AGENDA

Extraordinary Council Meeting

Date: Monday, 11 March 2024

Time: 4.30pm

Location: Cowra Council Chambers
116 Kendal Street, Cowra

Paul Devery

General Manager

Order Of Business

1 INTRODUCTION

1.1 Recording & Publishing

In accordance with the Local Government Act (1993), Cowra Council is recording this meeting and will upload the recording to Council's website. By speaking at this meeting, you agree to being recorded and having that recording published in the public domain. Please ensure that when you speak at Council meetings you are respectful to others and use appropriate language at all times. Cowra Council accepts no liability for any defamatory or offensive remarks or gestures made during the course of this meeting.

1.2 Acknowledgement of Country

We acknowledge the traditional custodians of the land on which we gather, the Wiradjuri people, and pay our respects to elders both past and present.

1.3 Apologies and Applications for Leave of Absence by Councillors

List of apologies for the meeting.

1.4 Disclosures of Interest

Councillors and staff please indicate in relation to any interests you need to declare:

a. What report/item you are declaring an interest in?
b. Whether the interest is pecuniary or non-pecuniary?
c. What is the nature of the interest?

1.5 Presentations

1.6 Public Forum

I invite any member of the public wishing to speak on an item in the agenda to please come to the lectern, introduce yourself, state the item you wish to speak on and allow time for any councillor or member of staff if they have declared an interest in the item to manage that conflict which may include them leaving the chamber during your presentation.

2 DIRECTOR-ENVIRONMENTAL SERVICES

2.1 Development Application No. 57/2020, Lot 2 DP 557714, Lot 1 DP 1201417, Lot 10 DP 1107219 & Lot 3905 DP 1200283, 2-4 Kite Street Cowra, continued use of, and proposed upgrades to landscaping material supplies, lodged by Buzzree Pty Ltd

File Number: D24/307

Author: Larissa Hackett, Director Environmental Services

RECOMMENDATION

1. **That Council notes that the reason for the decision is that the proposal largely complies with Section 4.15 of the Environmental Planning and Assessment Act 1979. The application was publicly notified and no submissions were received; and**

2. **That Development Application No. 57/2020, for the continued use of, and proposed upgrades to landscaping material supplies on Lot 2 DP 557714, Lot 1 DP 1201417, Lot 10 DP 1107219 & Lot 3905 DP 1200283, 2-4 Kite Street Cowra be approved subject to the following conditions:**

GENERAL TERMS OF APPROVAL – NSW DEPARTMENT OF PLANNING AND ENVIRONMENT – WATER

3. **Before commencing any proposed controlled activity on waterfront land, an application must be submitted to Department of Planning and Environment-Water, and obtained, for a controlled activity approval under the Water Management Act 2000.**

4. **This General Terms of Approval (GTA) only applies to the proposed controlled activity described in the plans and associated documents found in Schedule 1, relating to Development Application DA 57/2020 provided by Council to Department of Planning and Environment-Water.**

5. **A. The application for a controlled activity approval must include the following plan(s):**

    a) **Site plans**

    b) **Soil and water management plan**

    c) **Erosion and sediment control plans**

    d) **Construction stormwater drainage outlet plan**

    e) **Vegetation management plan**

    f) **Construction detailed basin design plans**

    B. The plan(s) must be prepared in accordance with Department of Planning and Environment-Water's guidelines located on the website https://www.dpie.nsw.gov.au/water/licensing-and-

trade/approvals/controlled-activity-approvals/what/guidelines

CONDITIONS OF CONSENT – TRANSPORT FOR NSW

6. **The applicant must comply with the requirements of T HR CI 12090 ST Airspace and External Developments (Link: https://www.transport.nsw.gov.au/industry/asset-standards-authority/finda-standard/airspace-and-external-developments-1) and Development Near Rail Corridors and Busy Roads- Interim Guidelines (Link development-near-rail-corridors-and-busy-roads-interimguideline-2008.ashx (nsw.gov.au). Please note that State Environmental Planning Policy (Infrastructure) 2007 referred in the above documents has been superseded by State Environmental Planning Policy (Transport and Infrastructure) 2021.**

7. **The applicant must ensure its employees and all other persons do not enter any parts of the rail land other than the licenced premises unless otherwise permitted in writing in advance.**

8. **Prior to the commencement of works, if required the applicant shall provide certification/document from a qualified Geotechnical and Structural Engineers stating that the proposed works are to have no negative impact on the rail corridor and associated rail infrastructure. The applicant must consult and obtain written approval from UGLRL and TfNSW regarding any works involving penetration of ground if the excavation depth is greater than 2m depth with 25m of the rail corridor.**

9. **Prior to the commencement of works, the applicant shall provide an accurate survey locating the development with respect to the rail boundary and rail infrastructure. This work is to be undertaken by a registered surveyor, to the satisfaction of UGLRL on behalf of TfNSW.**

10. **Prior to the commencement of works, the applicant must acquire written approval from UGLRL and TfNSW to its stormwater management plan to confirm post-development flows should be equal or less than that of pre-development flows (or post-development flows should not exceed pre-development flows) and to ensure that the development is not directed to railway land and had no adverse impact on the rail corridor.**

11. **Prior to the commencement of works, appropriate fencing must be placed between the proposed development site, and the remainder of the rail corridor to prevent unauthorised access. Before installing any fencing work, the applicant must obtain approval from TfNSW. The applicant is advised to contact UGLRL's third party works via thirdpartyworks@uglregionallinx.com.au for more information.**

12. **Prior to the commencement of any work – cranes and equipment:**

    1. **If required, the applicant must submit an application to UGLRL for approval of TAHE prior to any use of cranes and equipment (Equipment) in the air space over the rail corridor.**

    2. **If required, the applicant is required to provide a safety assessment of the works necessary for the development assessing any potential impact or**

intrusion on the Danger Zone (as defined in the UGLRL Network Rules and Procedures and that any works are undertaken by a qualified Protection Officer.

3. The use of Equipment must be in accordance with the AS 2550 series of Australian Standards, Cranes, Hoist and Winches, including AS2550 15-1994 Cranes – Safe Use - Concrete Placing Equipment.

GENERAL CONDITIONS

13. Development is to be in accordance with approved plans.

The development is to be implemented in accordance with the plans and supporting documents stamped and approved and set out in the following table except where modified by any conditions of this consent.

Plan No./ Supporting Document	Prepared by/Reference Details	Cowra Shire Council Reference
Existing Project Site Layout Figure A	RW Corkery & Co December 2023	Received 21 December 2023 Stamped No. 57/2020(A)
Proposed Project Site Layout Figure 2.1	RW Corkery & Co December 2023	Received 21 December 2023 Stamped No. 57/2020(A)
Statement of Environmental Effects Ref 983/06	RW Corkery & Co December 2023	Received 21 December 2023 Stamped No. 57/2020(A)

In the event of any inconsistency between conditions of this development consent and the plans/supporting documents referred to above, the conditions of this development consent prevail.

14. The applicant shall comply with all relevant prescribed conditions of development consent under Part 6, Division 8A of the Environmental Planning and Assessment Regulation 2021 (see attached Advisory Note).

15. The applicant shall obtain the written agreement (and any associated permits, leases or purchases required) from Cowra Council for the use of road reserves within the existing project site and two Council owned lots within the site, being Lot 1 DP 1201417 and Lot 10 DP 1107219.

16. Approved hours of operation are as follows:

Landscaping Materials	Monday to Friday	7:00am to 5:00pm
	Saturday	7:00am to 12:00pm

Delivery and Supply	**Sunday & Public Holidays**	**No Operations**
Emergency Maintenance	**All Days**	**24 hours**

17. No advertising sign and/or structure other than that which is permitted under this development approval or permissible without consent (exempt development) is to be erected as part of the approved development until a formal application has been submitted to Council and a development consent has been issued.

18. All traffic movements in and out of the development are to be in a forward direction.

19. The emission of noise from the premises must be in accordance with the recommendations of the Noise and Vibration Impact Assessment prepared by Spectrum Acoustics Pty Ltd and the Noise Policy for Industry published by the NSW Environment Protection Authority (2017).

20. The Applicant must obtain a Whole Occupation Certificate issued from the Principal Certifier appointed for the subject development. An Occupation Certificate Application must be lodged via the NSW Planning Portal to the Principal Certifier accompanied by the relevant fee prior to arranging an inspection. If Cowra Council is the Principal Certifier appointed for the subject development an inspection for the Occupation Certificate can be arranged by contacting Environmental Services on (02) 6340 2040.

CONDITIONS TO BE COMPLIED WITH PRIOR TO THE COMMENCEMENT OF WORKS

21. The Applicant is to submit to Cowra Shire Council, at least two days prior to the commencement of any works, a 'Notice of Commencement of Building or Subdivision Works' and 'Appointment of Principal Certifier'.

22. Prior to the commencement of works, the applicant shall provide to the Principal Certifier evidence of the agreement reached with Cowra Council referenced in condition 13.

23. Prior to the commencement of works, a car parking plan is to be provided for the approval of the Principal Certifier that includes the provision of one disabled parking space at the office to be constructed and/or line-marked in accordance with AS2890.6 – Off-street parking for people with disabilities.

24. Prior to the commencement of work on the site, all erosion and sediment control measures shall be implemented and maintained prior to, during and after the construction phase of the development. The erosion and sediment control measures are to comply with the Soil and Water Management Plan prepared by Strategic Environmental and Engineering Consulting Pty Ltd and Part B of Cowra Shire Council Development Control Plan 2021 at all times.

25. Prior to the construction of the footings a 'peg-out' survey plan is to be submitted to the Principal Certifier which establishes the position of the property boundary

and demonstrates that the development will be constructed entirely within the boundaries of the property.

CONDITIONS TO BE COMPLIED WITH DURING CONSTRUCTION

26. Any damage caused to footpaths, roadways, utility installations and the like by reason of construction operations shall be made good and repaired to a standard equivalent to that existing prior to commencement of construction. The full cost of restoration/repairs of property or services damaged during the works shall be met by the Applicant.

27. All storage of goods and building materials and the carrying out of building operations related to the development proposal shall be carried out within the confines of the property. All vehicles must be parked legally and no vehicles are permitted to be parked over the public footpath. The unloading of building materials over any part of a public road by means of a lift, hoist or tackle projecting over the footway will require separate approval under Section 68 of the Local Government Act 1993.

28. Building activities and excavation work involving the use of electric of pneumatic tools or other noisy operations shall be carried out only between 7.00 am and 6.00 pm on weekdays and 8.00 am and 1.00 pm on Saturdays. No work on Sundays or Public Holidays is permitted.

29. The applicant must obtain any approvals required under Section 68 of the Local Government Act 1993 for water supply work, sewerage and stormwater drainage work or the disposal of liquid waste into Council's sewer.

CONDITIONS TO BE COMPLIED WITH PRIOR TO THE ISSUE OF A WHOLE OCCUPATION CERTIFICATE

30. Prior to the issue of a Whole Occupation Certificate, evidence is to be provided to the Principal Certifier that the disturbed areas encroaching on land controlled by Transport for NSW (on Lot 3905 DP 1200283) not covered by the licence agreement has been remediated to the satisfaction of TfNSW.

31. Prior to the issue of a Whole Occupation Certificate, the 10m wide Vegetated Riparian Zone is to be established along the southern boundary of the site in accordance with the species mix and methodology outlined in the Statement of Environmental Effects. Ringlock wire fencing is to be erected to delineate the revegetated area and to prevent accidental access to the revegetated area by site personnel and customers. Regular watering is to be undertaken for a minimum of 2 months following establishment.

32. Prior to the issue of a Whole Occupation Certificate, stormwater infrastructure is to be completed in accordance with the Soil and Water Management Plan prepared by Strategic Environmental and Engineering Consulting Pty Ltd.

33. Prior to the issue of a Whole Occupation Certificate, carparking is to be constructed and/or line-marked in accordance with the approved plan.

34. Prior to the issue of a Whole Occupation Certificate the applicant is required to enter into a lease agreement for the continued use of Council land identified as

Lot 1 DP 1201417, Lot 10 DP 1107219 and the road reserve at the corner of Kite Street and River Street.

ADVICE

If, during work, an Aboriginal object is uncovered then WORK IS TO CEASE IMMEDIATELY and the Office of Environment & Heritage is to be contacted urgently on (02) 6883 5300. Under the National Parks and Wildlife Act 1974 it is an offence to harm an Aboriginal object or place without an 'Aboriginal heritage impact permit' (AHIP). Before making an application for an AHIP, the applicant must undertake Aboriginal community consultation in accordance with clause 80C of the NPW Regulation.

INTRODUCTION

Development Application No. 57/2020 proposes the continued use of, and proposed upgrades to landscaping material supplies on Lot 2 DP 557714, Lot 1 DP 1201417, Lot 10 DP 1107219 & Lot 3905 DP 1200283, 2-4 Kite Street Cowra. The application was lodged with Council by Buzzree Pty Ltd on 29 June 2020. It has since been subject to one major amendment (discussed below) and required re-exhibition and re-referral to two government agencies.

The application is being reported to Council because it involves two lots and some road reserve areas that are owned by Cowra Council. In accordance with Council's Code of Planning Practice – Development Applications, where applications involve Council interests the application is to be reported to Council for determination.

A copy of the development plans of the proposed continued use of are included in Attachment '1' to this report and a copy of the Statement of Environmental Effects is included in Attachment '2'.

Description of Site

The subject land covers an area of approximately 2.9ha. A landscape materials yard has been operating from the site since the early 1970's. Prior to this, the site formed part of a gravel extraction operation involving the extraction of gravel from the bed and banks of the adjacent Lachlan River.

