proposed measures to avoid or mitigate these impacts.	6.7 and SCSC Part 7
	• Identification of any Crown land or waterways affected by the proposal, assessment of potential impacts, and proposed measures to address these.	5.3.2, 6.3.5, 6.4.5 and Figures 5.4, 5.1
NSW DPE – Resources and Geoscience 25 October 2017	Undertake a geological assessment to determine the nature, quality and extent of the resource that:	
	– Documents the size and quality of the resource and demonstrates that both have been adequately assessed; and	2.2.2 and Appendix 6
	– Documents the methods used to assess the resource and its suitability for the intended applications.	Appendix 6
	• Provide a summary of the regional and local geology including information on the stratigraphic unit or units within which the resource is located.	2.2.1
	• Describe the amount of material to be extracted and the method or methods used to determine the size of the resource	2.2.2 and Appendix 6
	• Describe the composition, grainsize, grading, clay content and contaminants of the resource to be extracted	2.2.2
	• Provide an assessment of the quality of the material and its suitability for the anticipated range of applications should be given.	2.2.3
	• Describe the amount of material anticipated to be produced annually.	2.5.3
	• Detail the existing operation of the history and past production.	1 and 2.1.2



Table A4.2 (Cont'd)
Coverage of Issues Identified by Other Government Agencies for Consideration in the EIS

Page 2 of 5

Agency / Organisation	Paraphrased Relevant Requirement	Relevant EIS Section(s)
LAND RESOURCES (Cont'd)		
NSW DPE – Resources and Geoscience 25 October 2017 (Cont'd)	Provide an assessment of alternative sources to the proposal and the availability of these sources. The impact of not proceeding with the proposal should be addressed.	8.4
	Justify the proposal in terms of the local and, if appropriate, the regional context.	8.3.3
	Describe the location and size of markets to be supplied from the site.	2.2.3
WATER		
Department of Industry – Crown Lands and Water 26 October 2017	The identification of an adequate and secure water supply for the life of the project. Confirmation that water can be sourced from an appropriately authorised and reliable supply.	2.7 and 6.3.6
	A detailed and consolidated site water balance.	2.7
	Assessment of impacts on surface and ground water sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian land, and groundwater dependent ecosystems, and measures proposed to reduce and mitigate these impacts.	6.3 and 6.4
	Proposed surface and groundwater monitoring activities and methodologies.	6.3.4, 6.4.6 and 6.4.7
	Detail final landscape and drainage.	2.13.2, 2.13.4
WATER RESOURCES		
NSW Environment Protection Agency 24 October 2017	Where a discharge is proposed the proponent should provide the rationale as to why it cannot be avoided through application of available technology and management practices and why it represents the best environmental outcome and what measures are proposed to reduce its environmental impact.	No discharge proposed
	The EIS should provide details of:	Figure 5.1
	Drainage works and associated infrastructure within the site layout and any natural or artificial waters within or adjacent to the development.	Figure 5.1
	Total water balances for the development including water requirements (quantity, quality and source(s)) and proposed storm and wastewater disposal, including type, volumes, proposed treatment and management methods and re-use options.	2.7 and 6.4.6-6.4.8
	The quantity and physio-chemical properties of all potential water pollutants and the risks they pose to the environment and human health.	6.6
	Any proposed water pollution control measures and their performance	6.4.6-6.4.8
	Containment of spills and leaks or discharges with potential for water or land impacts	6.4.6
	Any proposed water storage ponds or basins proposed to be constructed or utilised during the whole mine operational life.	Figure 2.4
	Characterisation of potential water pollutants and identification of any proposed water pollution controls and their performance.	6.3.4, 6.3.5, 6.4.3 and 6.4.6-6.4.8



Table A4.2 (Cont'd)
Coverage of Issues Identified by Other Government Agencies for Consideration in the EIS

Page 3 of 5

Agency / Organisation	Paraphrased Relevant Requirement	Relevant EIS Section(s)
TRAFFIC AND TRANSPORT		
NSW DPE – Resources and Geoscience 25 October 2017	Describe the route(s) used to transport quarry products to market.	2.8.3
Roads and Maritime Services 25 October 2017	Describe the characteristics of the traffic generated by the development	6.2.3
	Assess the impact of the development on the safety and efficiency of the road network.	6.2.5
	Address the potential impacts on the road network, particularly intersections, associated with the development during the lifetime of the project	6.2.5
	Outline mitigation measures to be implemented to maintain the standard and safety of the road network and the procedures to monitor and ensure compliance.	6.2.4
	Consider the cumulative impacts of the potential traffic generation when added to existing traffic volumes upon the surrounding road network.	6.2.5.3
	Consider the need for a transport management plan, including a driver code of conduct that outlines measures to manage traffic related issues related to the haulage of material from the site.	6.2.4 and 6.2.5
WASTE		
NSW DPE – Resources and Geoscience 25 October 2017	Discuss the disposal of waste products and the location and size of stockpiles.	2.3, 2.6, 2.11 and Figure 2.3
NSW Environment Protection Agency 24 October 2017	The EIS should consider:	2.11
	The principles of the waste hierarchy and cleaner production;	
	Potential impacts associated with the handling, processing and storage of all materials	
	The beneficial reuse of all wastes generated at the premises	
FLOODING		
Office of Environment and Heritage 26 October 2017	Map the following features relevant to flooding as described in the Floodplain Development Manual 2005 (NSW Government 2005) including:	SCSC Part 3
	Flood prone land.	
	Flood planning area, the area below the flood planning level.	
	Hydraulic categorisation (floodways and flood storage areas).	6.4.4, 6.4.5 and SCSC Part 3
	Describe flood assessment and modelling undertaken in determining the design flood levels for events, including a minimum of the 5% Annual Exceedance Probability (AEP), 1 % AEP flood levels and the probable maximum flood, or an equivalent extreme event.	
	Model the effect of the proposed development (including fill) on the flood behaviour under the following scenarios:	6.4.4, 6.4.5 and SCSC Part 3
	Current flood behaviour for a range of design events including the 0.5% and 0.2% AEP year flood events as proxies for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change.	



Table A4.2 (Cont'd)
Coverage of Issues Identified by Other Government Agencies for Consideration in the EIS

Page 4 of 5

Agency / Organisation	Paraphrased Relevant Requirement	Relevant EIS Section(s)
FLOODING (Cont'd)		
Office of Environment and Heritage 26 October 2017 (Cont'd)	Modelling must consider and document:	
	• The impact on existing flood behaviour for a full range of flood events	6.4.4 and 6.4.5
	• Impacts of the development on flood behaviour resulting in detrimental changes in potential flood affection of other developments or land.	6.4.4 and 6.4.5
	• Relevant provisions of the NSW Floodplain Development Manual 2005.	SCSC Part 3
	Assess the impacts of the proposed development on flood behaviour.	6.4.4, 6.4.5 and SCSC Part 3
VISUAL		
NSW DPE – Resources and Geoscience 25 October 2017	• Assess the noise, vibration, dust and visual impacts, and proposed measures to minimise these impacts.	6.5.5, 6.5.7, 6.5.8, 6.6.7, 6.6.8, 6.6.10, 6.10.4 and 6.10.5
NOISE		
NSW DPE – Resources and Geoscience 25 October 2017	• Assess the noise, vibration, dust and visual impacts, and proposed measures to minimise these impacts.	6.5.5, 6.5.7, 6.5.8, 6.6.7, 6.6.8, 6.6.10, 6.10.4 and 6.10.5
NSW Environment Protection Agency 24 October 2017	• Assess potential noise sources in accordance with the Industrial Noise Policy (INP).	6.5.7
	• Identify all residential or noise sensitive premises likely to be impacted by the development.	6.5.7
	• Quantify and assess the potential noise impacts associated with the number of traffic movements proposed for the proposal in accordance with the NSW Road Noise Policy (DECCW, 2011).	6.5.7.1
AIR QUALITY		
NSW DPE – Resources and Geoscience 25 October 2017	• Assess the noise, vibration, dust and visual impacts, and proposed measures to minimise these impacts.	6.5.5, 6.5.7, 6.5.8, 6.6.7, 6.6.8, 6.6.10, 6.10.4 and 6.10.5
NSW Environment Protection Agency 24 October 2017	• Describe the proposed measures to manage dust from these activities and how the ongoing performance of these measures will be ensured.	6.6.7 and 6.6.10
	• Assess dust in accordance with Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales in conjunction with analysis of local meteorologic and terrain data would be sufficient design and management options for the proposed development.	6.6 and SCSC Part 6
	• Identify any other existing impacts on air quality with in the area and if necessary, provide an assessment and commentary on the predicted cumulative impacts that may arise.	6.6.8



Table A4.2 (Cont'd)
Coverage of Issues Identified by Other Government Agencies for Consideration in the EIS

Page 5 of 5

Page 3 of 3

Agency / Organisation	Paraphrased Relevant Requirement	Relevant EIS Section(s)
BUSHFIRE		
NSW Rural Fire Service 1 November 2017	Address any bush fire protection measures adopted to ensure compliance with the Aims and Objectives identified in Clause 1.2 of <i>Planning for Bushfire Protection 2006</i> .	6.11.3
	Assess the risk of activities occurring on the site becoming a potential ignition point for fire escaping from the site.	
REHABILITATION		
NSW DPE – Resources and Geoscience 25 October 2017	Discuss the proposed rehabilitation procedures during, and after completion of, extraction operations, and proposed final use of site.	2.13
ABORIGINAL CULTURAL HERITAGE		
Office of Environment and Heritage 26 October 2017	Identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the proposed development	6.9.5
	The identification of cultural heritage values must be conducted in accordance with the <u>Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (OEH 2010)</u>, and should also be guided by the <u>Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW. 2011)</u>.	SCSC Part 9a
	Consultation with Aboriginal people must be undertaken and documented in accordance with the <u>Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW)</u>.	6.9.2.3
	Demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes.	6.9.4 and 6.9.5
	Outline measures proposed to mitigate impacts.	6.9.4
	Assess cultural heritage values including a surface survey undertaken by a qualified archaeologist in areas with potential for subsurface Aboriginal deposits.	6.9.2.4
	Develop a cultural heritage management plan.	6.9.4
	Provide a protocol in the event that human remains, or suspected human remains, are encountered during operation.	6.9.4
HISTORIC HERITAGE		
Office of Environment and Heritage 26 October 2017	The EIS must provide a heritage assessment including but not limited to an assessment of impacts to State and local heritage.	6.9.3 and 6.9.5



Appendix 5

Consultation Materials

Prepared by Advanced
Environmental Systems

(Total No. of pages including blank pages = 4)



ENVIRONMENTAL IMPACT STATEMENT

Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

This page has intentionally been left blank

**PROJECT ADVERTISEMENT****Environmental Impact Statement (EIS) Community Input
Howlong Sand and Gravel Quarry Redevelopment****The Project**

Fraser Earthmoving Construction have re-established operations of the Howlong Sand and Gravel Quarry located at 4343 Riverina Highway Howlong, NSW 2643. The quarry is currently operating on approved licenses for extraction of the materials. As part of this development an EIS is being prepared to feed into a State Significant Development Proposal significantly reducing the area of materials can be removed, but increasing the annual volume of material to be removed from 30,000 T per year up to a maximum of 300,000 T per year. The project will provide employment through progressive extraction, transporting of materials and rehabilitation over the next 30 years. Full time employment is currently being provided for 10 personnel, this will increase as volumes required are increased. The long-term use of the land following rehabilitation will be for agriculture, but also include wetlands, fish farming and floodplain ecosystem renewal.