Features adjacent to the subject land include the Lachlan River to the south and west, agricultural land to the west and northwest, and light industrial, residential, and business zones to the north, northeast, and east.

Lot & DP	Owner	Zone
Lot 2 DP 557714	Applicant	RU1
Lot 1 DP 1201417	Cowra Council	SP2
Lot 10 DP 1107219	Cowra Council	RU1
Lot 3905 DP 1200283	NSW Government	SP2
Unformed road reserves associated with Lee and River Streets.	Cowra Council	RU1

The subject land includes land within Lot 3905 DP1200283 which is occupied by the disused Cowra to Eugowra Railway. A licence agreement between the Applicant and Rail Corporation

NSW for the continued use of the section of the Project Site within Lot 3905 DP1200283 was granted on 17 February 2020.

The Applicant proposes to seek an agreement in relation to access and continued use of land within the Project Site owned by Cowra Council.

The subject land is accessed by a concrete driveway on the corner of Kite Street and River Street and is intersected by the disused Cowra to Eugowra Railway.

The subject land is occupied by a Landscaping Materials Yard adjacent to the upper bank of the Lachlan River, with the southwestern and western boundaries defined by a combination of a concrete block walls and an earth bunds. Infrastructure which forms part of the existing Landscaping Material Yard includes the following.

- Two concrete pad work areas, including one with an adjacent unlined sump used for truck washout and water storage.
- Material bunkers constructed using concrete blocks and panels.
- Various material stockpiles.
- Surface water management infrastructure including earth bunds and concrete block walls along the southern and western perimeter of the Project Site.
- A concrete-sealed driveway and level crossing.

A location map is included in Attachment '3' and an aerial photograph is included in Attachment '4' to this report.

Description of Proposal

The application was initially submitted as Designated Development seeking consent for the continued use of a concrete batching plant including manufacture of precast concrete products and concrete waste recycling. Continued use was also sought for the sales of small quantities of landscaping and other materials.

Following lodgement, a thorough review of Council records discovered historical approval for the existing concrete batching operation but not for landscaping materials supplies. The application was subsequently amended for this component only. There is also no existing formal authorisation for the use of Council land.

The applicant's principal objectives for the proposal are to:

- Obtain the necessary development consent and rectify issues associated with the use of land controlled by Council and Transport for NSW;
- Continue to service the construction and landscaping material market in the Cowra region;
- Undertake modification to the existing site layout to ensure that environmental risks are minimised to the maximum extent practicable; and
- Undertake all activities in a manner to ensure compliance with conditional requirements of all approvals, reasonable community expectations and, to the extent practicable, the objectives of the Cowra LEP.

The proposal includes the following key activities:

- Modifications to the project site layout, including the construction of a concrete sealed work area including truck washout bays and bunding and relocation of some concrete bunkers;
- The establishment of a range of surface water management infrastructure (including a sediment basin) to ensure improved environmental management of the project site;
- Continued sale of small quantities of landscaping and other materials to the general public and small business;
- Recycling of limited quantities of returned concrete material from the applicant's adjacent concrete batching operations;
- Ancillary activities, including management of surface water and storage of equipment.
- Remediation of a section of the rail corridor
- Establishment of a vegetated riparian zone

The hours of operation for the existing and proposed Landscaping Materials Yard are as follows:

Activity	**Period**	**Hours of Operation**
Landscaping Materials Delivery and Supply	Monday to Friday	7:00am to 5:00pm
	Saturday	7:00am to 12:00pm
	Sunday	No Operations
Emergency Maintenance	All Days	24 hours

The Applicant currently employs five full-time employees.

The table below lists mobile equipment that would be used for day-to-day operations, together with the likely use of each piece of equipment.

Equipment	**No.**	**Function**
Front-end Loader	2	Loading trucks and trailers within the Landscaping Materials Yard. Stockpile management activities. Washout bay clean-out.
Agitator Trucks[1]	3 - 5	Enter and exit the Project Site, washing at the Concrete Sealed Work Area
Note 1: Agitator trucks associated with the Applicant's adjacent concrete batching operations would only enter the Project Site for truck washout purposes.		

No site office or amenities are present within the boundary of the Landscaping Materials Yard as facilities available at the Applicant's adjacent concrete batching plant are used instead (not the subject of this DA). Those site amenities are connected to Council's reticulated sewage system.

Occupation Certificate

The applicant is seeking consent for the continued use of the premises and proposed upgrades to landscaping material supplies business. While it is acknowledged that the use of the premises has been in operation for many years, Council will still require compliance with conditions of a development consent. As such a "Whole Occupation certificate" is required to be applied for by the applicant to confirm that all conditions of the consent have been complied with. The whole occupation certificate will not be issued unless all required works have been undertaken, a fire safety certificate has been issued and all conditions of consent have been complied with to the satisfaction of the Principal Certifier.

Environmental Impact Assessment

In determining a development application, a consent authority is to take into consideration such of the matters as are of relevance to the development in accordance with Section 4.15(1) of the Environmental Planning and Assessment Act 1979. The following section provides an evaluation of the relevant Section 4.15 Matters for consideration for DA 57/2020:

S4.15(1)(a)(i) Any Environmental Planning Instrument

The application is classified as Non-Designated, Local Development as it does not meet the relevant thresholds for Designated, Regionally Significant or State Significant Development.

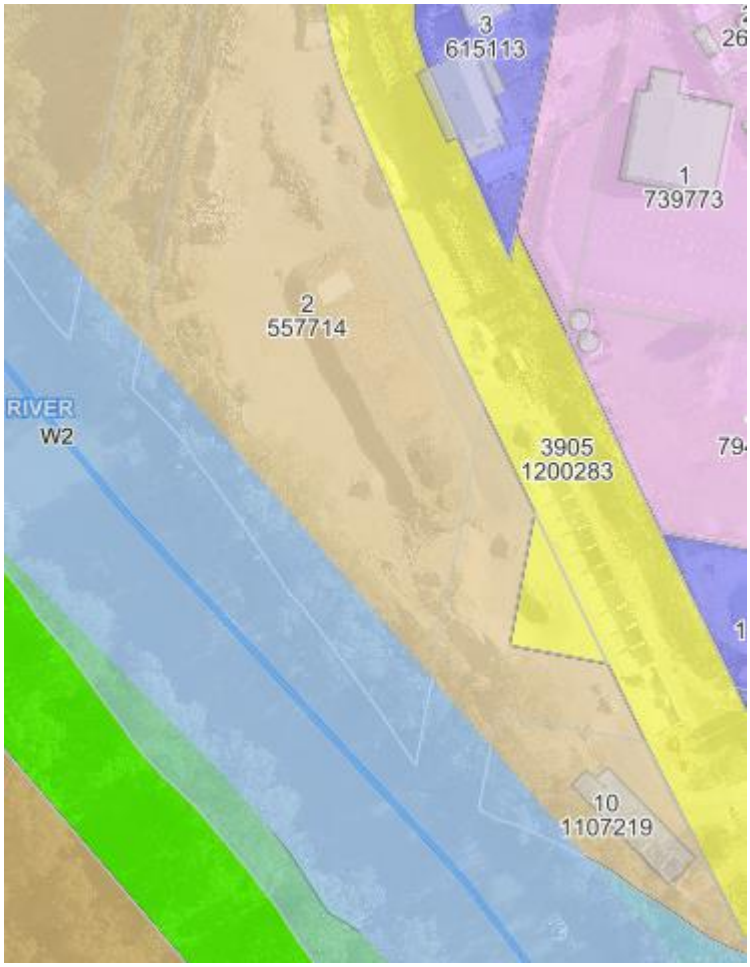
The proposal is classified as Integrated Development under Section 4.46 of the EP&A Act as a controlled activity approval for activities within 40m of waterfront land Under the *Water Management Act 2000* is required. This has been issued and is discussed elsewhere in this report along with the necessary licence from Transport for NSW for the use of rail corridor land.

A Section 138 Permit from Council for the ongoing use of the unformed sections of road reserves associated with Lee Street and River Street would also be required.

Cowra Local Environmental Plan 2012

The subject land is zoned RU1 Primary Production and SP2 Rail Infrastructure Facilities under the provisions of the *Cowra Local Environmental Plan 2012 (LEP)*.

Landscaping material supplies are permitted with consent in the RU1 zone (which is what the land west of the railway line is zoned), however are prohibited in the SP2 zone (the former railway lands). Clause 5.3 of the LEP (development near zone boundaries) can be used in this instance to utilise the RU1 zone provisions within 100m of the zone boundary, with respect to permissibility.



Clause 2.3(2) of the Cowra LEP 2012 requires that "The consent authority must have regard to the objectives for development in a zone when determining a development application in respect of land within the zone".

Zone RU1 Primary Production

1 Objectives of zone

• To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.

• To encourage diversity in primary industry enterprises and systems appropriate for the area.

• To minimise the fragmentation and alienation of resource lands.

• To minimise conflict between land uses within this zone and land uses within adjoining zones.

2 Permitted without consent

Environmental protection works; Extensive agriculture; Home occupations; Intensive plant agriculture

3 Permitted with consent

Airstrips; Animal boarding or training establishments; Aquaculture; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Camping grounds; Cellar door premises; Cemeteries; Community facilities; Correctional centres; Depots; Dual occupancies (attached); Dwelling houses; Eco-tourist facilities;

Environmental facilities; Extractive industries; Farm buildings; Farm stay accommodation; Forestry; Freight transport facilities; Function centres; General industries; Heavy industries; Helipads; Home-based child care; Home businesses; Home industries; Home occupations (sex services); Industrial training facilities; Information and education facilities; Intensive livestock agriculture; Jetties; ***Landscaping material supplies****; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Roads; Roadside stalls; Rural industries; Rural workers' dwellings; Secondary dwellings; Signage; Transport depots; Veterinary hospitals; Water recreation structures; Water supply systems*

4 Prohibited

Any development not specified in item 2 or 3

Objective	**Response**
• *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*	The land is not used for primary production and has historically been used for landscape materials supplies.
• *To encourage diversity in primary industry enterprises and systems appropriate for the area.*	The land is not suitable or capable for primary industry enterprises.
• *To minimise the fragmentation and alienation of resource lands.*	The land is already fragmented.
• *To minimise conflict between land uses within this zone and land uses within adjoining zones.*	The continuation of the land use is considered acceptable with respect to the minimising potential conflict with neighbouring land uses. The proposed hours of operation are acceptable and mitigation measures proposed in the SEE are reasonable to ensure that any impacts are acceptable.

Zone SP2 Infrastructure

1 Objectives of zone

• *To provide for infrastructure and related uses.*

• *To prevent development that is not compatible with or that may detract from the provision of infrastructure.*

2 Permitted without consent

Roads

3 Permitted with consent

Aquaculture; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose

4 Prohibited

Any development not specified in item 2 or 3

Objective	**Response**
• *To provide for infrastructure and related uses.*	The land is no longer utilised for the purposes of a rail line. TfNSW has no objections to the proposed development on this land (Lot 3905).
• *To prevent development that is not compatible with or that may detract from the provision of infrastructure.*	Lot 3905 has been used for landscape materials supplies for a considerable period of time and the applicant has a licence in place with TfNSW to use it for this purpose.

5.3 Development near zone boundaries

(1) The objective of this clause is to provide flexibility where the investigation of a site and its surroundings reveals that a use allowed on the other side of a zone boundary would enable a more logical and appropriate development of the site and be compatible with the planning objectives and land uses for the adjoining zone.

(2) This clause applies to so much of any land that is within the relevant distance of a boundary between any 2 zones. The relevant distance is 100 metres.

(3) This clause does not apply to—

(a) land in Zone RE1 Public Recreation, Zone C1 National Parks and Nature Reserves, Zone C2 Environmental Conservation, Zone C3 Environmental Management or Zone W1 Natural Waterways, or

(b) land within the coastal zone, or

(c) land proposed to be developed for the purpose of sex services or restricted premises.

Note—

When this Plan was made it did not include Zone W1 Natural Waterways.

(4) Despite the provisions of this Plan relating to the purposes for which development may be carried out, development consent may be granted to development of land to which this clause applies for any purpose that may be carried out in the adjoining zone, but only if the consent authority is satisfied that—

(a) the development is not inconsistent with the objectives for development in both zones, and

(b) the carrying out of the development is desirable due to compatible land use planning, infrastructure capacity and other planning principles relating to the efficient and timely development of land.

(5) This clause does not prescribe a development standard that may be varied under this Plan.

Comments

The following provides consideration of Clause 5.3:

Sub-clause 1

The applicant is seeking to utilise clause 5.3 to allow for the landscape materials supplies development on the SP2 Rail Infrastructure part of the subject land as it adjoins the RU1 zoned land where landscape materials supplies are permitted with consent. The clause is designed to provide flexibility in such a situation.

Sub-clause 2

The entirety of the SP2 zoned land is within 100 metres of the RU1 Primary Production land-use zone meaning the entire site can be utilised in the proposed development which is permitted to within 100 metres of a neighbouring zone. The development is consistent with sub-clause 2.

Sub-clause 3

The land is zoned SP2 which is not listed as being specifically excluded, nor is the land mapped within a coastal zone and the proposed use is not listed as specifically excluded from its operation. The development is consistent with sub-clause 3.

Sub-clause 4

The proposed landscape materials supplies is not considered inconsistent with the zone objectives of the SP2 and RU1 zones in this instance. Refer to previous assessment against the zone objectives. The development is consistent with the planning controls of Sub-clause 4(a).

The proposed development is considered compatible with the area and is desirable as the area has sufficient capacity of infrastructure to cater for a landscape materials supplies business without over-burdening any public utility, consistent with Sub-clause 4(b).

Sub-clause 5

This proposed development does not vary any prescribed development standard within the LEP.

The proposed landscape materials supplies development in the environmental context of the subject land can be developed consistent the provisions of clause 5.3 without variation and may be approved.

5.21 Flood Planning

Clause 5.21 of the Cowra LEP identifies the following objectives with regards to flood planning.

- "To minimise the flood risk to life and property associated with the use of land.
- To allow development on the land that is compatible with the flood function and behaviour on the land, taking into account projected changes as a result of climate change.
- To avoid adverse or cumulative impacts on flood behaviour and the environment.
- To enable the safe occupation and efficient evacuation of people in the event of a flood".

A review of Cowra LEP 2012 Flood Planning Map Sheet FLD_002C confirms that the Project Site is located within the nominated flood planning area.

While noting the potential for flooding is limited to extreme rainfall conditions, the proposal has been designed so as to minimise both flood risk to property and adverse effects on flood behaviour.

The Applicant contends that structures and activities within these areas would not impact on flood behaviour or be inconsistent with the Cowra LEP or DCP for the following reasons:

- *All structures have been designed to minimise impacts on flood behaviour, including the following.*
  - *The existing material bunkers have been constructed in the most elevated section of the Landscaping Material Yard, with the openings of these bunkers on the downslope side, permitting entry and exit of flood waters with minimal obstruction.*
  - *The concrete wash out bays and water storage cell would be recessed into the ground and lined with concrete, permitting the free passage of flood waters over the tops of these structures and not obstructing flood waters.*
  - *All structures extending above the ground surface within the Flood Planning Area would be earth bunds or would be constructed using concrete blocks. In the event that these structures are subjected to high velocity flood waters, the concrete blocks may be displaced*

short distances, but would not form debris that would result in damage downstream of the Project Site.

- *The Applicant would relocate as much landscaping materials from lower sections of the Project Site to higher sections in advance of potential flooding. This would limit the potential for that material to be entrained in flood waters.*

These measures are considered reasonable. The development is assessed to be compatible with the flood function and behaviour on the land and will not adversely affect flood behaviour or the safe occupation and evacuation of people. Projected changes to flood behaviour as a result of climate change are unknown. Landscaping products can be relocated if the surrounding area is impacted by flooding. It is assessed that the proposed development is satisfactory with regard to the considerations contained in Clause 5.21.

7.3 - Terrestrial Biodiversity

Clause 7.3 of the Cowra LEP identifies the following objective with regards to terrestrial biodiversity, which is to maintain terrestrial biodiversity by:

- "protecting native flora and fauna,
- protecting the ecological processes necessary for their continued existence; and
- encouraging the conservation and recovery of native fauna and flora and their habitats".

A review of Cowra LEP 2012 Terrestrial Biodiversity Map confirms that the Project Site is partially located on land identified as 'Biodiversity' which is the riparian vegetation located on the banks of the Lachlan River.

Section 3.9 of the submitted SOEE provides information on biodiversity-related impacts associated with the Proposal to allow for consideration against Clause 7.3(3) and (4) of the Cowra LEP.

No vegetation removal is proposed – accordingly no negative impacts have been identified.

7.4 - Riparian Lands and Watercourses

Clause 7.4 of the Cowra LEP identifies the following objectives with regards to riparian lands and watercourses, namely to protect and maintain:

- "water quality within watercourses,
- the stability of the bed and banks of watercourses,
- the aquatic and riparian habitats; and
- ecological processes within watercourses and riparian areas."

A review of Cowra LEP 2012 Wetlands Map Groundwater Vulnerability Map Riparian Lands and Watercourses Map confirms that the project is located adjacent to an identified watercourse, namely the Lachlan River.

Additionally, Clause 7.4 of the Cowra LEP applies to "all land that is within 40 metres of the top of the bank of each watercourse" as identified on the aforementioned map.

The application includes a number of management and mitigation measures aimed at minimising impacts on surface water and flooding and improving water quality. DPE-Water have provided their General Terms of Approval (Water Management Act 2000) which are included in the recommended conditions of consent. The application is satisfactory with regard to the considerations of Clause 7.4.

7.6 - Groundwater Vulnerability

Clause 7.6 of the Cowra LEP identifies the following objectives with regards to groundwater vulnerability.

- "To maintain the hydrological functions of key groundwater systems.
- To protect vulnerable groundwater resources from depletion and contamination as a result of development."

A review of Cowra LEP 2012 Wetlands Map Groundwater Vulnerability Map Riparian Lands and Watercourses Map Sheet confirms that the Project Site is located on land identified as 'Groundwater Vulnerable'.

The application includes the following assessment of potential impacts:

Potential groundwater-related impacts and constraints include the following:

- Interception or extraction of groundwater from an aquifer. No groundwater would be extracted or intercepted and therefore no aquifer interference or other groundwater approval or licence is required. As a result, this issue poses a negligible constraint.
- Contamination of groundwater through the discharge of high pH or contaminated water. Truck wash out activities would be undertaken in areas of the Project Site which are concrete sealed to prevent infiltration of potentially contaminated water. The Applicant would ensure that potentially contaminated water would drain to the concrete-lined water storage cell which would be constructed to ensure that contaminated water does not seep through to reach the water table. Assuming that these measures are implemented, this issue is likely to pose a minor constraint.
- Contamination of groundwater from hydrocarbon leaks or spills. The Applicant would implement appropriate hydrocarbon management procedures. As a result, this issue is likely to pose a negligible constraint.
- Impacts on groundwater dependent ecosystems. On the basis that groundwater would not be affected by the Proposal, groundwater dependent ecosystems would not be impacted, and so this issue is likely to pose a negligible constraint.

Given the water management measures outlined in Section 2.2.4 and Appendix 2, it is not anticipated that the Proposal would have any impact on groundwater resources and is therefore consistent with the objectives of the Cowra LEP.

7.8 Essential services

Development consent must not be granted to development unless the consent authority is satisfied that any of the following services that are essential for the development are available or that adequate arrangements have been made to make them available when required—

(a) the supply of water,

(b) the supply of electricity,

(c) the disposal and management of sewage,

(d) stormwater drainage or on-site conservation,

(e) suitable vehicular access.

Comments

The site is connected to all available services. There is an existing access onto the site.

State Environmental Planning Policies

The following State Environmental Planning Policies are considered relevant to Council's consideration:

State Environmental Planning Policies

SEPP	COMMENTS
SEPP (Housing) 2021	Not applicable
SEPP (Primary Production) 2021	Not applicable
SEPP (Resources and Energy) 2021	Not applicable
SEPP (Resilience and Hazards) 2021	Includes the former SEPP 55 – Remediation of Land. See comments below
SEPP (Industry and Employment) 2021	Not applicable
SEPP (Transport and Infrastructure) 2021	Not applicable
SEPP (Biodiversity and Conservation) 2021	Not applicable. No vegetation requires removal.
SEPP (Planning Systems) 2021	Not applicable
SEPP (Precincts – Eastern Harbour City) 2021	Not applicable
SEPP (Precincts – Central River City) 2021	Not applicable
SEPP (Precincts – Western Parkland City) 2021	Not applicable
SEPP (Precincts - Regional) 2021	Not applicable
SEPP (Building Sustainability	Not applicable

Index: BASIX)	
SEPP 65—Design Quality of Residential Apartment Development	Not applicable
SEPP (Exempt and Complying Development Codes) 2008	Not applicable

- **SEPP (RESILIENCE AND HAZARDS) 2021**

Under Clause 4.6 a consent authority must not consent to the carrying out of any development on land unless:

(a) it has considered whether the land is contaminated, and

(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and

(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose

It is assessed that the proposal would not be classified as offensive or potentially offensive development as it would not have a significant adverse impact on the locality. The site has been subject to long-term industrial use.

Following a suspected pollution incident, on 30 June 2020 Council issued a Notice of Intention to the Applicant to issue a Clean-up Direction under Section 92 of the Protection of the Environment Operations Act 1997. A further direction was issued by Council on 17 August 2022 requiring the Applicant to complete a contamination assessment at the site. Details of the contamination assessment are included in Section 3.6 of the Statement of Environmental Effects (SEE). In summary, the contamination assessment concluded that the suspected pollution incidents had not resulted in unacceptable impacts to soil or groundwater at the site which was therefore suitable for continued commercial/industrial use. The SEE contains proposed surface water controls which would prevent future pollution as a result of truck washout activities.

The land is presently used as a landscape materials supplies business – no change is proposed other than seeking approval for its continued use. No further investigation is required in accordance with the NSW Managing Land Contamination Planning Guidelines.

4.15(1)(a)(ii) Any draft Environmental Planning Instrument

There are no draft Environmental Planning Instruments that apply to the development.

S4.15(1)(a)(iii) Any Development Control Plan (DCP)

Cowra Shire Council Development Control Plan 2021

Relevant Plan sections:

PART A – PLAN INTRODUCTION

Consent is required for the proposed development.

PART B – LAND MANAGEMENT

Appropriate soil and water management controls are to be implemented in accordance with the approved documentation.

PART I – INDUSTRIAL DEVELOPMENT

The landscaping materials supplies component including product bunkers and stockpile areas has minimal road frontage and visibility from public spaces. Streetscape landscaping is not considered necessary. Hours of operation, noise emission limitations and waste management controls are included in the application and in the recommended conditions of consent. The proposal is designed appropriately in consideration of the requirements of Part 1.

PART K – LAND USE BUFFERS

Cowra Airport Obstacle Limitation Surface

The subject land is located outside of the OLS and all other buffers under Part K.

PART O – ENVIRONMENTAL HAZARD MANAGEMENT

The subject land is partially mapped as flood prone as discussed previously in this report. It is assessed that the proposal has been satisfactorily designed so as to minimise both flood risk to property and adverse effects on flood behaviour.

The subject land is not mapped as bushfire prone.

A contamination assessment has concluded that the site is suitable for continued commercial/industrial use.

PART P – CPTED PRINCIPLES

The proposal does not include any substantial built form. A CPTED Assessment is not considered necessary.

S4.15(1)(a)(iiia) Any Planning Agreement

There is no planning agreement that has been entered into under Section 7.4 of the Environmental Planning and Assessment Act 1979 by the applicant in relation to the development proposal. Similarly, the applicant has not volunteered to enter into a draft planning agreement for the development proposal.

S4.15(1)(a)(iv) The EP & A Regulations

Section 4.15(1)(a)(iv) requires Council to also consider Clauses 92, 93, 94 and 94A of the Environmental Planning and Assessment Regulation. The following provides an assessment of the relevant clauses of the Regulation:

- Clause 92 – The Government Coastal Policy does not apply to Cowra Shire and therefore Clause 92(1)(a) and (b) are not applicable to this development proposal. The proposal does not involve demolition of a building and therefore the requirements of AS 2601 do not need to be considered in accordance with Clause 92(2).

- Clause 93 – The proposal does not involve the change of a building use for an existing building, or the use of an existing building as a place of public entertainment and therefore the requirement to consider fire safety and structural adequacy of buildings in accordance with Clause 93 is unnecessary.

- Clause 94 – The proposal does not involve the rebuilding, alteration, enlargement or extension of an existing building or place of public entertainment and therefore the requirement to consider the upgrading of buildings into total or partial conformity with the Building Code of Australia.

- Clause 94A – The proposal does not involve the erection of a temporary structure and therefore the requirements to consider fire safety and structural adequacy is unnecessary.

S4.15(C)(1)(b) The Likely Impacts of the Development

Section 4.15(C)(1)(b) requires the Council to consider the likely impacts of the development, including environmental impacts on both the natural and built environments as well as the social and economic impacts in the locality. The following provides an assessment of the likely impacts of the development:

Context and Setting

The area is characterised by a range of commercial and residential land uses. The proposal is assessed as being consistent with the character of the locality and is appropriate given its local context and setting.

Access, Transport and Traffic

Site access is via an existing concrete driveway located at the corner of Kite Street and River Street. The applicant states that the landscaping materials yard typically requires two material delivery trucks to access the site each week. The proposal does not include any changes to the existing traffic environment. Temporary parking for customers is available in the landscaping materials yard.

Public Domain

The proposal will not have a negative impact on public recreational opportunities or public spaces in the locality.

Utilities

The site is connected to all necessary utilities.

Heritage

There are no Aboriginal or European heritage items on the subject land or adjoining lands.

Stormwater, Water and Sewerage

The application will not impact on water or sewer services. A soil and water management plan (SWMP) has been submitted as part of the application and assessed as satisfactory.

Soils

Minimal impact on soils. The SWMP mitigates potential soil erosion and sedimentation issues.

Air and Microclimate

There is potential for dust to be emitted from the site in association with vehicle movements and product stockpiles. There may also be a temporary increase during the proposed upgrades to site infrastructure. The Statement of Environmental Effects proposes a range of control measures to minimise dust and particulate emissions. This includes monitoring dust generation, wetting surfaces and stockpiles and ensuring construction activities are not undertaken in windy conditions. Water will be applied to the revegetated riparian corridor areas for the first two months following seed or hydromulch application.

Flora and Fauna

No native vegetation exists on the site and the continued use of the development will not require the removal of any trees. Revegetation of the adjacent riparian vegetation is proposed as part of the application. The applicant has proposed to establish a 10m wide vegetated riparian zone delineated by a fence. The vegetation community selected will reflect existing remnant riparian vegetation in the locality. The proposal is unlikely to adversely affect threatened species, communities or their habitats.

Waste

Any construction waste will be removed from the site and appropriately recycled or catered for at a licensed waste management facility.

Energy

A BASIX Certificate is not required for this application.