More Information

Preliminary information about the quarry redevelopment and rehabilitation plans can be viewed at Federation Council Library, 59 Hawkins Street, Howlong.

OR

The NSW Planning and Environment website:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8804

Come and talk to us

The team preparing the EIS is available, by appointment, to provide information and answer any questions about the proposed redevelopment up to the 16th of March.

Contact: Mr Peter Clinnick 0412 151 225 or Email: info@environmentalsystems.com.au



GOVERNMENT AGENCY CONSULTATION REGISTER

Date	Person	Organisation
1/2/18	Kate Lannarch	Federation Council
6/2/18	Joel Herbert	Planning and Environment (P & E)
14/2/18	Judy Kirk	Landcare Corowa
14/2/18	Miranda Kerr	Office of Environment and Heritage (OE & H)
28/2/18	Judy Kirk	Landcare Corowa
28/2/18	Craig Bretherton	Environment Protection Authority (EPA)
13/3/18	Miranda Kerr	OE & H
16/3/18	Allen Newman	Heritage Seeds
18/4/18	Angelina/Lloyd	Local Land Services (LLS)
24/4/18	Peter O'Shawncosy	LLS
26/4/18	Troy Hitchor	LLS
26/4/18	Judy Kirk	Landcare Corowa
26/4/18	Kathie Liebusque	Landcare West Hume
27/4/18	Kate Lanarch	Federation Council
27/4/18	Miranda Kerr	OE & H
4/5/18	Kathie Liebusque	Landcare West Hume
10/5/18	Lisa	EPBC Referrals
16/5/18	Lauren	Environment Australia
17/5/18	Lauren	Environment Australia
21/5/18	Brendan Christy	Landcare Corowa
21/5/18	Joel Hurbert/Miranda Kerr	P & E/OE & H
23/5/18	Kate Lanarch	Federation Council
23/5/18	Allen Newman	Heritage Seeds
24/5/18	Email	Murray Catchment Authority
24/5/18	Email	Registrar Aboriginal Land Rights
24/5/18	Steve Meredith	OE & H
24/5/18	Email	Native Title Services Corporation
24/5/18	Email	National Native Title Tribunal
24/5/18	Troy Hitchor	LLS
30/5/18	Cressida Gilmore	DPE Resources and Geoscience
29/5/18	Andrew Fisher	OE & H
-/6/18	Morris Morgan	Roads and Maritime Services (RMS)
1/6/18	David Hunter	OE & H
1/6/18	Craig Bretherton	EPA
1/6/18	Steve Meredith	OE & H
4/6/18	Kate Lanarch	Federation Council
4/6/18	Joel Herbert	P & E
22/5/18	Lindsay Bush	Rural Fire Service (RFS) Corowa
14/6/19	Morris Morgan	RMS
26/7/19	Craig Bretherton	EPA
22/8/19	Susan, Appleyard, Kate Larnach	Federation Council



Appendix 6

Resource Assessment February 2018

**Prepared by Hanson
Construction Materials**

(Total No. of pages including blank pages = 6)



ENVIRONMENTAL IMPACT STATEMENT

Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

This page has intentionally been left blank



Hanson Australia National Aggregates
Reserves and Resources Assessment – Addendum 2



Reserves and Resources Summary																																																	
Site Name: Howlong Sand and Gravel	Date of estimation: 26/02/2018																																																
Region: Southern Region (Country)	Ownership: Third Party																																																
Tenement number:	Permit to extract:																																																
Key stakeholders: David Pallot, Murray Butterworth, Andrew Harvey																																																	
Summary of geology <i>(specify source and date of site investigation data used)</i> Deposit sites within the Coonambidgal Formation, which spans from the Pleistocene to Holocene era. The deposit is made up of mainly fluvial to lacustrine sand and gravel layers, interbedded with clay																																																	
2. Topographic survey data <i>(specify date, nature of information, survey filename)</i> A detailed digital terrain model compiled by Drone – 200mm contours – Topo2018																																																	
3. Quarry design models <i>(specify model types, filenames and date)</i> Based on the drill results a geological model can be built in Minex 6.5.0 consisting of lithological layers. Thus a layered model comprising these units can be devised. The layers were entered and modelled in Minex. The model produces a seam floor on a grid developed to accurately reflect the logging of all the holes. The roof of the units are derived from the floor of the upper unit, and thickness grids are calculated using grid arithmetic by taking the seam roof RL at each mesh point and subtracting the seam floor at that same grid point. The model produced was checked against the data and is considered to reflect the drill results consistently.																																																	
4. Geological layers <i>(seam names)</i> <table border="1" data-bbox="319 1232 1324 1422"> <thead> <tr> <th>Seam code</th> <th>Father code</th> <th>Material</th> <th>Density</th> <th>Colour</th> <th>Priority</th> <th>Expansion</th> <th>Enabled</th> </tr> </thead> <tbody> <tr> <td>CL</td> <td>CL</td> <td>ORE</td> <td>1</td> <td></td> <td>1</td> <td></td> <td>☒</td> </tr> <tr> <td>VCS</td> <td>VCS</td> <td>ORE</td> <td>2</td> <td></td> <td>1</td> <td></td> <td>☒</td> </tr> <tr> <td>MS</td> <td>MS</td> <td>ORE</td> <td>2</td> <td></td> <td>1</td> <td></td> <td>☒</td> </tr> <tr> <td>MCS</td> <td>MCS</td> <td>ORE</td> <td>2</td> <td></td> <td>1</td> <td></td> <td>☒</td> </tr> <tr> <td>CS</td> <td>CS</td> <td>ORE</td> <td>2</td> <td></td> <td>1</td> <td></td> <td>☒</td> </tr> </tbody> </table>		Seam code	Father code	Material	Density	Colour	Priority	Expansion	Enabled	CL	CL	ORE	1		1		☒	VCS	VCS	ORE	2		1		☒	MS	MS	ORE	2		1		☒	MCS	MCS	ORE	2		1		☒	CS	CS	ORE	2		1		☒
Seam code	Father code	Material	Density	Colour	Priority	Expansion	Enabled																																										
CL	CL	ORE	1		1		☒																																										
VCS	VCS	ORE	2		1		☒																																										
MS	MS	ORE	2		1		☒																																										
MCS	MCS	ORE	2		1		☒																																										
CS	CS	ORE	2		1		☒																																										
5. Planning constraints and considerations <i>(specify nature of constraints)</i> - Extraction buffer from river 100 metres - Base of Extraction RL 110, pit 30 metres deep - Owned by third party 10% loss factor, however could be more with improved knowledge - Bathymetric survey shows depths of 7-12m across stage 1 and 2 ponds																																																	



Hanson Australia National Aggregates
Reserves and Resources Assessment – Addendum 2



6. Pit design parameters (specify for each area of the quarry)

1. Max pit design 3H:2V
2. One Bench, 30m V, 55 degrees.
3. Bottom of pit RL110

7. Maximum depth of excavation/level of base of quarry (specify for each area of the quarry)

1. Max depth RL110

8. Loss Factor (include details of interface losses at all relevant horizons – overburden, interburden, base)

1. Loss factor estimated at 10%, could increase depending on fine sand grading.

9. Budgeted production rate (annual net saleable tonnage)

1. 150,000 t per annum

10. Summary material quality (including as applicable; summary grading, mechanical properties, chemical properties, comparisons with relevant standards)

Coarse to very coarse sand and gravel deposit, FM ranging from 2.0-5.0. Pebble aggregate production of 7mm, 10-14mm graded and 20mm.

The below table shows the testing split between coarse and fine aggregate (coarse aggregate > 4.75mm).

HOWLONG CORE ANALYSIS																								
COARSE vs FINE																								
The information below is based on the gradings completed on the Howlong core samples and estimates the amount of coarse sand : fine sand ratio.																								
Depth	PP01		PP02		PP02B		PP03		XHO1701		XHO1702		XHO1703		XHO1704		XHO1705		XHO1707		XHO1709		AVERAGE	
(m)	C (%)	F (%)	C (%)	F (%)	C (%)	F (%)	C (%)	F (%)	C (%)	F (%)	C (%)	F (%)	C (%)	F (%)	C (%)	F (%)	C (%)	F (%)	C (%)	F (%)	C (%)	F (%)	C (%)	F (%)
0-2	-	-							-	-	-	-					-	-						
2-4	7	93							28	72	29	71					13	87					19	78
4-6	-	-							-	-	-	-					-	-						
6-8	32	68	17	83	31	69	9	91	21	79	37	63	15	85	0	100	11	89	24	76	31	69	26	74
8-10	-	-							-	-	-	-					-	-						
10-12	16	84	4	96	4	96	14	86	39	61	27	73	35	65	25	75	49	51	20	72	24	76	24	76
12-14	-	-							-	-	-	-					-	-						
14-16	3	97	22	78	11	89	29	71	47	53	4	96	16	84	6	94	16	84	9	91			16	84
16-18																								
18-20	35	65	32	68	29	71	29	71	1	99	11	89	33	67	19	81	25	75	25	75	9	91	23	77
20-22	-	-							-	-	-	-					-	-						
22-24	17	83	12	88	10	90	29	71	6	94	4	96	12	88	6	94	50	50	3	97	9	91	15	85
24-26	-	-							-	-	-	-					-	-						
26-28	0	100	0	100	13	87	8	92	30	70	9	91					2	98	1	99	1	99	7	93
28-30									-	-														
30-32							9	91															9	91
32-34							-	-																
34-36							5	95															5	95
OVERALL AVERAGE:																						16	84	



Hanson Australia National Aggregates
Reserves and Resources Assessment – Addendum 2



11. Summary of reserves and resources *(including geological confidence, waste volumes estimated for each block)*

Stage 1

Clay overburden – 59,089 m³
Very coarse sand (FM >4) – 1,403,826 t
Medium sand (FM 2-2.5) – 274,915 t
Medium to coarse sand (FM 2.5-3) – 1,167,467 t
Coarse sand (FM 3-4) – 687,163 t