Noise and Vibration

The development application does not propose any additional activities to those already being undertaken on the site which has been operating since the 1970's. Nevertheless, the applicant has submitted an acoustic assessment which contains the following noise management measures:

- Ensure that the operation of the sprinkler system is restricted to daytime periods (i.e. 7:00am to 6:00pm, Monday to Saturday).
- Comply with the approved hours of operation.
- Actively engage with the surrounding community and neighbours to ensure that any concerns over noise or vibration are identified and addressed.

It is noted that neither the Applicant or Council has received any noise complaints regarding the operation of the facility.

Natural Hazards

The site is partially subject to flooding as previously discussed in this report. There are no habitable buildings proposed as part of the application. It is assessed that suitable measures are

proposed to address the flood hazard and the proposed development will not impact adversely on flood behaviour.

Technological Hazards

Site assessment has confirmed that there are no technological hazards rendering the site unsuitable for the continued use of the landscaping materials supplies.

Safety, Security and Crime Prevention

This development will not generate any activity likely to promote any safety or security problems to the subject land or surrounding area.

Social and Economic Impacts on the locality

The proposed development will not result in any identified negative social or economic impacts.

Site Design and Internal Design

The design of the development is satisfactory for the site and without any identified adverse impacts.

Construction

There are proposed minor structures for product storage and surface water management that can be constructed without adverse impacts on neighbours or the environment.

Cumulative impacts

The proposal is not expected to generate any ongoing negative cumulative impacts.

S4.15(1)(c) The Suitability of the Site for the Development

The development is consistent with the zone objectives and consideration has been given to the impacts the development will have within the locality. It is considered that the proposed development will not create adverse impacts within its local setting. Appropriate services for water, waste disposal and other utilities are available to the site. It is assessed that the development will not impact upon any existing services. The development site is not identified as being unsatisfactorily constrained by natural features. The site is considered suitable for the development subject to the imposition of appropriate conditions of consent.

S4.15(1)(d) Any Submissions Received

Public Consultation

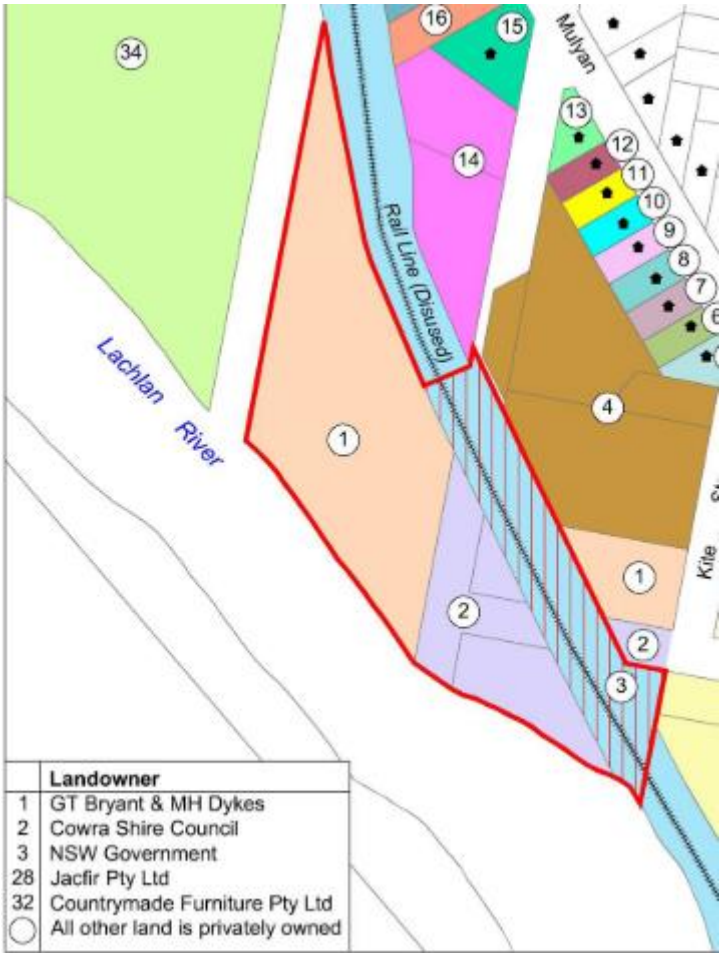
The subject Development Application was advertised and notified to adjoining owners in writing from 25 May 2021 to 23 June 2021, in accordance with Cowra Community Participation Plan 2020. No submissions were received in relation to the proposed development.

Public Authority Consultation:

The Applicant required and has received land-owner's consent and a licence from Transport for NSW (TfNSW) for the use of land within the disused rail corridor. TfNSW has requested the

application of a number of conditions of consent which have been included in the recommended conditions.

The applicant seeks to negotiate suitable agreements with Council regarding the use of some unformed road reserve land within the existing project site and two Council owned lots within the site, being Lot 1 DP 1201417 (560m²) and Lot 10 DP 1107219 (2,326m²). A recommended condition of consent notes this requirement. On the map extract below the boundaries of the project site are shown in red and the Council owned areas referenced above are labelled no.2 and highlighted in purple.



The application also represents Integrated Development requiring a Controlled Activity approval under the Water Management Act 2000. The responsible agency is the NSW Department of Planning and Environment (DPE) – Water. Council received the General Terms of Approval (GTA's) from NSW DPE-Water on 2 November 2023. The GTA's are included in the recommended conditions of consent.

S4.15(1)(d) The Public Interest

Community Interest

The proposed development is permissible on the subject land and is not expected to adversely impact on the community interests of the area. The proposed development has been considered in terms of the context and setting of the locality in previous sections to this report. The proposed development will not impose any identified adverse economic or social impacts on the local community.

S7.12 Fixed development consent levies

The development is of insufficient estimated cost to trigger the requirement for development contributions under Cowra Council S94A Contributions Plan 2016.

Conclusion

Development Application No. 57/2020 proposes the continued use of, and proposed upgrades to landscaping material supplies on Lot 2 DP 557714, Lot 1 DP 1201417, Lot 10 DP 1107219 & Lot 3905 DP 1200283, 2-4 Kite Street Cowra. The application was lodged with Council by Buzzree Pty Ltd on 29 June 2020. It has since been subject to one major amendment and required re-exhibition and re-referral to two government agencies.

The application was supported by a Statement of Environmental Effects and development plans prepared by the applicant, which provide sufficient information to allow assessment of the proposal.

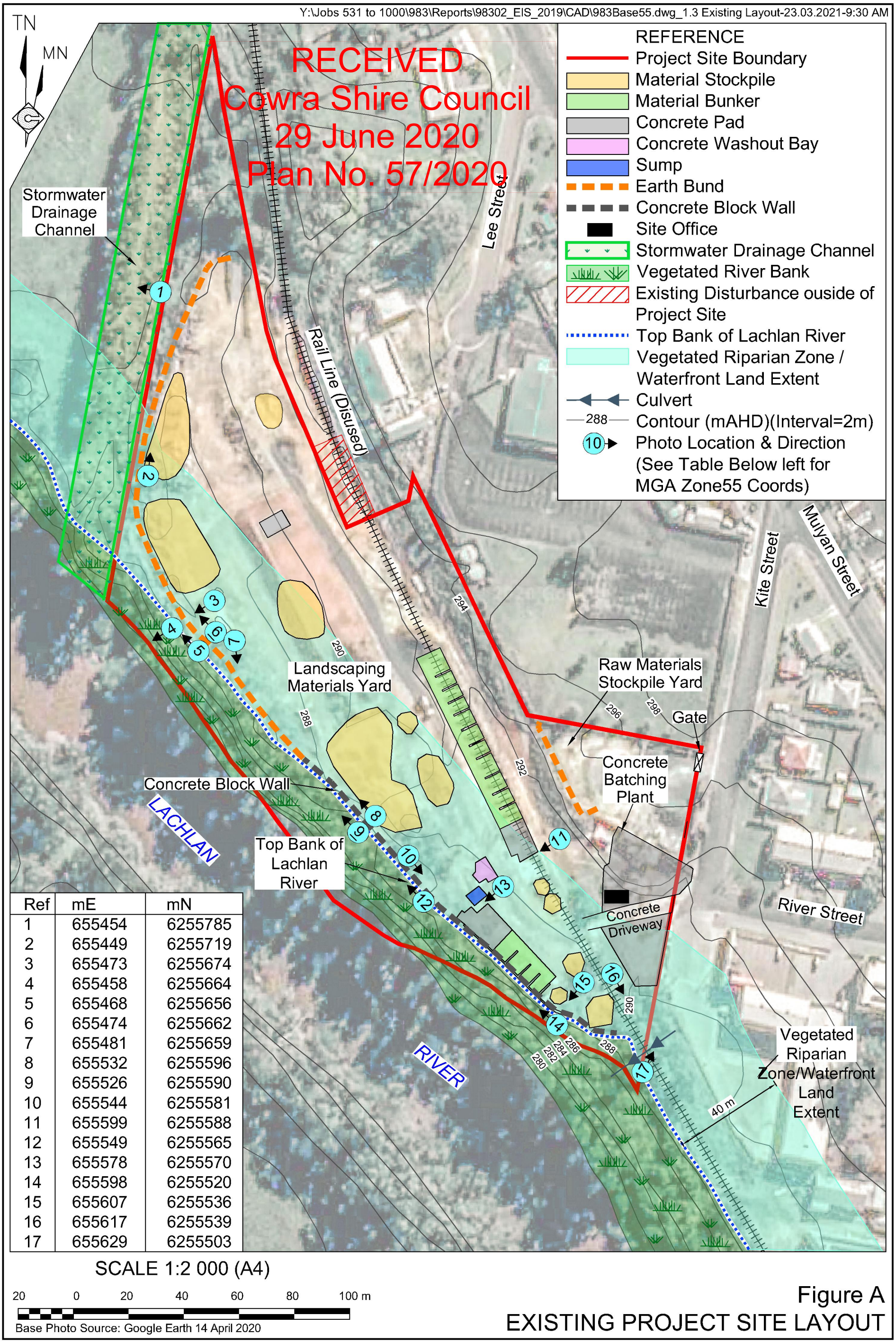
The proposed development has been assessed to be consistent with the requirements of Cowra Local Environmental Plan 2012, relating to development in the RU1 & SP2 zones and is consistent with the existing land-use activities of the locality.

The development application was notified in accordance with Cowra Community Participation Plan 2020. No submissions were received following the consultation process.

Having considered the documentation supplied by the applicant, the findings of site inspection(s) and the comments made from consultation, it is assessed that the impacts of the proposal and the likely environmental interactions between the proposed development and the environment are such that Council should not refuse the development application. Accordingly, a recommendation of conditional approval is listed in the recommendation.

ATTACHMENTS

1. DA 57/2020 - Development Plans ⇩
2. DA 57/2020 - Statement of Environmental Effects ⇩
3. DA 57/2020 - Location map ⇩
4. DA 57/2020 - Aerial view ⇩


Y:\Jobs 531 to 1000\983\Reports\98302_EIS_2019\CAD\983Base55.dwg_1.3 Existing Layout-23.03.2021-9:30 AM
TN
MN
RECEIVED
Cowra Shire Council
29 June 2020
Plan No. 57/2020
REFERENCE
Project Site Boundary
Material Stockpile
Material Bunker
Concrete Pad
Concrete Washout Bay
Sump
Earth Bund
Concrete Block Wall
Site Office
Stormwater Drainage Channel
Vegetated River Bank
Existing Disturbance ouside of Project Site
Top Bank of Lachlan River
Vegetated Riparian Zone / Waterfront Land Extent
Culvert
Contour (mAHD)(Interval=2m)
Photo Location & Direction (See Table Below left for MGA Zone55 Coords)
Stormwater Drainage Channel
Lee Street
Rail Line (Disused)
Kite Street
Mulyan Street
Landscaping Materials Yard
Raw Materials Stockpile Yard
Gate
Concrete Batching Plant
Concrete Block Wall
LACHLAN
Top Bank of Lachlan River
Concrete Driveway
River Street
RIVER
Vegetated Riparian Zone/Waterfront Land Extent
40 m
288
290
292
294
296
298
280
282
284
286
288
290
Ref mE mN
1 655454 6255785
2 655449 6255719
3 655473 6255674
4 655458 6255664
5 655468 6255656
6 655474 6255662
7 655481 6255659
8 655532 6255596
9 655526 6255590
10 655544 6255581
11 655599 6255588
12 655549 6255565
13 655578 6255570
14 655598 6255520
15 655607 6255536
16 655617 6255539
17 655629 6255503
SCALE 1:2 000 (A4)
20 0 20 40 60 80 100 m
Base Photo Source: Google Earth 14 April 2020
Figure A
EXISTING PROJECT SITE LAYOUT

Y:\Jobs 531 to 1000\983\Reports\98302_EIS_2019\CAD\983Base55.dwg_2.1 Layout-26.07.2021-11:58 AM

TN MN

Stormwater Drainage Channel

CD1

Rail Line (Disused)

Existing Landscape Materials Yard

See Figure 2.2b

Proposed Concrete-sealed Work Area

WSC2

SB2

10m

CD2

294

290

288

Mulyan Street

Lee Street

Kite Street

See Figure 2.2a

296

298

Existing Raw Materials Stockpile Yard

SB1

WSC1

Batch Plant

Site Office

River Street

Driveway / Site Access Road

Vegetated Riparian Zone
To be revegetated using hydromulch containing a native seed mix. The vegetation community to be established in this area will reflect remnant native vegetation assemblages along the Lachlan River in the vicinity of the Project SIte.