Stage 2

Clay overburden – 63,684 m³
Very coarse sand (FM >4) – 1,410,750 t
Medium sand (FM 2-2.5) – 468,132 t
Medium to coarse sand (FM 2.5-3) – 920,380 t
Coarse sand (FM 3-4) – 617,366 t

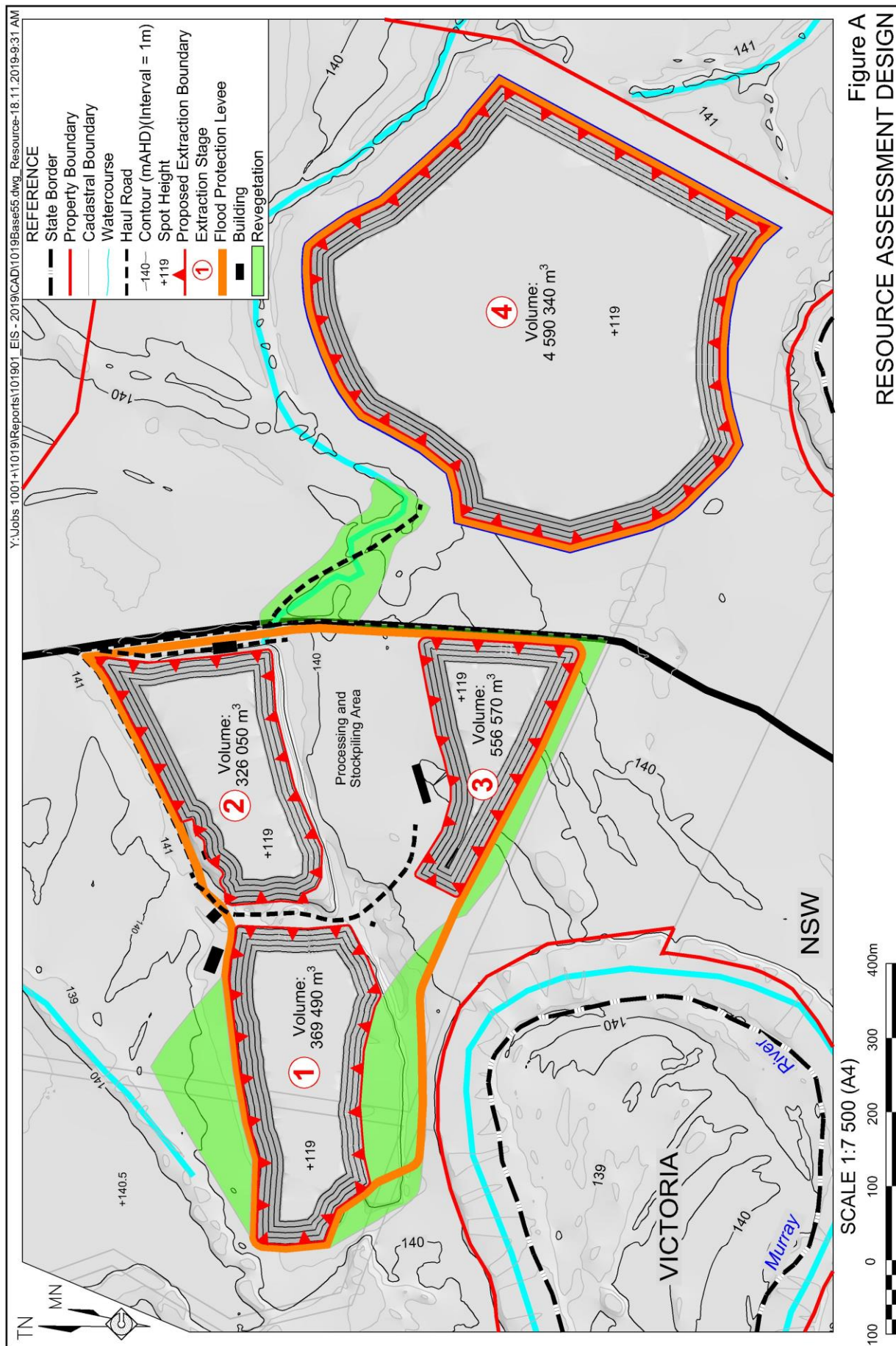
Stage 3

Clay overburden – 214,749 m³
Very coarse sand (FM >4) – 1,581,238 t
Medium sand (FM 2-2.5) – 440,192 t
Medium to coarse sand (FM 2.5-3) – 1,393,278 t
Coarse sand (FM 3-4) – 3,333,949 t

Stage 4

Clay overburden – 244,209 m³
Very coarse sand (FM >4) – 1,748,289 t
Medium sand (FM 2-2.5) – 269,258 t
Medium to coarse sand (FM 2.5-3) – 407,308 t
Coarse sand (FM 3-4) – 4,035,493 t







Appendix 7

Engineering Report Bridge Load Rating Assessment

Prepared by S.J. Street & Associates

(Total No. of pages including blank pages = 30)



ENVIRONMENTAL IMPACT STATEMENT

Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

This page has intentionally been left blank

ENGINEERING REPORT

4343 RIVERINA HIGHWAY, HOWLONG NSW 2643

“TARCOOLA”

BRIDGE LOAD RATING ASSESSMENT

FOR

FRASER EARTHMOVING



Prepared by:
S.J.Street & Associates P/L
2 December 2017
Revision 0

1. PROJECT BRIEF

SJStreet & Associates were requested to prepare an Engineering Report by Fraser Earthmoving on the load rating of an existing bridge at Tarcoola Estate in NSW, located at 4343 Riverina Highway Howlong NSW 2643.

The site is located approximately 3 kilometres east of Howlong.

The purpose of the report is to assist with facilitating the reopening of a quarry on the site. The bridge capacity rating requires reassessment for the planned used of High Mass Limit B-double trucks on the bridge.

2. DOCUMENTATION

- o The client provided dimensional data and photos of the bridge;
- o There is no stamped load rating on the bridge;
- o No condition assessment inspection is available for the bridge;

3. BRIDGE CONFIGURATION

The bridge was inspected on site on 15 November 2017.

The bridge is a 6 span continuous span steel framed bridge, with a precast concrete deck- refer attached bridge site location and photos Appendix 1.

4. STRUCTURAL ASSESSMENT

4.1 Truck Loads

Vehicle loads considered include the following load specifications, as defined in AS5100 Bridge Design:

- HS20-44
- T44
- HLP320
- SM1600
- A160 axle/ W80 wheel load;
- Standard abnormal load

In addition, the following load conditions were requested to be assessed by the client:

- o High Mass Limit Long wheel base 62.5T B-double repetitive load- see below;
- o High Mass Limit Long wheel base 67T B-double maximum load;

A summary of the truck load configurations is included in Appendix 2.

4.2 Structural Assessment- Lane Analysis

A lane analysis was done comparing the various design loads, assuming one vehicle is loading the 6-span lanes at a time.

The assessment basis was done on unfactored loads, with no dynamic load factor.

High Mass Limit trucks have a long wheel base and may be able to be approved for use on certain bridges considering the long wheel base of these trucks. This type of approval is based on comparative assessment with design loads, but not posted on the bridge.

Refer Appendix 3 for results.

The bridge deck width of 3.9m allows 1 x driving lane.

The results are summarised as follows, using T44 as the reference load:

TARCOOLA BRIDGE	
Truck Load	Analysis Result
T44	Reference Load
HS20-44	Suitable
Abnormal Vehicle	Not suitable
HLP320	Not suitable
M1600	Not suitable
A160	Suitable
Small dog & truck	Suitable
62.5T B-double	Suitable
67.5T B-double	Suitable

4.3 Structural Assessment- Longitudinal beam assessment- Limit State Loading

As the longitudinal beam is an imperial size, it will be lower Grade 250 steel compared to currently available Grade 300 steel.

Due to this, a load factor assessment to AS5100 was done of the beam design assuming:

- 610UB113 size
- Grade 250 steel
- Continuous beam over 6 spans: 10.6m/10.35m/10.0m/10.6m/10.53m/10.85m
- 50% deck load on a beam;
- 60% deck live load on a beam allowing for off centre loading;
- Limit state load factors: Dead load 1.5; Live load 2.0;
- Dynamic load factor: Dead load: 1.0; Live load 1.17;
- Beams are laterally restrained at 2-3m allowing for the beams being continuous over supports, the lateral diagonal braces at mid span and at the supports, and the concrete deck restraints to the beams

The results indicate:

T44 loading	phiMb capacity (610UB113 Grade 250 ly=3m) = 690kNm vs M*=796kNm max factored applied load 14% overload
B-double loading	phiMb capacity (610UB113 Grade 250 ly=3m) = 690kNm vs M*=719kNm max factored applied load 4% overload

4.4 Structural Assessment- Longitudinal beam assessment- Working Load methods

Due to these results, the following additional checks were done to the superseded working stress AS1250 Steel Code which was based around Grade 250 steel:

Beam Strength vs Allowable:	Complies to AS1250
Shear Strength vs allowable:	Complies to AS1250
Web buckling/crimping at supports vs allowable:	Complies to AS1250

While this is not intended to be used for current bridge design, the results indicate the bridge was originally designed for T44 loads.

4.5 Structural Assessment- Longitudinal Beams- Serviceability Loads

4.5.1 Deflection under live load

Based on unfactored live loads; dynamic load allowance as above

Maximum deflection under vehicle live load: 16.6mm
This is lower than the allowable limit of $\text{Span}/600 = 18.1\text{mm}$

4.5.2 Fatigue Assessment

Based on unfactored dead and live loads; dynamic load allowance as above

Assessed based design life of 100,000 T44 loads

4.6 Other design checks

This assessment has considered the strength of the main load bearing longitudinal beams.

The deck and cross head beams are generally aligned over their supports for vehicles traversing the centre of the bridge.

No details of the deck reinforcement in the precast concrete deck elements is known.

No checks of these elements and their foundations has been done.

5 DISCUSSION

Additional comments on various elements of the bridge design and configuration are noted below:

- Usage

The bridge also functions to take wide loads such as farm machinery. Checks assume one vehicle on the bridge at any time.

- Load rating

The bridge is not load rated to current standard AS5100 design loads such as HLP320 and M1600.

- Width

Vehicle width of the deck is 3.9m (excluding kerbs) which is lower than current minimum width recommendations in AS5100 of 4.2m.

- Kerbing & guardrail

The bridge has an edge kerb but no guardrail due to these wide loads.

Any provision of guardrail would need to be a low profile and lie outside the line of the existing kerbs to allow such wide load farm usage of the bridge to continue.

- Approaches

The approach slopes can increase longitudinal horizontal impact loads on the bridge.

- Steelwork

Marine environment can speed up corrosion and will require regular maintenance of a painted bridge such as this.

- Impact and Off-centre load assumptions

Vehicle speed will affect the assumed dynamic load factors. AS5100 considers 1.15 at 10km/hr; to achieve less than this, which is required to achieve the load rating, will require a speed limit of 5km/hr

5. REPAIRS & REMEDIAL WORKS

The following ten-point plan of repairs and remedial works is recommended to accommodate the proposed B-double traffic on the bridge:

1. Annual Level 2 Bridge Condition inspections (eg AusSpan) and associated maintenance program;
2. Limit vehicle speed to a maximum of 5km/hr
3. Provide suitable signage on bridge approaches;
4. Level out approaches in elevation and plan and provide rock beaching retention fill on edges to protect batter slopes from erosion;
5. Abrasive sand blast all steelwork to Class 2.5 and paint with a two coat epoxy primer paint system;
6. Realign and reclip precast concrete decking planks to edge steel beams- replace missing bolts and clips- all details hot dipped galvanized;
7. Provide precast concrete bollards on the approaches each side to control vehicle alignment across the bridge;
8. Install suitable low level guiderail each side eg low level pipe railing fixed back to deck, maximum height 1/3 of wheel height;

9. All work to be carried out by experienced tradesman to current Australian Standards.

Prepared by: STEPHEN STREET
 SJSTREET & ASSOCIATES PTY LTD
 B.E. (Civil) F.I.E.Aust.
 Chartered Professional Engineer
 National Professional Engineers Register (NER)
 Practice Certificate Number 342 558
 Registered Building Practitioner Number EC-2025

Signature:



Date: 2 December 2017

Attachments:

- Appendix 1 Site Data and Inspection Photos
- Appendix 2 Truck Live Load Summary
- Appendix 3 Lane Analysis Results
- Appendix 4: Repairs & Remedial Works Summary

ENGINEERING REPORT



REGISTERED
Building Practitioner
plus CPD



S.J.STREET & ASSOCIATES PTY LTD, STRUCTURAL ENGINEERS & REGISTERED BUILDING PRACTITIONERS

JOB TITLE:	Tarcoola Bridge Load Rating	JOB NO.	11779
SUBJECT:	Engineering Report: Bridge Load Rating	PAGE NO.:	REV
DESIGNER/DATE:	SJS Dec'17	CHECKED/DATE:	SECTION: FILE:

APPENDIX 1

* SITE DATA & INSPECTION PHOTOS

CALCULATION SHEET



REGISTERED
Building Practitioner
plus CPD

SJSStreet
& Associates Pty Ltd

S.J.STREET & ASSOCIATES PTY LTD,
STRUCTURAL ENGINEERS & REGISTERED BUILDING PRACTITIONERS

JOB TITLE: JOB NO. 11779
SUBJECT: PAGE NO.: 11 OF
DESIGNER/DATE: SJS 10/1/17 CHECKED/DATE: SECTION: FILE:

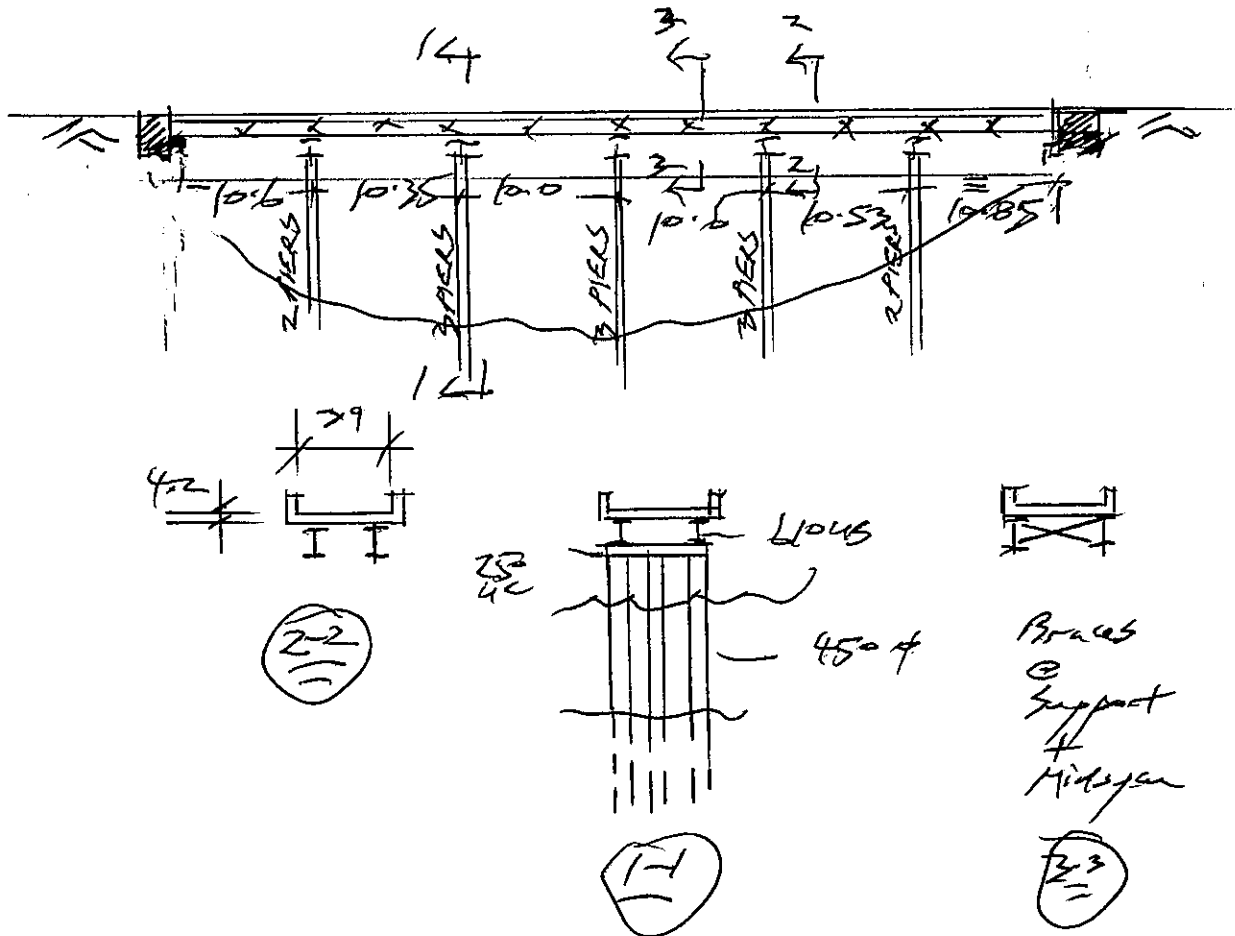
TARCOOLA BRIDGE

6 span bridge
- 10m ref layout

150mm deck
610 x 30 long beams
2500E water

check bridge for
B doubles.

Currently rated for
T44, - to check



S J Street & Associates

From: Andrew Mckimmie <andrewmckimmie@fraserearthmoving.com>
Sent: Thursday, 9 November 2017 7:28 PM
To: S J Street & Associates
Subject: Tarcoola Bridge
Attachments: CCF_000001.pdf

Hi Stephen,

Measurements for the bridge sections on the attached hand drawing.

The measurements taken are as follows,
Concrete deck width - 4200 mm,
Depth of concrete intrafficable area - 150 mm,
Piers - 420 mm approximate diameter,
Main I Beam - 610 mm,
Cross I Beam - 250 mm,
The bridge is broken into 6 spans these being;
1 - 10600 mm,
2 - 10350 mm,
3 - 10000 mm
4 - 10600 mm,
5 - 10530 mm, and
6 - 10850 mm.

The first cross beams from the bank on either side are supported by two piers the remaining three supports in the centre are supported by three piers.

The two main I beams run the length of the bridge and are supported on either end by another two piers. The I beams are installed on 2700 mm centres.

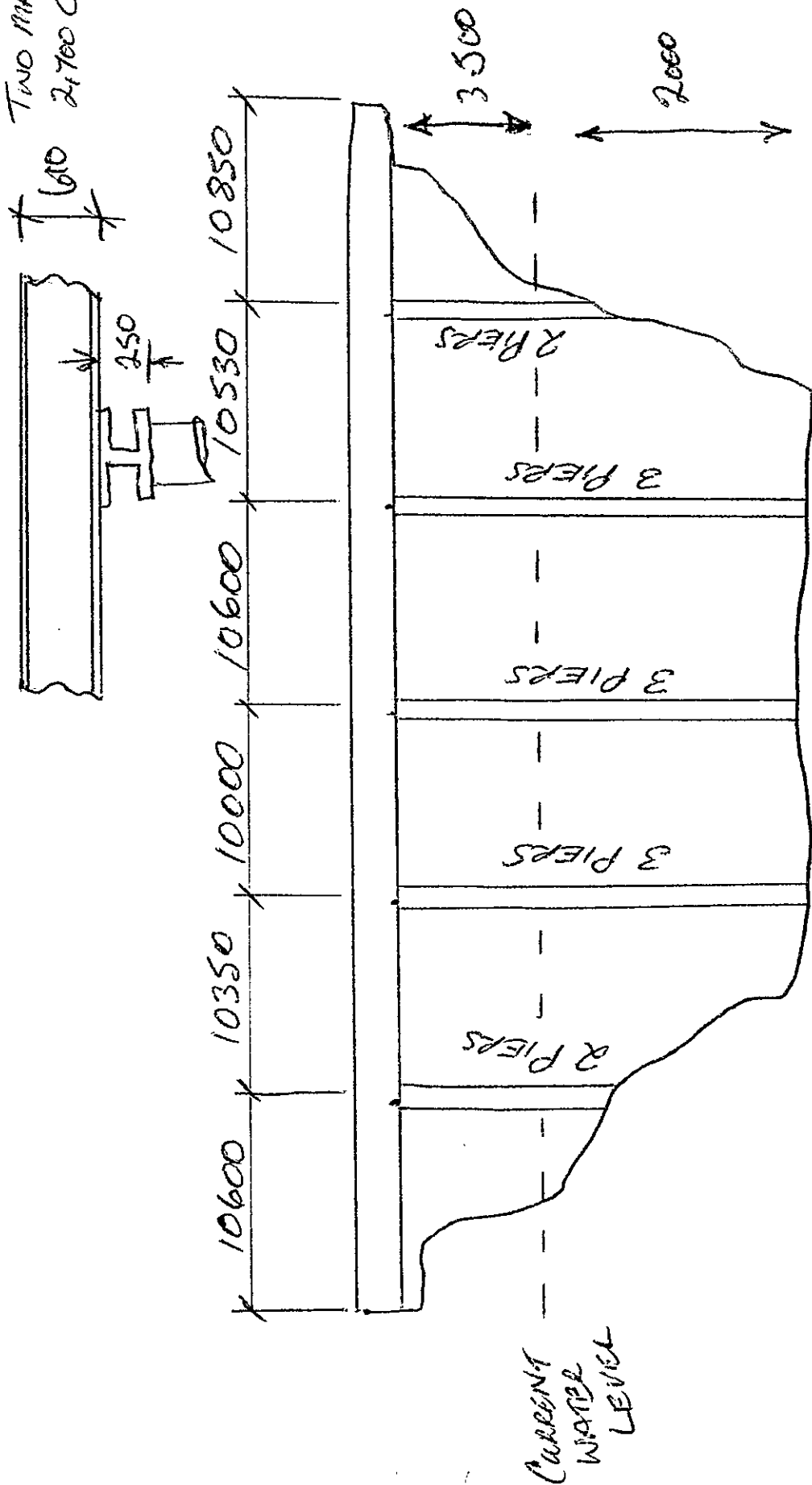
If there is any other information that you require please let me know.