LACHLAN RIVER

284
282
280

REFERENCE
- Project Site Boundary
- Batch Plant Area
- Landscaping Materials Yard
- Raw Materials Stockpile Yard
- Material Bunkers
- Driveway / Site Access Road
- Site Office
- Area to be Remediated to Transport for NSW Satisfaction
- Top Bank of Lachlan River
- Waterfront Land Extent (40m)
- Vegetated Riparian Zone (10m)
- Vegetated River Bank
- Vegetated Area
- Ringlock Wire Fence
- Cadastral Boundary
- Rail Line (Disused)
- 288 Contour (mAHD)(Interval=2m)

Water Management Infrastructure
- Concrete-sealed Work Area
- Concrete Pad
- Agitator Truck Washout Bay
- Sediment Basin (SB)
- Water Storage Cell (WSC)
- Stabilised Earth Bund
- Rollover Bund
- Stormwater Drainage Channel
- Clean Water Diversion (CD)
- Stabilised Spillway / Energy Dissipater
- Underground Pipe
- Culvert

SCALE 1:1 300 (A3)
20 0 20 40 60 m
Source: CPC Land Development Consultants Pty Ltd

Figure 2.1
PROPOSED PROJECT SITE LAYOUT

Buzzree Pty Limited

ABN: 86 125 534 367

Statement of Environmental Effects

for the

Bryant's Landscaping Materials Yard

Prepared by:

RWCorkery&co

December 2023


RWCorkery&co

Buzzree Pty Limited
ABN: 86 125 534 367

Statement of Environmental Effects

for the

Bryant's Landscaping Materials Yard

Prepared for:

Buzzree Pty Limited
ABN: 86 125 534 367

Telephone: (02) 6341 1288
Email: bryantsconcrete1@bigpond.com

PO Box 316
COWRA NSW 2794

Prepared by:

R.W. Corkery & Co. Pty. Limited
Geological & Environmental Consultants
ABN: 31 002 033 712

Telephone: (02) 9985 8511
Email: admin@rwcorkery.com
Postal: PO Box 1796
CHATSWOOD NSW 2057

Sydney | Orange | Townsville

Sydney
Suite 12.01, 1-5 Railway Street
CHATSWOOD NSW 2067

Orange
62 Hill Street
ORANGE NSW 2800

Ref No. 983/06 December 2023

This Copyright is included for the protection of this document

CONTENTS

CONTENTS

CONTENTS

APPENDICES

CONTENTS

Page

FIGURES

TABLES

PLATES

Executive Summary

Introduction

This *Statement of Environmental Effects* (SoEE) has been prepared by R.W. Corkery & Co. Pty Limited (RWC) on behalf of Buzzree Pty Limited (the Applicant). This document has been prepared to accompany a development application for the continued operation of, and proposed upgrades to, the Bryant's Landscaping Materials Yard located at 2 Kite Street, Cowra, NSW (the Proposal).

The Proposal would comprise:

- modifications to the Project Site layout, including establishment of a range of surface water management infrastructure to ensure improved environmental management of the Project Site;
- sale of small quantities of landscaping and other materials to the general public and small business;
- recycling of limited quantities of returned concrete material from the Applicant's adjacent concrete batching operations; and
- ancillary activities, including management of surface water and storage of equipment.

The Proposal is classified as:

- "Non-Designated, Local Development" as it does not meet the relevant thresholds for Designated or State Significant Development; and
- "Integrated Development" under the *Environmental Planning and Assessment Act 1979* as it would require a Controlled Activity Approval under the *Water Management Act 2000.*

This SoEE has been prepared to support the application for development consent. Cowra Shire Council is to accept, notify and/or exhibit, assess and determine the application.

The Applicant

Buzzree Pty Limited (the Applicant) assumed control of the Project Site on 1 July 2007. The Project Site contains an existing landscaping materials sales business which has been operating since the early 1970s.

The Applicant also owns and operates an approved concrete batching plant located adjacent to the Project Site.

Objectives of the Proposal

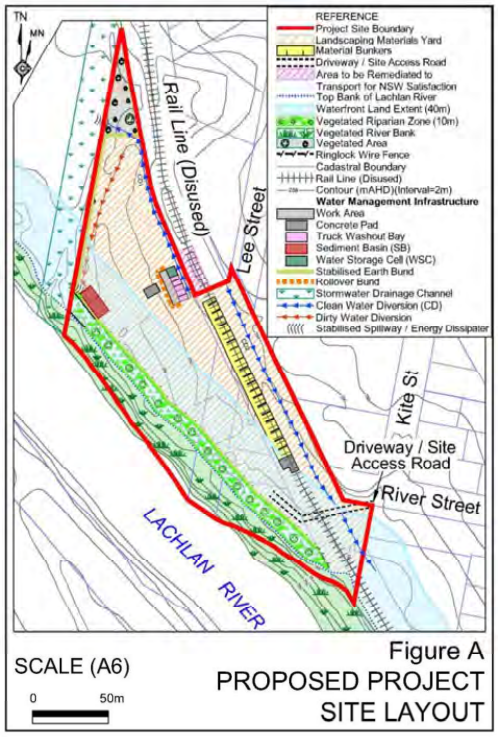
The Applicant's objectives for the Proposal are to:

- obtain the necessary development consent and rectify issues associated with use of land controlled by Council and Transport for NSW;
- continue to service the construction and landscaping material market in the Cowra region;
- undertake modification to the existing Project Site layout to ensure that environmental risks are minimised to the maximum extent practicable; and
- undertake all activities in a manner to ensure compliance with conditional requirements of all approvals, reasonable community expectations and, to the extent practicable, the objectives of the Cowra LEP.

Description of the Proposal

Overview

The Proposal would include the following activities (**Figure A**).



- Modifications to the Project Site layout, including the:
  - construction of a concrete-sealed work area including truck washout bays;
  - construction of a range of surface water management infrastructure to ensure improved environmental management of the Project Site; and
  - establishment of a Vegetated Riparian Zone where the southern boundary of the Landscape materials Yard abuts the bank of the Lachlan River.
- Sale of small quantities of landscaping and other materials to the general public, small business and for small infrastructure projects.
- Ancillary activities, including management of surface water and storage of equipment.

Site Establishment

The Applicant would commence the following minor site establishment activities following receipt of development consent and other necessary approvals, leases and permits.

- Establishment of water management infrastructure including a sediment basin with stabilised spillway, and a clean water diversion drain.
- Construction of a concrete-sealed work area consisting of a concrete pad, concrete-sealed truck washout bays, a concrete-sealed water storage cell, and rollover bunds to contain potentially contaminated water.
- Construction of a stabilised earth bund along the southern and western borders of the Landscaping Materials Yard.
- Establishment of a 10m wide Vegetated Riparian Zone along the southern boundary of the Landscaping Materials yard.

Proposed Operations and Workforce

Proposed operations at the Project Site, including landscaping material sales, concrete waste recycling, and transportation operations (i.e. receipt of material deliveries and loading of product for transportation) would be consistent with existing operations.

The proposed hours of operations would be consistent with existing hours of operation and are outlined in **Table A**.

Table A
Proposed Hours of Operation

Activity	Period	Hours of Operation
Landscaping Materials Delivery and Supply	Monday to Friday	7:00am to 5:00pm
	Saturday	7:00am to 12:00pm
	Sunday	No Operations
Emergency Maintenance	All Days	24 hours

The Proposal would continue to directly employ five personnel to manage on site activities, with additional contract truck drivers employed by contract transportation companies or the Applicant's customers as required.

Planning Context

Planning Instruments

The Project Site is situated within land zoned as Zone RU1 – Primary Production and SP2 – Infrastructure under the *Cowra Local Environmental Plan 2012* (Cowra LEP). Landscaping Material Supplies is permissible with development consent in zone RU1.

The purpose of land zoned SP2 within the Project Site is rail transportation. The Applicant holds a licence from Rail Corporation NSW to occupy land zoned SP2 adjacent to the Project Site for the purposes of the existing operation of a concrete batching plant. Under Clause 5.3 of the Cowra LEP, the Proposal would be permissible as areas of the Project Site zoned SP2 are within 100m of the boundary between land zoned RU1 within which Landscaping Material Supplies is permissible.

Approvals Required

In addition to development consent, the Applicant anticipates the following approval would be required.

- A Controlled Activity Approval under Section 91(2) of the Water Management Act 2000 for activity "in, on, or under waterfront land".

Assessment and Management of Key Environmental Issues

The components and features of the existing environment within and surrounding the Project Site have been assessed and the Proposal has been designed to avoid or to minimise impacts on that environment where possible.

Surface Water Resources

The Applicant has committed to the establishment of water management infrastructure within the Project Site which would ensure the effective separation of clean water, dirty water (i.e. potentially sediment laden water) and contaminated water (i.e. water potentially containing cementitious materials and alkaline salts from cement material).

Clean water would be diverted around the Project Site by a series of clean water diversion drains and bunds.

Dirty water would be captured by a sediment basin and preferentially used for dust suppression, irrigation of on-site vegetation, and truck washout where possible. Where necessary to maintain sufficient storage capacity, dirty water would be treated prior to discharge from the Project Site.

Contaminated water would be captured in a water storage cell located within the proposed concrete-sealed work area. This water would be preferentially used in the manufacture of concrete in the Applicant's concrete batching plant adjacent to the Project Site, with an automatic level controller employed to ensure that accumulated contaminated water is pumped to the plant as available. Excess contaminated water would be permitted to evaporate.

As a result, it is not anticipated that the Proposal would result in significant adverse surface water impacts.

Flooding

A stabilised earth bund would be constructed around the southern and western borders of the Landscaping Materials Yard to divert runoff from the Project Site into a sediment basin and provide some protection from flooding. The bund would be constructed to a minimum elevation of 298.68m AHD, a minimum height of approximately 1m, and a maximum height of approximately 1.68m. At the proposed heights, the stabilised earth bund would provide immunity for the Project Site from the 1:100 year Average Recurrence Interval flood level (289.18m AHD) plus 0.5m freeboard.

The proposed bund would result in a loss of area for flood conveyance equivalent to <0.3% of the total available area and an increase in flood levels in the vicinity of the Project Site by approximately 10mm.

As a result, the Proposal would not have a significant adverse flood-related impact on neighbouring properties or flood behaviour.

Noise

Noise monitoring undertaken at the Project Site concluded that existing activities including operation of the dust suppression sprinkler system during the shoulder period (i.e. between 6:00am and 7:00am) resulted in exceedances of the relevant Project Noise Trigger Levels.

As a result, and assuming the noise management and mitigation measure outlined in this SoEE are implemented, it is anticipated that the Proposal would result in reduced noise levels compared to those associated with existing operations.

Other Impacts

Impacts on biodiversity, traffic, air quality, groundwater, Aboriginal and historic heritage, land resources and capability, and hazards associated with the Proposal would be negligible as the Proposal is generally consistent with existing operations at the Project Site.

Evaluation and Justification of the Proposal

The Proposal has been evaluated and justified through consideration of its potential impacts on the environment and potential benefits to the local and broader community. This evaluation has found that, with the implementation of the proposed operational controls, safeguards and mitigation measures, it is concluded that the Proposal achieves a sustainable outcome for the local and broader environment.

The Proposal and associated activities have been assessed in terms of a wide range of biophysical, social and economic issues. Potential residual impacts can be justified in terms of the positive economic and social benefits to the local Cowra community and the broader Cowra Local Government Area.

Conclusion

The Proposal:

- provides for the ongoing use of the Project Site for landscaping supplies sales whilst minimising the residual impacts on the biophysical environment;
- includes upgrades to site water management infrastructure which would permit the effective management of sediment-laden and contaminated water runoff generated at the Project Site,
- would allow for the continued employment of up to five personnel, continued expenditure in the local economy, and the maintenance of competitive prices for landscaping supplies in the local area; and
- would result in positive environmental outcomes with no additional adverse environmental impacts compared to existing operations at the Project Site.

In light of the conclusions included throughout this SoEE, it is assessed that the Proposal could be constructed and operated in a manner that would satisfy all relevant statutory goals and criteria, environmental objectives, and reasonable community expectations.

1. Introduction

1.1 Scope

This *Statement of Environmental Effects* (SoEE) has been prepared by R.W. Corkery and Co. Pty Limited (RWC), on behalf of Buzzree Pty Limited (the Applicant), to accompany an application for development consent to Cowra Shire Council (Council) to operate an existing landscape supplies business at 2 Kite Street, Cowra, NSW ("the Proposal") (**Figure 1.1**).

For the purposes of this document, the area which is the subject of the development application is referred to as the "Project Site" (**Figure 1.2**) (see Section 1.4).

The Project Site is located on land zoned as follows under the *Cowra Local Environmental Plan 2012* (Cowra LEP).

- RU1 – Primary Production.
- SP2 – Infrastructure.

Section 1.6.4.1 describes the permissibility of the Proposal under the Cowra LEP.

The Proposal would be classified as Non-Designated, Local Development as it does not meet the relevant thresholds for Designated or State Significant Development.

Additionally, the Project would be classified as "Integrated Development" under Section 4.46 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as the location of the Project Site adjacent to the Lachlan River and the proposed activities would require a Controlled Activity Approval under Section 91(2) of the *Water Management Act 2000* for activity "in, on, or under waterfront land."

The Proposal therefore requires development consent to be issued by Council. This SoEE has been prepared to support the application for development consent. An extract of the licence agreement with Transport for NSW and a plan showing the railway corridor licence area is presented as **Appendix 1**.

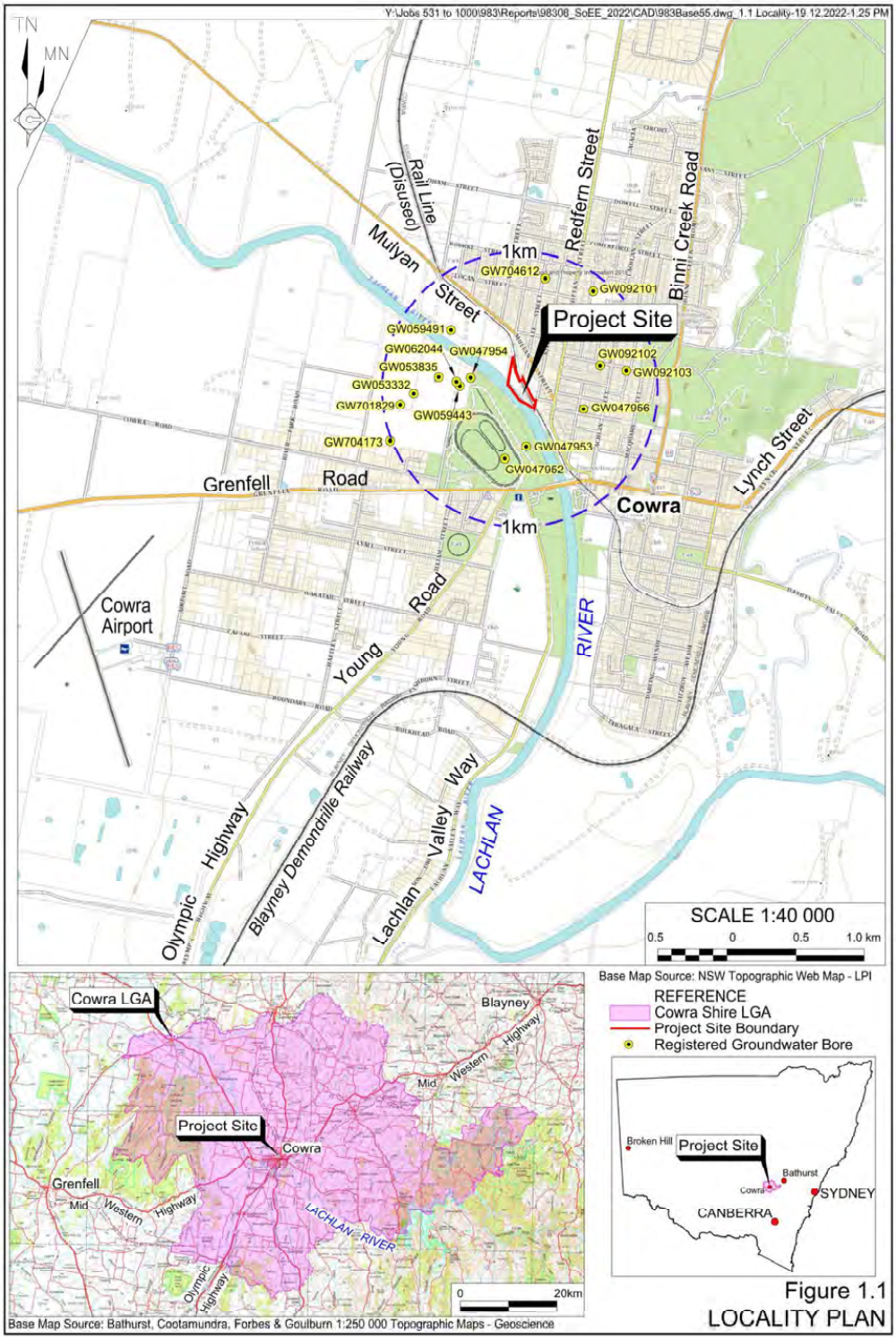


Figure 1.1
LOCALITY PLAN

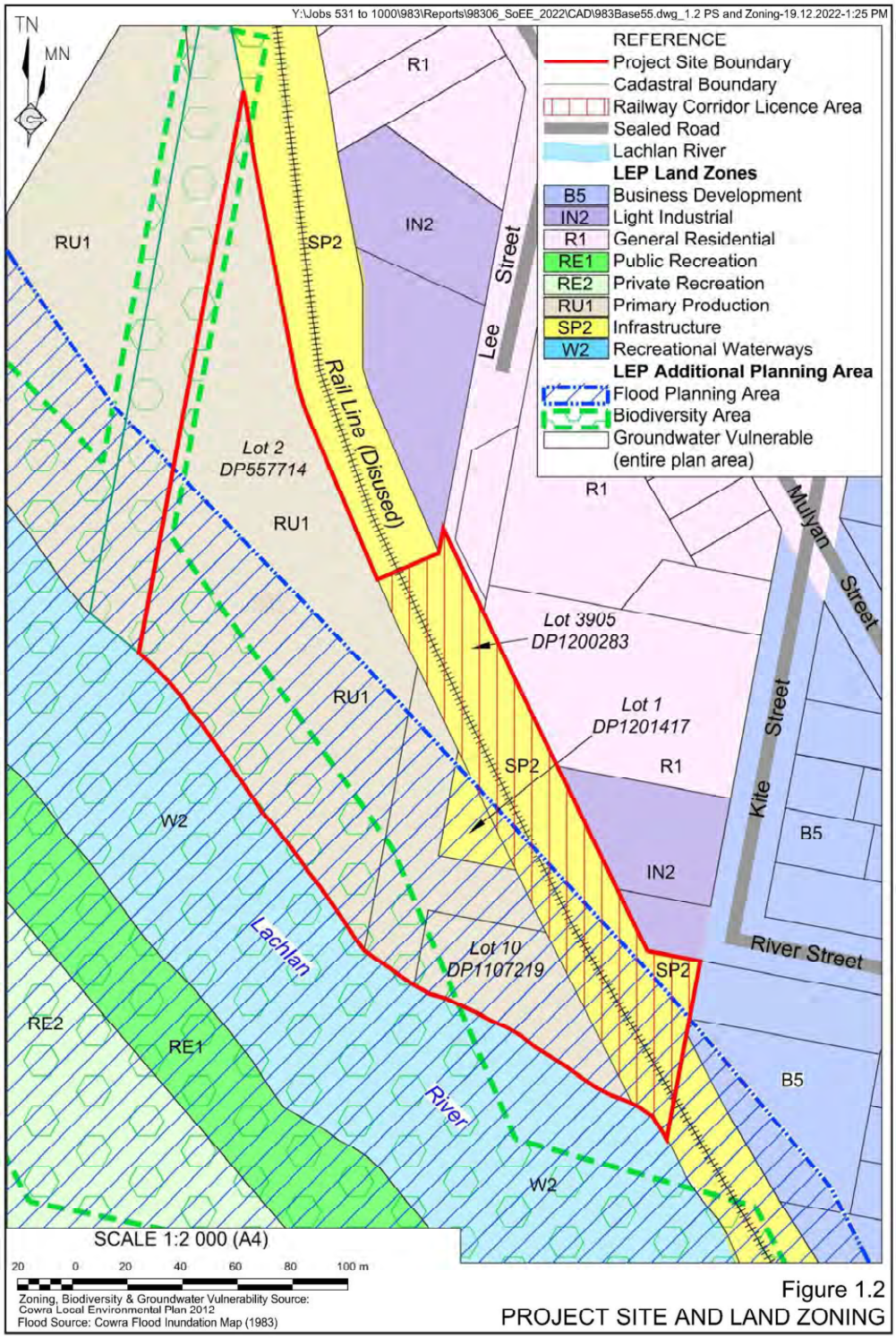


Figure 1.2
PROJECT SITE AND LAND ZONING

1.2 Format of the Statement

The format of the document is set out below.

Section 1: introduces the Proposal and Buzzree Pty Limited as the Applicant. Background to the Proposal is provided, together with the planning context for the Proposal and the results of consultation undertaken. The section concludes with an overview of the key personnel involved in the management of investigations, including the specialist consultant team involved.

Section 2: describes the proposed construction and operational phases of the Proposal, hours of operation, employment, transport delivery routes and required infrastructure and services.

Section 3: presents a description of the existing environment, summarises the outcomes of the various specialist consultants' assessments, proposed management and mitigation measures, and assesses the potential impacts and maintenance / monitoring requirements.

Section 4: provides a conclusion to the document which justifies the Proposal in terms of biophysical, economic and social considerations and identifies the consequences of not proceeding with the Proposal.

Section 5: lists the various source documents referred to for information and data used during the preparation of this *Statement of Environmental Effects*.

Appendices present:

1. An extract of the licence agreement and a plan showing the railway corridor licence area for Lot 3905, DP1200283.
2. A *Soil and Water Management Plan* prepared by Strategic Environmental and Engineering Consulting Pty Limited.
3. Natural Resources Access Regulator consultation.
4. Community Consultation Sheet No. 1 prepared by RWC.
5. A *Noise and Vibration Impact Assessment* prepared by Spectrum Acoustics Pty Limited.
6. *Groundwater Contamination Assessment* prepared by Ground Doctor Pty Ltd.

1.3 The Applicant

The Applicant assumed control of the Project Site on 1 July 2007. The current director of Buzzree Pty Limited is Mr Garry Bryant.

The Applicant has been a sponsor of local Rugby League and AFL sports clubs, the Woodstock Park Speedway, the Cowra Eisteddfod, and multiple annual village productions since assuming control of the Project Site in 2007.

The Applicant also owns and operates the concrete batching plant located adjacent to the Project Site on Lot 1011 DP1124153 and the unformed road reserve associated with River Street.

1.4 Project Site

The Project Site covers an area of approximately 2.9ha. A landscape materials yard has been operating at the Project Site since the early 1970's. Prior to this, the site formed part of a gravel extraction operation involving the extraction of gravel from the bed and banks of the adjacent Lachlan River.

Features adjacent to the Project Site include the Lachlan River to the south and west, agricultural land to the west and northwest, and light industrial, residential, and business zones to the north, northeast, and east.

Table 1.1 and **Figure 1.2** present the cadastral information and zoning of land within the Project Site.

Table 1.1
Project Site

Lot	Deposited Plan	Owner	Zoning
2	557714	Applicant	RU1 - Primary Production
3905[1]	1200283	NSW Government	SP2 – Infrastructure
1	1201417	Cowra Shire Council	SP2 – Infrastructure
10	1107219	Cowra Shire Council	RU1 – Primary Production
Unformed road reserves associated with Lee and River Streets.		Cowra Shire Council	RU1 – Primary Production
Note 1: Partially included within the Project Site.			

The Project Site includes land within Lot 3905 DP1200283 which is occupied by the disused Cowra to Eugowra Railway. A licence agreement between the Applicant and Rail Corporation NSW for the continued use of the section of the Project Site within Lot 3905 DP1200283 (**Figure 1.2**) was granted on 17 February 2020 and is included as **Appendix 1**.

The Applicant proposes to seek an agreement in relation to access and continued use of land within the Project Site owned by Cowra Shire Council.

The Project Site is accessed by a concrete driveway on the corner of Kite Street and River Street and is intersected by the disused Cowra to Eugowra Railway.

Portions of the Project Site are zoned RU1 – Primary Production and SP2 - Infrastructure under the Cowra LEP (see Section 1.6.4.1).

Sections of the Project Site are also identified on various plans under the Cowra LEP as follows (**Figure 1.2**).

- Flood Planning Area
- Biodiversity Area
- Groundwater Vulnerable Area

1.5 Background and Existing Operations

The Applicant has operated the landscape materials yard since 1 July 2007 when it was purchased from the previous operator. Prior to the Applicant assuming control, the Project Site had been used as a landscaping materials yard since the early 1970s and was formerly the site of a river gravel extraction operation.

The Applicant sells small quantities of sand, gravel, aggregate and other landscaping products to retail and small business customers, within Cowra and the surrounding areas.

Figure 1.3 presents the existing Project Site layout. The Project Site is occupied by a Landscaping Materials Yard adjacent to the upper bank of the Lachlan River, with the southwestern and western boundaries defined by a combination of a concrete block walls and an earth bunds. Infrastructure which forms part of the existing Landscaping Material Yard includes the following.

- Two concrete pad work areas, including one with an adjacent unlined sump used for truck washout and water storage.
- Material bunkers constructed using concrete blocks and panels.
- Various material stockpiles.
- Surface water management infrastructure including earth bunds and concrete block walls along the southern and western perimeter of the Project Site.
- A concrete-sealed driveway and level crossing.

It is noted that an area of existing disturbance associated with the Proposal is currently located on land that would not form a component of Project Site (**Figure 1.3**). The Applicant would remediate this area and restore the land to the standard required by the land holder, namely Transport for NSW or their nominee.

The Applicant's principal activity within the Project Site is the sale of landscaping materials. In summary, existing activities include the following.

- Receipt of raw materials deliveries within the Landscaping Materials Yard.
  - Typically, two material delivery trucks would access the Project Site per week.
- Washout of product trucks and agitator trucks.
- Recycling of waste concrete (i.e. stockpiling and crushing on a campaign basis) sourced from adjacent concrete batching operations.
- Sale of small quantities of landscaping and other materials to the general public and small businesses.
- Ancillary activities, including stockpile watering to minimise dust, storage of equipment, and management of surface water.

Table 1.2 outlines the hours of operation for the existing Landscaping Materials Yard at the Project Site. The Proposal would not alter these hours.