Regards,
Andrew.

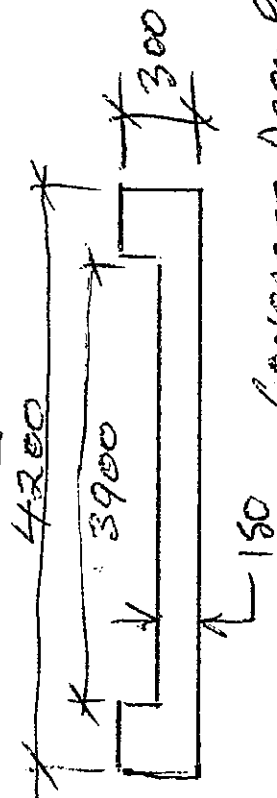
Andrew McKimmie
Fraser Earthmoving Construction
Email: andrewmckimmie@fraserearthmoving.com
Mobile: 0417 883 576.



TWO MAIN I BEAMS
2400 CENTRES



← PIER 420φ



CONCRETE DECK PLATES

P. A. K.

From: Andrew McKimmie <andrewmckimmie@fraserearthmoving.com>
Sent: Friday, 24 November 2017 4:59 PM
To: 'S J Street & Associates'
Subject: RE: Bridge rating
Attachments: IMG_0430-sma11Jpg; IMG_0428-small.jpg; IMG_0429-smal1Jpg; Austarc-16TC-Data-Sheet_2014.pdf

Hi Stephen,

The flanges are off set from the pier from approximately 1.5 metres to 2 metres they do vary a little.

I really hope you like these attached photos the pain they have caused.

The main beam has been prepped with a vee then butt welded with the Y, thick vertical plate being welded to the side of the beam with a single pass fillet.

The 1/2 inch base plate has been welded into position with a three pass fillet.

The Y, plate is approximately 8" wide and the height of the beam.

The 1/2 plate is approximately 13" and protrudes the beam by approximately an 1 1/4".

By appearance the welds would appear to have been carried out using WIA 16 TC's. Data sheet attached above.

It is expected that during peak activity there will be 30 trucks a day accessing via the bridge, 75 % are assumed to be "B" Doubles. 22 to 23 trucks per day the remainder will be made up of smaller trucks and dog's. Once set up is complete it is expected the quarry will operate 5 days per week. For a basic assumption I would just under half the rate for a Saturday trucks may still required to pick up materials during Saturday mornings.

125 "B" Doubles per week and 44 smaller trucks.

With maintenance and shut down times we would expect that the quarry would be operating approximately 46 weeks of the year making approximately 5750 "B" Doubles per year and 2024 smaller trucks.

Hope this helps.

Regards,
Andrew.

Andrew McKimmie
Fraser Earthmoving Construction
Email: andrewmckimmie@fraserearthmoving.com
Mobile: 0417 883 576.



From: S J Street & Associates [mailto:sjstreet@inet.net.au]
Sent: Friday, 24 November 2017 3:45 PM
To: 'Andrew McKimmie' <andrewmckimmie@fraserearthmoving.com>
Subject: Bridge rating

SITE PHOTOS



REGISTERED
Building Practitioner
plus CPD

SJSStreet
& Associates Pty Ltd

S.J.STREET & ASSOCIATES PTY LTD, STRUCTURAL ENGINEERS & REGISTERED BUILDING PRACTITIONERS

JOB TITLE: Tarcoola Bridge Load Rating

JOB NO. 11779

SUBJECT: Engineering Report: Bridge Load Rating

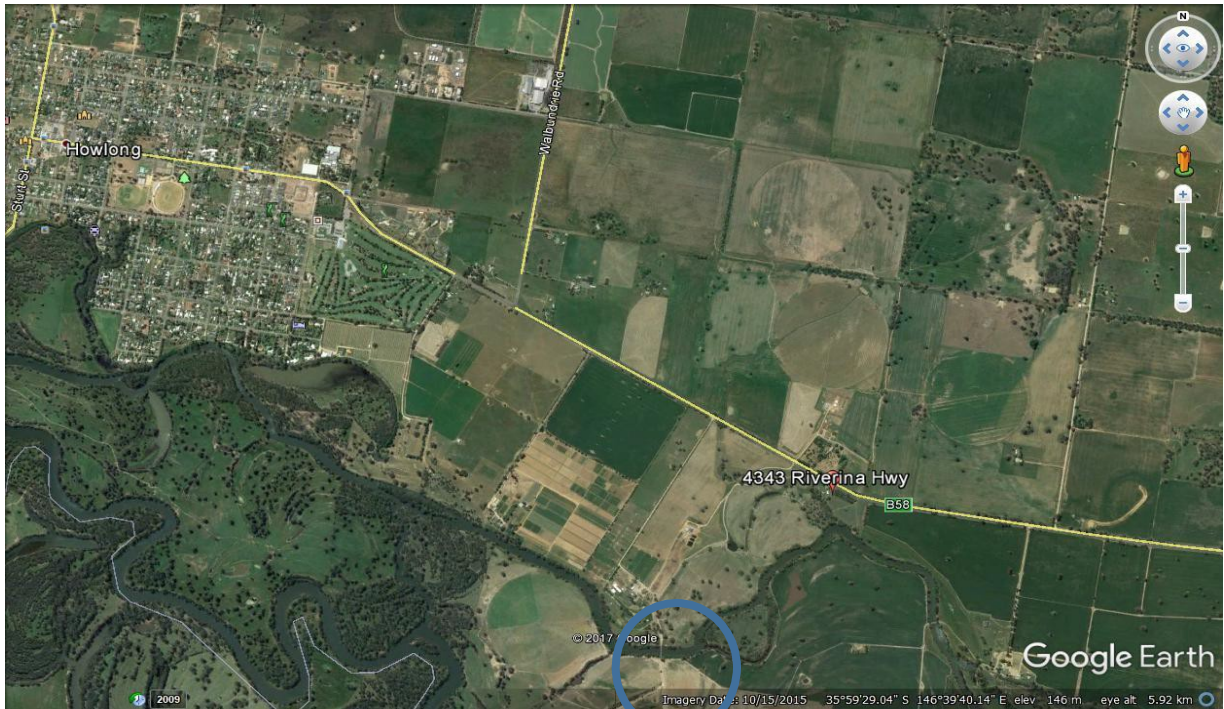
PAGE NO.: 1 REV

DESIGNER/DATE: SJS Dec'17

CHECKED/DATE:

SECTION:

FILE:



Site location 3KM east of Howlong



Aerial View
Google Earth

6 span bridge

SITE LOCATION & GENERAL ARRANGEMENT

TARCOOLA BRIDGE
4343 RIVERINA HIGHWAY, HOWLONG NSW 2643



Photo #1 Looking west from
north side

SITE PHOTOS

JOB TITLE:	Tarcoola Bridge Load Rating	JOB NO.	11779
SUBJECT:	Engineering Report: Bridge Load Rating	PAGE NO.:	2 REV
DESIGNER/DATE:	SJS Dec'17	CHECKED/DATE:	SECTION: FILE:



Photo #2 Looking west from north embankment



Photo #3 Underside of bridge deck showing main 610UB beams and lateral braces;
cross head beams 250UC and piles

SITE PHOTOS

JOB TITLE:	Tarcoola Bridge Load Rating	JOB NO.	11779
SUBJECT:	Engineering Report: Bridge Load Rating	PAGE NO.:	3 REV
DESIGNER/DATE:	SJS Dec'17	CHECKED/DATE:	SECTION: FILE:



Photo #4

Corroded steelwork

Main beams are stamped: BHP 24" x 7 1/2"

Flange thickness measures at 18mm

Equivalent

610UB113

Grade 250



Photo #5

Debris at deck level indicates flood level in this tributary creek

Missing deck clips; misaligned deck; corroded steelwork

SITE PHOTOS

JOB TITLE:	Tarcoola Bridge Load Rating	JOB NO.	11779
SUBJECT:	Engineering Report: Bridge Load Rating	PAGE NO.:	4 REV
DESIGNER/DATE:	SJS Dec'17	CHECKED/DATE:	SECTION: FILE:



Photo #6

Bridge deck kerb & alignment
from north side

No guardrail
Deck width between kerbs measures
3.9m



Photo #7: Edge foundation- North abutment

SITE PHOTOS

JOB TITLE:	Tarcoola Bridge Load Rating	JOB NO.	11779
SUBJECT:	Engineering Report: Bridge Load Rating	PAGE NO.:	5 REV
DESIGNER/DATE:	SJS Dec'17	CHECKED/DATE:	SECTION: FILE:



Photo #8:

Precast concrete decking slabs
fixed to longitudinal
beams;



Photo #9: Precast
concrete deck

Wearing at wheel tracks



SITE PHOTOS

JOB TITLE:	Tarcoola Bridge Load Rating	JOB NO.	11779
SUBJECT:	Engineering Report: Bridge Load Rating	PAGE NO.:	6 REV
DESIGNER/DATE:	SJS Dec'17	CHECKED/DATE:	SECTION: FILE:



Photo #10: Edge kerbing and drainage slots

Edge kerbing is cast with deck;
Guardrail has been removed

ENGINEERING REPORT



REGISTERED
Building Practitioner
plus CPD



S.J.STREET & ASSOCIATES PTY LTD, STRUCTURAL ENGINEERS & REGISTERED BUILDING PRACTITIONERS

JOB TITLE:	Tarcoola Bridge Load Rating	JOB NO.	11779
SUBJECT:	Engineering Report: Bridge Load Rating	PAGE NO.:	REV
DESIGNER/DATE:	SJS Dec'17	CHECKED/DATE:	SECTION: FILE:

APPENDIX 2

* TRUCK LIVE LOAD SUMMARY

CALCULATION SHEET

JOB TITLE: Tarcoola Bridge Load Rating

JOB NO. 11779

SUBJECT: Load Diagram

PAGE NO.: 1 OF 2

DESIGNER/DATE: SJS Nov'17

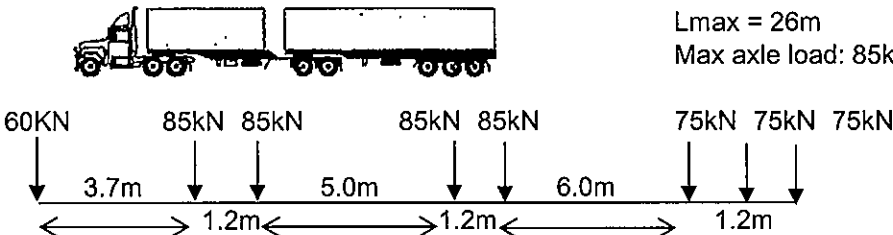
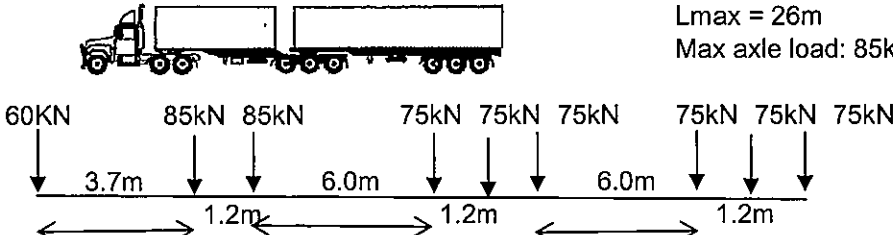
CHECKED/DATE:

SECTION: FILE:

LOADING	LOAD DIAGRAM	OVERALL WIDTH
AS5100 Loads		
HS20-44 (ref AASHTO 1977, 1996)		2.4m overall width 3.0m design lane Max axle load: 142kN Length L=8.54m
T44 Truck (ref NAASRA, 1976 AS5100.7-2004)		2.2m overall width 3.0m design lane Max axle load: 96kN L=9.1m
Standard Abnormal Vehicle ref AS5100.7		4.8m overall width Occupy two design lanes Max axle load: 240kN L=15m Not applicable for narrow bridge
HLP320 (ref AS5100.7)		Max axle load: 200kN Overall width: 3.6m L=27.0m
M1600 (ref AS5100.2)		L=25m Max axle load: 120kN Overall width: 2.4m 3.2m design lane
A160 Axle (ref AS5100.2)		2.4m width 3.2m design lane Max axle load: 160kN

CALCULATION SHEET

JOB TITLE: Tarcoola Bridge Load Rating JOB NO. 11779
 SUBJECT: Load Diagram PAGE NO.: 2 OF 2
 DESIGNER/DATE: SJS Nov'17 CHECKED/DATE: SECTION: FILE:

LOADING	LOAD DIAGRAM	OVERALL WIDTH
Client Loads		
Small trucks 15T Gross (ref VicRoads)	 60kN 3.7m 90kN Front Single axle Rear Single Axle 15.0 (6.0 + 9.0)	Width = 2.4m Lmin = 3.7m Max axle load: 90kN
62.5T B Double (Ref VicRoads) 62.5Tonne Gross	 60kN 85kN 85kN 85kN 85kN 75kN 75kN 75kN 3.7m 1.2m 5.0m 1.2m 6.0m 1.2m 62.5 (6.0 + 17.0 + 17.0 + 22.5)	Width: 2.5m Lmax = 26m Max axle load: 85kN
68 T B Double (ref VicRoads) 68 Tonne Gross	 60kN 85kN 85kN 75kN 75kN 75kN 75kN 75kN 75kN 3.7m 1.2m 6.0m 1.2m 6.0m 1.2m 68.0 (6.0 + 17.0 + 22.5 + 22.5)	Width: 2.5m Lmax = 26m Max axle load: 85kN
Small Dog 18T Gross in combination with small truck (ref VicRoads)	 90 kN 2.0m 90kN Single axle Front Single axle Rear 18.0 (9.0 + 9.0)	Width: 2.5m L= 2.0m Max axle load = 90kN

TRUCK TRAILERS

Vehicle	Configuration	Weight (kg)	Weight (lb)
GML - NHVAS CMI -		40.5 (6.0 + 16.5 + 18.0) (S)	
		30.0 (6.0 + 0.0 + 9.0)* (S)	
		40.5 (6.0 + 16.5 + 9.0) (S)	42.5 (11.0* + 16.5 + 9.0 + 9.0)
		41.0 (6.0 + 17.0 + 9.0) (S)	43.5 (11.0* + 17.0 + 9.0 + 9.0)

GML -	24.0 (6.0 + 9.0) (S)	31.5 (6.0 + 9.0 + 16.5) (S)	39.0 (6.0 + 16.5 + 16.5) (S)	42.5 (6.0 + 16.5 + 20.0) (S)
RFS -	28.0 (6.0 + 10.0 + 10.0) (S)	33.0 (6.0 + 10.0 + 17.0) (S)	40.0 (6.0 + 17.0 + 17.0) (S)	43.0 (6.0 + 17.0 + 20.0) (S)
NHVAS CML -		32.0 (6.0 + 9.0 + 17.0) (S)	40.0 (6.0 + 17.0 + 17.0) (S)	43.5 (6.0 + 17.0 + 21.0) (S)
NHVAS HML -		33.0 (6.0 + 10.0 + 17.0) (S)	40.0 (6.0 + 17.0 + 17.0) (S)	45.5 (6.0 + 17.0 + 22.5)** (S)

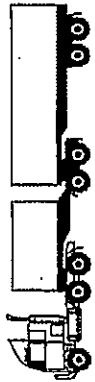
B-DOUBLES

Mini B-doubles (General Access) (Overall length 13.0 m or less)



GML -	50.0 (6.0 + 16.5 + 16.5 + 16.5) (S)
RFS -	50.0 (6.0 + 17.0 + 17.0 + 17.0) (S)

Mini B-doubles (Approved routes only)



GML -	55.5 (6.0 + 16.5 + 16.5 + 16.5) (S)
NHVAS CML -	57.0 (6.0 + 17.0 + 17.0 + 17.0) (S)
NHVAS HML -	57.0 (6.0 + 17.0 + 17.0 + 17.0) (S)
RFS -	57.0 (6.0 + 17.0 + 17.0 + 17.0) (S)

Mass limits for lag type trailers are the same as pig trailers



B-Doubles (Approved routes only)



GML -	55.5 (6.0 + 16.5 + 16.5 + 16.5) (S)
RFS -	57.0 (6.0 + 17.0 + 17.0 + 17.0) (S)
NHVAS CML -	57.0 (6.0 + 17.0 + 17.0 + 17.0) (S)
NHVAS HML -	57.0 (6.0 + 17.0 + 17.0 + 17.0) (S)



GML -	59.0 (6.0 + 16.5 + 16.5 + 20.0) (S)
RFS -	60.0 (6.0 + 17.0 + 17.0 + 20.0) (S)
NHVAS CML -	61.0 (6.0 + 17.0 + 17.0 + 21.0) (S)
NHVAS HML -	62.5 (6.0 + 17.0 + 17.0 + 22.5) (S)



GML -	62.5 (6.0 + 16.5 + 20.0 + 20.0) (S)
RFS -	63.0 (6.0 + 17.0 + 20.0 + 20.0) (S)
NHVAS CML -	64.5 (6.0 + 17.0 + 21.0 + 21.0) (S)
NHVAS HML -	68.0 (6.0 + 17.0 + 22.5 + 22.5) (S)

NOTES TO BE USED IN CONJUNCTION WITH THE CHART

- This chart is a guide to the maximum mass allowed. The actual mass allowed is the LESSER of the sum of the axle mass limits, the manufacturers ratings, the mass limits relating to axle group spacings and the regulatory mass limits.

- Vehicles with tri axles operating at Higher Mass Limits and B-doubles are only permitted on approved routes and must carry copies of the following information bulletins:

- B-doubles & Higher Mass Limits information bulletin;
- Local Roads Approved for B-doubles & Higher Mass Limits Trucks;
- Height Clearance on Roads (for vehicles over 4.3 metres high);
- 26 metres B-doubles information bulletin for B-doubles between 25 and 26 metres in length; and
- for non approved roads a specific permit must be issued by VicRoads to use that road.

- For the purpose of this chart all axle groups are fitted with 4 tyres per axle except for steer axle groups.

SYMBOLS TO BE USED IN CONJUNCTION WITH THE CHART

* Subtract one tonne if twin-steer axle group is non load sharing

** Approved routes only

Trailer mass must never exceed the truck mass except for a 4 axle dog trailer, which must not exceed 125% of the truck mass

These vehicles are allowed an additional 0.5 tonne on the steer axle, which adds 0.5 tonne to the permitted gross mass (see example below), if they comply with all of the following:

- Euro 4 engine as required in ADR 80/01 and ADR 80/02 or later versions;
- Front Underrun Protection Device (FUPD) (UN ECE Regulation No 63);
- Increased cabin strength (UN ECE Regulation No 29);
- A manufacturers GVW greater than 15 tonnes; and
- The vehicle is appropriately rated.