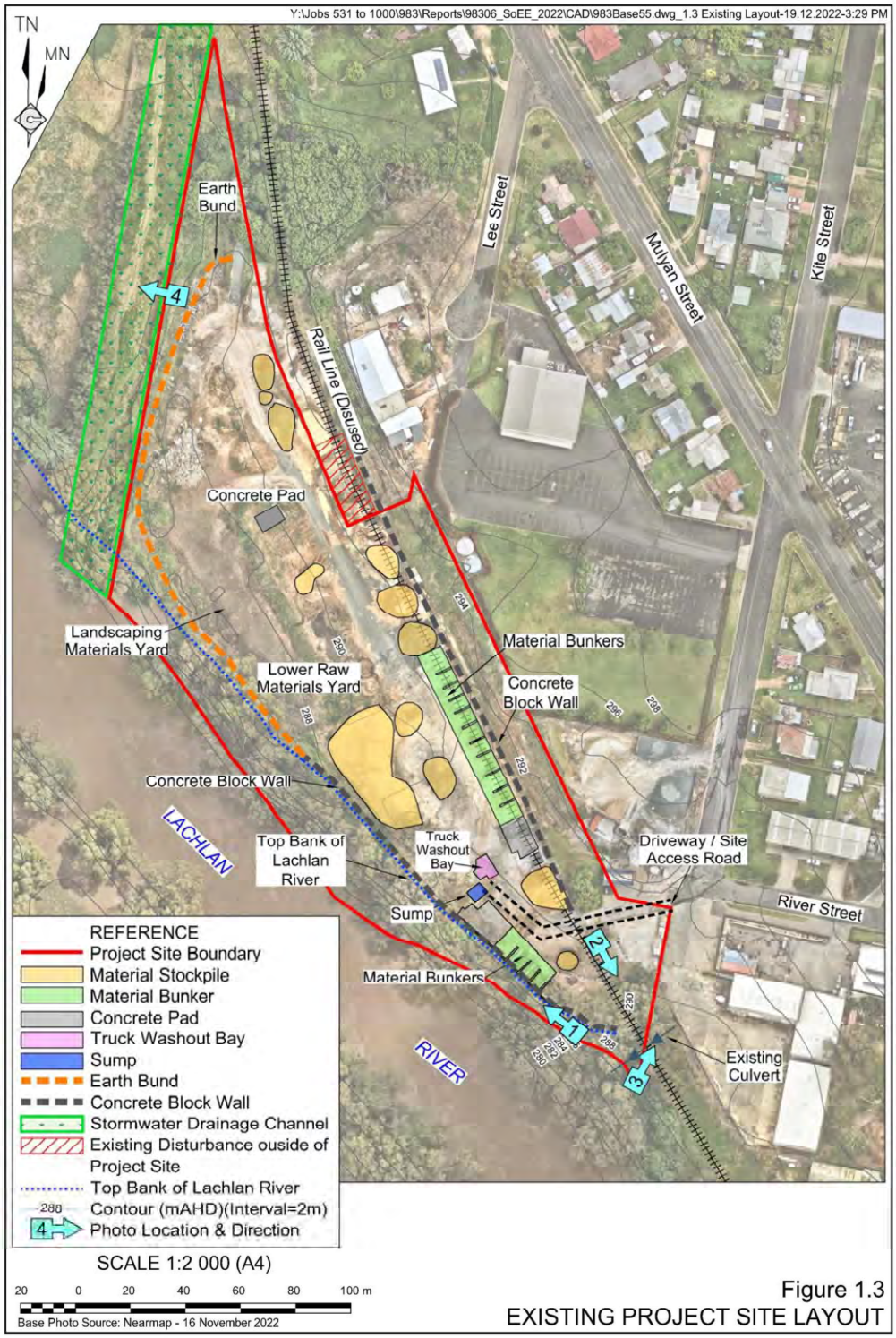


Figure 1.3
EXISTING PROJECT SITE LAYOUT

Table 1.2
Existing Hours of Operations

Activity	Period	Hours of Operation
Landscaping Materials Delivery and Supply	Monday to Friday	7:00am to 5:00pm
	Saturday	7:00am to 12:00pm
	Sunday	No Operations
Emergency Maintenance	All Days	24 hours

The Applicant currently employs five full-time employees.

The proposed activities, described in detail in Section 2, are largely consistent with the existing activities.

1.6 Planning Considerations

1.6.1 Introduction

A range of NSW legislation and planning instruments apply to the Proposal. These pieces of legislation and statutory instruments were reviewed to identify any environmental aspects requiring consideration in this SoEE.

A summary of each relevant piece of legislation and planning instrument is provided in the following subsections. The application and relevance of planning instruments to specific environmental issues has been addressed in the relevant specialist consultant assessments and considered in Section 3 of this document.

1.6.2 NSW Legislation

1.6.2.1 Introduction

The key NSW legislation relating to the approvals and licences required for the Proposal are identified and discussed as follows.

- *Environmental Planning and Assessment Act 1979* (EP&A Act).
- *Protection of the Environment Operations Act 1997* (POEO Act).
- *Water Management Act 2000* (WM Act).
- *Biodiversity Conservation Act 2016* (BC Act).

1.6.2.2 Environmental Planning and Assessment Act 1979

The EP&A Act provides the framework for the assessment and approval of development in NSW and is administered by the Department of Planning and Environment (DPE).

The application would be classified as Non-Designated, Local Development as it does not meet the relevant thresholds for Designated or State Significant Development.

The Proposal would also be classified as Integrated Development under Section 4.46 of the EP&A Act as a controlled activity approval for activities within 40m of waterfront land Under the *Water Management Act 2000* would be required.

1.6.2.3 Protection of the Environment Operations Act 1997

The POEO Act provides a framework for the prevention and regulation of pollution, and pollution causing development, within NSW. The POEO Act identifies activities for which an Environment Protection Licence (EPL) is required where particular activities exceed thresholds or triggers identified within Schedule 1 of the POEO Act.

Landscaping Material Supplies are not identified as an activity for which an EPL is required under Schedule 1 of the POEO Act.

The fact that an EPL is not required notwithstanding, the POEO Act incorporates specific conditions which make it an offence to pollute. In particular the following sections of the POEO Act are noted.

- Section 120 – a person who pollutes any waters is guilty of an offence.
- Sections 124 to 126 – it is an offence to cause air pollution.
- Section 139 – it is an offence to cause noise pollution.
- Sections 143 and 144 – it is an offence to transport or dispose of waste or operate an unlicensed waste facility.

1.6.2.4 Water Management Act 2000

The WM Act, amongst other matters, regulates development and activities within areas over which a Water Sharing Plan (WSP) has been issued which:

- use water;
- require construction of infrastructure to modify the flow or management of water; and/or
- require development on or under waterfront land or which interferes with groundwater.

As the Project Site is located on waterfront land adjacent to the top bank of the Lachlan River and is also located within a Flood Planning Area under the Cowra LEP, a Controlled Activity Approval would be required under Clause 91(2) of Part 3 of the WM Act.

1.6.2.5 Biodiversity Conservation Act 2016

The BC Act facilitates a system for assessing impacts on threatened species, populations and endangered or critically endangered ecological communities (EEC/CEEC). The BC Act requires offsetting of impacts to native vegetation where:

- area thresholds are exceeded;
- sensitive lands are identified (on OEH generated maps); or
- significant impact on threatened species, populations or communities is assessed.

The Proposal would not disturb native vegetation and, as a result, the BC Act does not apply.

1.6.3 State Environmental Planning Policies

1.6.3.1 Introduction

The following State Environmental Planning Policies (SEPPs) are potentially relevant to the Proposal and have been considered below.

- State Environmental Planning Policy (Resilience and Hazards) 2021 (730) replacing SEPP 33 – Hazardous and Offensive Developments and SEPP 55 – Remediation of Land.
- State Environmental Planning Policy (Transport and Infrastructure) 2021 (732) replacing SEPP (Infrastructure) 2007.
- State Environmental Planning Policy (Primary Production) 2021 (729) replacing the SEPP (Primary Production and Rural Development) 2019.
- State Environmental Planning Policy (Biodiversity and Conservation) 2021 (722) replacing the SEPP (Vegetation in Non-Rural Areas) 2017.

1.6.3.2 State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 3 and 4 of the Resilience and Hazards SEPP 2021 applies to development involving:

- Hazardous and Offensive Developments; and
- Remediation of Land.

Chapter 3 - Hazardous and Offensive Developments

Hazardous industries, and potentially hazardous, relate to industries that, without the implementation of appropriate impact minimisation measures, would, or potentially would, pose a significant risk in relation to the locality, to human health, life or property, or to the biophysical environment.

The hazardous substances and dangerous goods to be held or used at the Project Site are required to be identified and classified in accordance with the risk screening method of

(DP 2011). Hazardous materials are defined within DP (2011) as substances falling within the classification of the *Australian Code for Transportation of Dangerous Goods by Road and Rail* (Dangerous Goods Code) (National Transport Commission, 2011).

As no hazardous substances or dangerous goods would be stored within the Project Site, the Proposal would not be classified as hazardous or potentially hazardous development.

Offensive industries, and potentially offensive, relate to industries that, without the implementation of appropriate impact minimisation measures, would, or potentially would, emit a polluting discharge in a manner which would have a significant adverse impact in the locality or on future development in the locality.

Potential pollutant discharge impacts associated with the Proposal are detailed in Section 3. In summary, the Proposal would not be classified as offensive or potentially offensive development as it would not have a significant adverse impact on the locality.

Chapter 4 - Remediation of Land

Chapter 4 requires that consent for any development cannot be granted unless the consent authority has considered whether the land is contaminated. If the land is contaminated, the consent authority must be satisfied that:

a) "the land is suitable in its contaminated state (or would be suitable, after remediation) for the purpose for which the development is proposed to be carried out; and/or

b) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, the land would be remediated before the land is used for that purpose."

On 15 June 2020 the Applicant received a notice from Cowra Shire Council indicating Council's intention to issue a clean-up action for land within and adjacent the Project Site following a suspected pollution incident. The suspected pollution incidents detailed in the notice included:

- the disposal of chemicals (including MasterPolyheed 8875 and MasterSet AC 534) onto the ground and into drains which discharge onto the ground;
- the washing of chemical containers and the disposal of contaminated water onto the ground and into drains which discharge onto the ground;
- the washing down of agitator trucks containing residual cement and other chemicals in areas where wastewater discharges onto the ground.

Council issued a Clean-up Direction under Section 92 of the PoEO Act on 30 June 2020 and issued a further direction on 17 August 2022 requiring the Applicant to complete a contamination assessment at the Project Site. Details of the contamination assessment are provided in Section 3.6. In summary, the contamination assessment concluded that the suspected pollution incidents had not resulted in unacceptable impacts to soil or groundwater at the Project Site and that the Project Site was therefore suitable for continued commercial/industrial use.

Section 2.2.4 outlines proposed surface water controls which would prevent future pollution as a result of truck washout activities.

As a result, no further consideration of Chapter 4 of the Resilience and Hazards SEPP in relation to remediation of land is required.

1.6.3.3 State Environmental Planning Policy (Transport and Infrastructure) 2021

Clause 2.97 of the Transport and Infrastructure SEPP 2021 applies to development involving:

- "a new level crossing, or
- the conversion into a public road of a private access road across a level crossing, or
- a likely significant increase in the total number of vehicles or the number of trucks using a level crossing as a result of the development"

This clause does not apply as the Proposal would utilise an existing private level crossing within the Project Site and would not result in any changes to the total number of vehicles using the level crossing.

Clause 2.98 applies to development on land that is in or adjacent to a rail corridor, if the development:

- "is likely to have an adverse effect on rail safety;
- involves the placing of a metal finish on a structure and the rail corridor is used by electric trains;
- involves the use of a crane in air space above any rail corridor; or
- is located within 5 metres of an exposed overhead electricity power line that is used for the purpose of railways or rail infrastructure facilities."

This clause does not apply as the proposal would not involve the use of a metal finish or crane, the rail corridor does not include an overhead power line, and the rail corridor is currently disused.

Clause 2.99 applies to development involving the penetration of ground to a depth of at least 2m below ground level:

- "within, below or above a rail corridor;
- within 25m (measured horizontally) of a rail corridor;
- within 25m (measured horizontally) of the ground directly below a rail corridor; or
- within 25m (measured horizontally) of the ground directly above an underground rail corridor."

This clause does not apply as excavations associated with the Proposal within 25m of the rail corridor, including the construction of a diversion drain and water storage cell, would not reach or exceed a depth of 2m.

1.6.3.4 State Environmental Planning Policy (Primary Production) 2021

SEPP (Primary Production and Rural Development) 2019 was repealed in July 2020 and replaced with the Primary Production SEPP 2021.

The Proposal is not located on State significant agricultural land as identified in Schedule 1 of the Primary Production SEPP.

Division 4(2.27) of Part 2.5 of the Primary Production SEPP requires consideration of:

a) *"whether, because of its nature and location, the development may have an adverse effect on oyster aquaculture development or a priority oyster aquaculture area."*

No oyster aquaculture developments and no priority oyster aquaculture areas, as identified in the *NSW Oyster Industry Sustainable Aquaculture Strategy*, are located in the vicinity of the Project Site.

No further consideration of the Primary Production SEPP is considered necessary.

1.6.3.5 State Environmental Planning Policy (Biodiversity and Conservation) 2021

The Biodiversity and Conservation SEPP applies to the Project Site as it contains land zoned as SP2 Infrastructure (**Figure 1.2**). The aims of this SEPP are:

b) *"to protect the biodiversity values of trees and other vegetation in non-rural areas of the State, and*

c) *To preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation."*

The Proposal would not increase the disturbance footprint occupied by the existing landscaping materials supply business within the Project Site and would not involve the clearing of any native vegetation. As a result, the Biodiversity and Conservation SEPP has not been considered further.

1.6.4 Local Planning Issues

1.6.4.1 Cowra Local Environmental Plan 2012

Permissibility

The Project Site is located within the Cowra Local Government Area to which the Cowra LEP is relevant. The Project Site is situated within land which is zoned:

- RU1 – Primary Production; and
- SP2 – Infrastructure.