E.g. (6.5 + 16.5 + 20) = 43.0 (an increase of 0.5 tonne in gross weight does not require an increase in axle spacings)

HOW TO READ THE CHART

15.0	(6.0 + 9.0)	** (S)
↑	↑	↑
Gross Weight	Individual axle Weights	Refer to symbols

LEGEND

- GML - General Mass Limits
- RFS - Certified Road Friendly Suspension
- NHVAS CML - National Heavy Vehicle Accreditation Scheme Concessional Mass Limits
- NHVAS HML - National Heavy Vehicle Accreditation Scheme Higher Mass Limits

This chart is a summary only. Detailed information about vehicle mass and any later versions of this chart can be obtained from the VicRoads website: www.vicroads.vic.gov.au

ENGINEERING REPORT



REGISTERED
Building Practitioner
plus CPD



S.J.STREET & ASSOCIATES PTY LTD, STRUCTURAL ENGINEERS & REGISTERED BUILDING PRACTITIONERS

JOB TITLE:	Tarcoola Bridge Load Rating	JOB NO.	11779
SUBJECT:	Engineering Report: Bridge Load Rating	PAGE NO.:	REV
DESIGNER/DATE:	SJS Dec'17	CHECKED/DATE:	SECTION: FILE:

APPENDIX 3

* BRIDGE LANE LOAD ANALYSIS

CALCULATION SHEET

JOB TITLE: Tarcoola Bridge Load Rating JOB NO. 11779
 SUBJECT: Lane Load Analysis PAGE NO.: 1 OF 1
 DESIGNER/DATE: SJS Nov'17 CHECKED/DATE: _____ SECTION: _____ FILE: _____

BRIDGE TARCOOLA BRIDGE LANE LOAD ANALYSIS							
Reference load: T44 Bridge width: 3.9m = max 1 design lane Effective span: 6 spans- continuous beam: 10.6m/10.35m/10.0m/10.6m/10.53m/10.85m Assumption: One vehicle (or small truck + dog) on full 60m+ length of bridge deck at any time							
LOADING	Maximum Bending Moment (max) M_{lane} kNm	Shear V_{lane} kN	Support Reaction R_{lane} kN	Ratio Bending Moments Loading/T44	Ratio Shear Forces Loading/T44	Ratio Support Reaction Loading/T44	Analysis Result
HS20-44	383	167	233	0.81	0.69	0.65	Suitable
T44	473	242	358	1.0	1.0	1.0	Suitable
Abnormal Vehicle	Not applicable as load width exceeds single lane bridge width						Not suitable
HLP320	733	667	1232	1.55	2.76	3.44	Not suitable
M1600	621	390	611	1.31	1.61	1.71	Not suitable
A160	345	160	117	0.73	0.66	0.33	Suitable
Small truck & Dog 	289	144	259	0.61	0.60	0.72	Suitable
62.5T B Double 	394	182	331	0.83	0.75	0.92	Suitable
68T B Double 	388	185	333	0.82	0.76	0.93	Suitable

ENGINEERING REPORT



REGISTERED
Building Practitioner
plus CPD



S.J.STREET & ASSOCIATES PTY LTD, STRUCTURAL ENGINEERS & REGISTERED BUILDING PRACTITIONERS

JOB TITLE:	Tarcoola Bridge Load Rating	JOB NO.	11779
SUBJECT:	Engineering Report: Bridge Load Rating	PAGE NO.:	REV
DESIGNER/DATE:	SJS Dec'17	CHECKED/DATE:	SECTION: FILE:

APPENDIX 4

* REPAIRS & REMEDIAL WORKS SUMMARY

JOB TITLE:	Tarcoola Bridge Load Rating	JOB NO.	11779
SUBJECT:	Engineering Report: Bridge Load Rating	PAGE NO.:	S1 REV
DESIGNER/DATE:	SJS Dec'17	CHECKED/DATE:	SECTION: FILE:

TARCOOLA BRIDGE LOAD RATING

REPAIRS & REMEDIAL WORKS REQUIRED FOR B-DOUBLE LOAD RATING

The following ten-point plan of repairs and remedial works is recommended to accommodate a 6.8 year design life and the proposed B-double traffic on the bridge:

1. Annual Level 2 Bridge Condition inspections (eg AusSpan) and associated maintenance program;
2. Limit vehicle speed to a maximum of 5km/hr
3. Provide suitable signage on bridge approaches;
4. Level out approaches in elevation and plan and provide rock beaching retention fill on edges to protect batter slopes from erosion;
5. Abrasive sand blast all steelwork to Class 2.5 and paint with a two coat epoxy primer paint system;
6. Realign and reclip precast concrete decking planks to edge steel beams- replace missing bolts and clips- all details hot dipped galvanized;
7. Provide precast concrete bollards on the approaches each side to control vehicle alignment across the bridge;
8. Install suitable low level guiderail each side eg low level pipe railing fixed back to deck, maximum height 1/3 of wheel height;
9. All work to be carried out by experienced tradesman to current Australian Standards.

This page has intentionally been left blank



Appendix 8

Environmental Risk Assessment

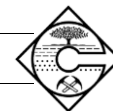
(Total No. of pages including blank pages = 12)



ENVIRONMENTAL IMPACT STATEMENT

Fraser Earthmoving Construction Pty Ltd
Howlong Sand and Gravel Expansion Project

This page has intentionally been left blank



ENVIRONMENTAL RISK ASSESSMENT

Risk is the chance of something happening that would have an impact upon the objectives or the task, which in this case is the construction and operation of the Howlong Sand and Gravel Quarry without unacceptable environmental impact. Risk is measured in terms of consequence (severity) and likelihood (probability) of an event happening.

A preliminary environmental risk assessment, prepared in accordance with Australian and International Standards HB 203:2012, HB 89:2013 and IEC/ISO 31010:2018 was undertaken to identify environmental issues that may be affected by the Project. Risk sources, potentially affected residences or environments, potential consequences and specific potential impacts were then identified. A review of the proposed operations, the local environment and other factors was undertaken to identify the likely consequence and likelihood of each potential environmental impact.

The level of risk was initially established assuming the implementation of standard mitigation measures within the quarrying industry. In some cases, it was accepted that the standard mitigation measures would be adequate to achieve an acceptable level of impact without the need for any additional controls or mitigation measures.

The determination of consequence was based on the definitions contained in **Table A8.1**. The likelihood or probability of each impact occurring was then rated according to the definitions contained in **Table A8.2**.

Table A8.1
Qualitative Consequence Rating

Level	Descriptor	Description
1	Catastrophic	The potential to cause regional environmental impact/ecosystem damage with impacts causing mine or business closure, e.g. major off-site release of a contaminant with long-term detrimental effects.
2	Major	The potential to cause substantial regional/local environmental damage which could result in major financial loss and/or prosecution, e.g. off-site release of a contaminant resulting in local ecosystem damage.
3	Moderate	The potential to cause substantial temporary or minor long-term damage, e.g. a minor water or large hydrocarbon off-site release with outside clean-up assistance required. May potentially result in a legal non-compliance.
4	Minor	The potential for a temporary or minor spill. No legal breach but may be non-compliant with internal environmental target, e.g. minor hydrocarbon spill.
5	Negligible	No detrimental effect, negligible environmental impact.

Table A8.2
Qualitative Likelihood Rating

Level	Descriptor	Description
A	Almost Certain	Is expected to occur in most circumstances
B	Likely	Will probably occur in most circumstances
C	Possible	Could occur
D	Unlikely	Could occur but not expected
E	Rare	Occurs only in exceptional circumstances



The risk associated with each environmental impact was initially assessed without the inclusion of any specific operational controls or systems or mitigation measures in place (other than standard mitigation measures). Based on the assessment of consequence and likelihood, an overall risk ranking of Negligible, Minor, Moderate, Major or Severe was assigned to each potential impact based on the matrix of **Table A8.3**.

Following the review of all relevant, environmental issues, the Project Design and the outcomes from the community consultation, the preliminary risk ratings were reviewed and adjusted to reflect the specific mitigation measures proposed to achieve the required levels of impact of the Project.

The results of the risk analysis are presented in **Table A8.4**.

Table A8.3
Risk Ranking

		Likelihood				
Consequence		A - Certain	B - Likely	C - Possible	D – Unlikely	E - Rare
	1 – Catastrophic	1	2	4	7	11
	2 – Major	3	5	8	12	16
	3 – Moderate	6	9	13	17	20
	4 – Minor	10	14	18	21	23
	5 – Negligible	15	19	22	24	25

 Low	 Medium	 High	 Extreme
---	--	--	---

The four levels of risk that have been identified for this Project (see **Table A8.3**) are defined as follows.

Low (L): requiring a basic assessment of proposed controls and residual impacts. Any residual impacts are unlikely to have any major impact on the local environment or stakeholders.

Medium (M): requiring a medium level assessment of proposed controls and residual impacts. It is unlikely to preclude the development of the Project but may result in impacts deemed unacceptable to some local or government stakeholders.

High (H): requiring in-depth assessment and high-level documentation of the proposed controls and mitigation measures. Ultimately, this level of risk may preclude the development of the Project.

Extreme (E): requiring in-depth assessment and high-level documentation of the proposed controls and mitigation measures and possible preparation of a specialised management plan. Unless considered to be adequately managed by the controls and/or management plan, this level of risk is likely to preclude the development of the Project.

Table A8.4
Risk Analysis

Page 1 of 4

Risk Source(s)	Receiver / Surrounding Environment	Potential Consequence	Potential Impact (Assuming Mitigation Measures Adopted)	Consequence	Likelihood	Risk	Proposed Mitigation Measures EIS Section Ref.
AIR QUALITY AND GREENHOUSE GAS							
- Particulate matter (PM_{2.5}, PM₁₀, TSP) from extraction and processing operations, stockpiles and exposed surfaces - Particulate matter (PM_{2.5}, PM₁₀, TSP) from vehicle movements within the Quarry infrastructure area or the Quarry Access Road	Residences / water tanks	Increased deposited dust and associated nuisance for local residents / sediment water tanks	Nuisance/amenity impacts from dust deposited on water tanks, window sills, cars, etc.	Minor (4)	Possible (C)	L	6.6.7
	Local residents and landowners	Increased particulate matter (in particular PM ₁₀ and PM _{2.5}) in the atmosphere	Adverse health impacts (if levels are excessive)	Moderate (3)	Unlikely (D)	L	
		Complaints to the Operator by community	Community and regulatory scrutiny	Moderate (3)	Possible (C)	M	
	Surface water bodies	Reduction in local water quality	Exceedance surface water quality	Moderate (3)	Unlikely (D)	L	
	Surrounding native vegetation	Reduction in vegetation health or mortality	Reduced condition of local vegetation or value as fauna habitat	Moderate (3)	Rare (E)	L	
Greenhouse gas emissions from vehicles and fixed and mobile plant	Local and regional air shed	Increase in greenhouse gas emissions to atmosphere	Contribution to greenhouse effect	Negligible (5)	Certain (A)	M	
Respirable silica within dust from extraction and processing operations, stockpiles and exposed surfaces	Residents living on surrounding landholdings	Increase in concentrations of respirable silica in the atmosphere	Adverse health impacts such as a respiratory disease	Major (4)	Rare (E)	L	
NOISE AND VIBRATION							
Noise from extraction and processing plant	Local residents and landowners	Increased noise levels	Noise levels cause annoyance and/or distractions	Moderate (3)	Unlikely (D)	L	6.5.5
		Impacts on the health and well-being of local residents	Noise levels can cause adverse effects on physical or mental health	Major (4)	Rare (E)	L	
		Complaints to Operator by community	Community and regulatory scrutiny	Moderate (3)	Possible (C)	M	
	Native fauna	Detrimental effects on local fauna	Relocation of and/or reduction of local native fauna species due to noise disturbance	Moderate (3)	Unlikely (D)	L	
Noise from trucks transporting quarry products off site	Local residents and landowners	Increased noise levels	Noise levels can cause annoyance and/or distractions	Moderate (3)	Unlikely (D)	L	
		Impacts on the health and well-being of local residents	Noise levels can cause adverse effects on physical or mental health	Major (2)	Rare (E)	L	
		Complaints to Operator by community	Community and regulatory scrutiny	Moderate (3)	Possible (C)	M	
VISIBILITY							
Changes in the visual character of the locality	Surrounding residents	Visibility of the quarry from local residences and vantage points from the Murray River	Decreased visual amenity of local setting	Moderate (3)	Unlikely (E)	L	6.10.4
	Motorists (Riverina Highway)	Visibility of the quarry from the Highway	Decreased visual amenity	Moderate (3)	Unlikely (E)	L	
TRAFFIC							
Increased traffic levels on the public road network	Motorists on the Riverina Highway	Truck traffic and possible congestion	Inconvenience to commuters	Moderate (3)	Unlikely (D)	L	6.2.4
			Increased risk of accidents occurring	Major (2)	Rare (E)	L	
	Deterioration of road surface	Accelerated road pavement deterioration	Minor (4)	Rare (E)	L		
	Residences in the vicinity of the Quarry	Truck traffic and vehicle noise/emissions	Reduced amenity of local area (noting presence of nearby traffic on the Riverina Highway)	Moderate (3)	Unlikely (D)	L	
	Native fauna	Death or injury to native animals on the road network	Loss of species in local area	Minor (4)	Unlikely (D)	L	

This page has intentionally been left blank

This page has intentionally been left blank

Table A8.4 (Cont'd)
Risk Analysis

Page 2 of 4

Risk Source(s)	Receiver / Surrounding Environment	Potential Consequence	Potential Impact (Assuming Mitigation Measures Adopted)	Consequence	Likelihood	Risk	Proposed Mitigation Measures EIS Section Ref.
BIODIVERSITY							
• Clearing of vegetation	• Regional biota	• Reduction in remnant native vegetation	• Reduction in local biodiversity	Minor (4)	Possible (C)	L	6.8.4
		• Loss of local and regionally important threatened species (flora and fauna)	• Local or regional reduction in distribution of threatened species, populations and EECs	Minor (4)	Possible (C)	L	
• Detrimental indirect effects of Project impacts, e.g. noise, dust, lighting	• Locally occurring species, populations and communities	• Dispersal of locally occurring species and populations away from the Site	• Reduced biodiversity value of the Site and local setting	Minor (4)	Unlikely (D)	L	
		• Reduced potential for use of the Site by threatened species, populations and EECs	• Reduced local distribution of threatened species, populations and EECs	Minor (4)	Unlikely (D)	L	
SURFACE WATER							
• Discharge of dirty or contaminated water	• Local tributaries and Murray River	• Decreased water quality	• Temporary sedimentation pollution of downstream waters	Moderate (3)	Possible (C)	M	6.4.3
	• Site soils and vegetation	• Contamination of soil resources	• Reduced potential for future land uses	Minor (4)	Unlikely (D)	L	
	• Local and regional catchment ecosystem	• Introduction of a toxic compound to the environment	• Pollution of local waterways resulting in detrimental effects to flora and fauna	Moderate (3)	Possible (C)	M	
• Changes to the landscape from Quarry operations	• The floodplain	• Damage to off-site infrastructure located within the floodplain	• Damage to infrastructure and risk to human life	Major (2)	Unlikely (D)	M	
• Flooding	• Quarry infrastructure	• Damage to on-site infrastructure located within the floodplain	• Damage to infrastructure and risk to human life	Major (2)	Unlikely (D)	M	
• Capture of water that would otherwise have fallen on the catchment	• River environment and downstream water users	• Reduced water available to sustain the environment or for downstream use	• Impact to natural environment or downstream irrigation or other approved water use	Negligible (5)	Likely (B)	L	
GROUNDWATER							
• Reductions in groundwater flow	• Local groundwater users	• Reduction in the volume of water contained within local aquifers / availability	• Reduced yields of groundwater bores	Moderate (3)	Unlikely (D)	L	6.3.4
	• Local streams, creeks and rivers	• Reduction in base flows	• Reduced discharge to the Murray River and other receiving systems	Major (2)	Unlikely (D)	M	
			• Degradation of riparian or aquatic vegetation/ecosystems	Moderate (3)	Unlikely (D)	L	
			• Reduced availability of water to downstream users	Moderate (3)	Unlikely (D)	L	
	• Terrestrial Groundwater dependent ecosystems	• Reduced availability of groundwater	• Degradation of terrestrial groundwater dependent ecosystems	Moderate (3)	Unlikely (D)	L	
• Contamination from on-site activities	• Regional groundwater setting	• Seepage of contaminated materials to regional groundwater	• Contamination of groundwater resource	Moderate (3)	Possible (C)	M	
ABORIGINAL CULTURAL HERITAGE							
• Removal or destruction of known Aboriginal sites and/or artefacts	• Local archaeological setting	• Damage or destruction of Aboriginal artefacts or site	• Destruction of identified site	Moderate (3)	Rare (E)	L	6.9.4
			• Cumulative reduction of the in situ archaeological record	Moderate (3)	Rare (E)	L	
• Removal or destruction of currently unidentified Aboriginal sites and/or artefacts			• Destruction of site not yet identified on archaeological record	Moderate (3)	Rare (E)	L	
			• Cumulative reduction of the in situ archaeological record	Moderate (3)	Rare (E)	L	

This page has intentionally been left blank

This page has intentionally been left blank

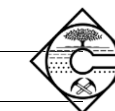
Table A8.4 (Cont'd)
Risk Analysis

Page 3 of 4

Risk Source(s)	Receiver / Surrounding Environment	Potential Consequence	Potential Impact (Assuming Mitigation Measures Adopted)	Consequence	Likelihood	Risk	Proposed Mitigation Measures EIS Section Ref.
HISTORIC HERITAGE							
• Removal or destruction of sites of heritage significance due to proposed activities	• Local archaeological setting	• Loss or damage to heritage sites	• Loss or destruction of items of heritage significance	Moderate (3)	Rare (E)	L	6.9.4
SOILS							
• Loss of soil resources as a result of land preparation activities	• Site soil resources	• Reduced soil resource to undertake appropriate rehabilitation program	• Rehabilitation outcomes not meeting objectives	Minor (4)	Unlikely (D)	L	6.7.4
• Degradation of soil resources as a result of stockpiling	• Site soil resources	• Compromised soil quality leads to poor vegetation regrowth on site	• Reduced standard of revegetation	Minor (4)	Unlikely (D)	L	
• Erosion as a result of vegetation clearing, from stockpiles or following soil replacement during rehabilitation	• Site soil resources	• Loss of soil resources	• Rehabilitation outcomes not meeting objectives	Minor (4)	Unlikely (D)	L	
	• On and off-site surface water bodies	• Sedimentation of on-site and local surface water bodies resulting in poor water quality	• Increased erosion on the final landform	Minor (4)	Unlikely (D)	L	
ECONOMIC							
• Increase in local employment	• Local community and residents	• Employment of quarry personnel and contractors	• Improvement of economic well-being with the LGA	Positive Impact			6.12
• Supply of sand and gravel aggregates	• Victoria and NSW	• Provision of cost-competitive sand and gravel aggregates	• Downward pressure on regional infrastructure and construction projects	Positive Impact			
SOCIAL							
• Increase in local employment	• Local community and residents	• Employment of quarry personnel and contractors	• Improvement of economic well-being within the LGA	Positive Impact			6.13.7
			• Change in local community structure as a result of income disparity	Negligible (5)	Unlikely (D)	L	
			• Inability of existing services and infrastructure to meet needs of community	Negligible (5)	Rare (E)	L	
• Impacts associated with local amenity such as traffic, noise, visual or dust impacts	• Local community and residents	• Loss of amenity	• Changes to an individual's experience of a place or of their home	Moderate (3)	Unlikely (D)	L	
			• Negative impacts to way of life and in extreme cases community interactions and cohesion	Moderate (3)	Unlikely (D)	L	
• Proximity of quarry to local and neighbouring properties	• Local community and residents	• Perceived / loss of amenity at local and neighbouring properties	• Change of social activities in local communities and impact on feelings of well-being derived from associated location	Moderate (3)	Rare (E)	L	
• Detrimental impacts to land values	• Local landowners	• Perceived / loss of land values arising from quarry's operation	• Reduction in land values	Moderate (3)	Rare (E)	L	
• Community fears and concerns for the future exacerbated by perceived inability to adapt or be involved in decisions that affect their lives	• Local community and residents	• Feeling that the community has no control over matters that directly affect their lives	• Fears for the future and future generations and feelings of helplessness	Moderate (3)	Unlikely (D)	L	
• Detrimental impacts to agricultural resources	• Local business and landowners	• Loss of agricultural resources (land and water)	• Loss of income	Moderate (3)	Rare (E)	L	

This page has intentionally been left blank

This page has intentionally been left blank

Table A8.4 (Cont'd)
Risk Analysis

Page 4 of 4

Page 4 of 4

Risk Source(s)	Receiver / Surrounding Environment	Potential Consequence	Potential Impact (Assuming Mitigation Measures Adopted)	Consequence	Likelihood	Risk	Proposed Mitigation Measures EIS Section Ref.
REHABILITATION							
• Rehabilitated soils and vegetation of the Site	• Future land use	• Soils and vegetation quality and suitability for future use is compromised or restricted	• Rehabilitation outcomes do not meet objectives	Moderate (3)	Unlikely (D)	L	2.13
	• Surrounding residents	• Poor rehabilitation	• Reduced amenity of the final landform	Moderate (3)	Unlikely (D)	L	
• Final land use of the Site	• Surrounding residents	• Altered landforms	• Reduced amenity of the final landform resultant from altered topography	Moderate (3)	Unlikely (D)	L	
	• Future land use	• Landform unsuitable for proposed final land use	• Final land use incompatible with surrounding landscape	Moderate (3)	Unlikely (D)	L	
BUSH FIRE							
• Initiation of bush fire due to on Site activities	• Local residents, business and landowners	• Health and safety impacts to employees and residents	• Loss of life, assets and property on site and in surrounding area	Major (2)	Rare (E)	L	6.11.3
		• Reduction of operating performance for the Site and surrounding businesses	• Property damage and impacts on production	Major (2)	Unlikely (D)	M	
	• Native flora and fauna	• Destruction and damage of native flora and fauna	• Reduced biodiversity value of the Site	Major (2)	Unlikely (D)	M	

This page has intentionally been left blank