The objectives of the RU1 – Primary Production Zone are as follows.

- "To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones."

The Proposal may be classified as "Landscaping Material Supplies" under the Cowra LEP. Landscaping Material Supplies is permissible with development consent within Zone RU1.

The objectives of the SP2 – Infrastructure Zone is as follows.

- "To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure."

Development for the following purpose is permissible within Zone SP2.

> "the purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose"

The purpose of land Zoned SP2 within the Project Site is rail transportation. The Applicant holds a licence from the Rail Corporation of NSW to occupy land Zoned SP2 within the Project Site for the purposes of the existing operation of a landscaping materials yard.

Clause 5.3 of the Cowra LEP provides for flexibility with regards to permissible land uses where:

> "a use allowed on the other side of a zone boundary would enable a more logical and appropriate development of the site and be compatible with the planning objectives and land uses for the adjoining zone."

This clause applies to land that is within 100m of the boundary between any two zones. As all land within the Project Site which is zoned SP2 is within 100m of adjacent land zoned RU1 (see **Figure 1.2**), the provisions of Clause 5.3 apply to this land.

Clause 5.3(4) of the Cowra LEP states the following.

> "(4) Despite the provisions of this Plan relating to the purpose for which development may be carried out, development consent may be granted to the development of land to which this clause applies for any purpose that may be carried out in the adjoining zone, but only if the consent authority is satisfied that-
>
> (a) the development is not inconsistent with the objectives for development in both zones, and
>
> (b) the carrying out of the development is desirable due to compatible land use planning, infrastructure capacity and other planning principles relating to the efficiency and timely development of land."

As identified above, Landscaping Material Supplies is permissible with development consent within Zone RU1 and would therefore be permissible under Clause 5.3 within land zoned SP2 within the Project Site.

The Proposal would not be inconsistent with the objectives for development in RU1 – Primary Production Zone for the following reasons.

- The Proposal would maintain the current level of diversity and competition in landscaping material supply industry in the Cowra area.
- The Proposal is an existing operation with and existing disturbance footprint and therefore would not result in the further fragmentation and alienation of resource lands.
- The Proposal is an existing operation which has no history of conflict with adjacent land uses (rural, residential, railway or industrial) and would complement the Applicant's adjoining industrial development (concrete batching plant).

The Proposal would not be inconsistent with the objectives for development in SP2 – Infrastructure Zone for the following reasons.

- The Proposal is considered incidental or ancillary to purpose of that land (railway) as the Applicant holds a licence from the Rail Corporation of NSW to occupy land zoned SP2 within the Project Site for the purposes of the existing operation of a landscaping materials yard.
- The Applicant would remove all Proposal-related infrastructure from within land zoned SP2 and remediate areas of the rail corridor within the Project Site in the event that the licence agreement is not renewed in the future.

The Proposal, including the portion of the Project Site within land zoned SP2, would be desirable as it:

- represents an existing landscaping materials yard which is compatible with adjacent operations (i.e. the Applicant's concrete batching plant);
- would rely upon existing infrastructure at the Project Site with minimal improvements and no additional disturbance required; and
- represents an efficient use of the relatively small area of land occupied by the Project Site.

The following additional clauses within the Cowra LEP are also relevant to the Proposal.

Clause 5.10 - Heritage Conservation

Clause 5.10 of the Cowra LEP identifies the following objectives with regards to heritage conservation.

- "To conserve the environmental heritage of Cowra.
- To conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings, and views.
- To conserve archaeological sites.
- To conserve Aboriginal objects and Aboriginal places of heritage significance."

A review of Cowra LEP 2012 Heritage Map Sheet HER_002C indicated that no identified heritage items are present within the Project Site. One heritage item of local significance, the Cowra Showground grandstand, is located southwest of the Project Site on the opposite bank of the Lachlan River. Although it is not anticipated that the Proposal would impact this heritage item, potential flood-related impacts on property in the vicinity of the Project Site are considered in Section 3.2.

Clause 7.2 - Flood Planning

Clause 7.2 of the Cowra LEP identifies the following objectives with regards to flood planning.

- "To minimise the flood risk to life and property associated with the use of land.
- To allow development on the land that is compatible with the land's flood hazard, taking into account projected changes as a result of climate change.
- To avoid significant adverse impacts on flood behaviour and the environment."

A review of Cowra LEP 2012 Flood Planning Map Sheet FLD_002C confirms that the Project Site is located within the nominated flood planning area (**Figure 1.2**). Additionally, a review of the NSW Water Resource Commission Flood Inundation Map for Cowra (1978) indicates that portions of the Project Site would be subject to flooding during floods with recurrence intervals of 20 years, 50 years, and 100 years.

Clause 7.2(3) of the Cowra LEP requires that development consent must not be granted unless the development:

a) "is compatible with the flood hazard of the land, and

b) is not likely to significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and

c) incorporates appropriate measures to manage risk to life from flood, and

d) is not likely to significantly adversely affect the environment or cause erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and

e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding."

While noting the potential for flooding is limited to extreme rainfall conditions, the Proposal has been designed so as to minimise both flood risk to property and adverse effects on flood behaviour which could result in adverse or detrimental impacts on other properties or the environment. Section 3.2 and **Appendix 2** provide information on flooding impacts to allow for consideration against Clause 7.2(3) of the Cowra LEP.

Clause 7.3 - Terrestrial Biodiversity

Clause 7.3 of the Cowra LEP identifies the following objective with regards to terrestrial biodiversity, which is to maintain terrestrial biodiversity by:

- "protecting native flora and fauna,
- protecting the ecological processes necessary for their continued existence; and
- encouraging the conservation and recovery of native fauna and flora and their habitats."

A review of Cowra LEP 2012 Terrestrial Biodiversity Map Sheet BIO_002 confirms that the Project Site is partially located on land identified as 'Biodiversity' (**Figure 1.2**).

Section 3.9 provides information on biodiversity-related impacts associated with the Proposal to allow for consideration against Clause 7.3(3) and (4) of the Cowra LEP.

Clause 7.4 - Riparian Lands and Watercourses

Clause 7.4 of the Cowra LEP identifies the following objectives with regards to riparian lands and watercourses, namely to protect and maintain:

- "water quality within watercourses,
- the stability of the bed and banks of watercourses,
- the aquatic and riparian habitats; and
- ecological processes within watercourses and riparian areas."

A review of Cowra LEP 2012 Wetlands Map Groundwater Vulnerability Map Riparian Lands and Watercourses Map Sheet CL1_002 confirms that the project is located adjacent to an identified watercourse, namely the Lachlan River (**Figure 1.2**). Additionally, Clause 7.4 of the Cowra LEP applies to "all land that is within 40 metres of the top of the bank of each watercourse" as identified on the aforementioned map.

Section 3.2 provides information on water quality impacts and surface water and flooding management and mitigation to allow for consideration against Clause 7.4(3) and (4) of the Cowra LEP.

Clause 7.6 - Groundwater Vulnerability

Clause 7.6 of the Cowra LEP identifies the following objectives with regards to groundwater vulnerability.

- "To maintain the hydrological functions of key groundwater systems.
- To protect vulnerable groundwater resources from depletion and contamination as a result of development."

A review of Cowra LEP 2012 Wetlands Map Groundwater Vulnerability Map Riparian Lands and Watercourses Map Sheet CL1_002 confirms that the Project Site is located on land identified as 'Groundwater Vulnerable' (**Figure 1.2**).

Section 3.6 provides information on potential groundwater-related impacts associated with the Proposal and identifies management and mitigation measures to allow for consideration against Clause 7.6(3) and (4) of the Cowra LEP.

1.6.4.2 Cowra Shire Council Development Control Plan 2021

The aims of the Cowra Shire Council Development Control Plan (Cowra DCP) 2021 are:

- "to promote growth and development in the Cowra Local Government Area;
- to ensure growth and development occurs in an orderly, environmentally friendly and sustainable manner; and
- to ensure positive outcomes are maximised for the benefit of the broader community."

Table 1.3 identifies specific matters addressed by sections of the Cowra DCP, their relevance to the Proposal, and the section of the SoEE in which they are addressed. Additionally, the Applicant acknowledges that the Proposal would be subject to the neighbour notification process (and potentially also the public exhibition process) in accordance with Part B of the Cowra DCP.

Table 1.3
Cowra Shire Development Control Plan 2021 – Relevant Sections

Page 1 of 5

Relevant DCP Clause	Description	SoEE Section
Part B – Land Management		
1.5 Erosion and Sediment Control Plan	a) Locality details.	Appendix 2
	b) North point and scale.	
	c) Property boundaries and adjoining roads.	
	d) Existing land contours.	
	e) Location of vegetation to be removed/ retained.	
	f) Existing watercourses and drains.	
	g) Proposed building structures and disturbed areas.	
	h) Proposed vehicular access.	
	i) Extent of earthworks and limits of cut and fill.	
	j) Location of proposed stockpiles.	
	k) Location of temporary and permanent site drainage, erosion and sediment control measures.	
	l) Location of temporary and permanent revegetation areas.	
	m) An explanation of any changes to the erosion prevention and sediment controls as the works proceed.	
	n) Supplementary notes covering inspection and maintenance requirements.	
1.6 Soil and Water Management Plan	Erosion and Sediment Control Plan measures are incorporated into a Soil and Water Management Plan where disturbance exceeds 2 500m^2.	Appendix 2
	a) Detailed calculations to determine the soil loss and the size of any sediment basins that may be required on the site.	
	b) Information required for an Erosion and Sediment Control Plan.	
	c) The location of lots, public open space, stormwater drainage systems.	
	d) The location of land designated or zoned for special uses.	
	e) Location and diagrams of all erosion and sediment site controls used.	
	f) Locations, calculations and engineering details of any sediment basins.	
	g) Location and details of other stormwater management structures such as: constructed wetlands, gross pollutant traps, trash racks or separators.	
	h) Procedures for the operation and maintenance of pollution control equipment/works must also be noted, including: i) quality and characteristic of any wastes before treatment; ii) estimate quality of wastes after treatment; iii) details of permitted maximum pollution levels specified by Council or the EPA; iv) estimate of the average volumes of waste from the site; v) details of the treatment methods e.g. flocculation agents; vi) methods of disposal of the wastes, including discharge points and/or disposal areas; vii) details of major items of equipment used e.g. pumps, sprays; viii) identify any special requirements or site conditions that exist (and may require specialist service/advice); ix) identify inspection procedures and inspectors; and x) any other relevant matters.	

Table 1.3 (Cont'd)
Cowra Shire Development Control Plan 2021 – Relevant Sections

Relevant DCP Clause	Description	SoEE Section
1.7 Design Guidelines	d) retain stripped topsoil for reuse on-site during landscaping and site rehabilitation.	N/A
	e) Protect stockpiles by erecting sediment fencing on the down slope side.	N/A
	i) Reduce the slope length through the use of graded banks, cross banks and drains.	N/A
	j) Keep batters as flat as possible. On larger developments batters should not exceed 3:1.	N/A
	k) Revegetate disturbed sites as soon as possible.	2.7
	l) Where possible, build a diversion bank around the topside of the excavation line to divert clean runoff from above the site away from the building site and other disturbed areas.	2.2.4
	m) Provide sediment fencing/hay bales below all construction sites to slow and filter sediment laden runoff.	N/A
	p) Sediment retention basins should be installed on large sites particularly if the soils are dispersive.	2.2.4
	r) Provide a designated wash-out area which will detain and filter polluted water.	2.2.4, 2.4.2
	s) Where possible, use grassed or natural drainage channels to carry and filter runoff.	2.2.4
	u) Stabilise disturbed areas by turfing, mulching, seeding, paving or similar.	2.2.4, Appendix 2
	v) Rehabilitate all excavated and filled areas.	N/A
	w) Erosion and sediment controls must be maintained throughout the course of construction and until the building site has been rehabilitated and stabilised.	Appendix 2
	y) All control measures are to be inspected after each rainfall event and cleaned or repaired if required.	3.2.3, 3.6.6
	z) Accidental spills of soil or other materials onto the roadway or gutter must be removed prior to completion of the day's work. Spills are to be removed by sweeping, shovelling or a means other than washing.	Noted
1.8 Erosion Prevention and Sediment Control Techniques	f) Drainage lines or channels carry concentrated flows and will require specialised revegetation techniques such as using erosion control blankets.	Appendix 2
Part I – Industrial Development		
1.3 Land Use Conflict and Pollution Management Controls	a) Careful site planning should be used to maximise the distance between activities that have potential to generate noise, dust, odour etc, and sensitive uses or activities on adjoining land.	N/A (ED)
	b) Consideration should be given to conducting noisy, dusty, or odorous activities at limited times of the day.	2.3.6, 3.3, 3.5
	c) Industrial activities that generate and discharge liquid trade waste to the reticulated sewerage system must obtain the relevant Liquid Trade Waste approval from Council.	N/A
	d) Development involving construction works should implement an Erosion and Sediment Control Plan prepared and submitted in accordance with Part Q of the DCP.	Appendix 2
	e) Vehicle entry, exits, loading, unloading and internal manoeuvring areas should be concreted, sealed or topped with blue metal aggregate (as a minimum) to prevent the emission of dust from trafficable surfaces.	2.2, 2.3, 2.5 & Figure 2.1
	f) Buildings used for noisy operations should be designed (orientated, insulated etc) to inhibit the transmission of noise onto nearby properties used for residential or other noise sensitive purposes.	3.3

Table 1.3 (Cont'd)
Cowra Shire Development Control Plan 2021 – Relevant Sections

Relevant DCP Clause	Description	SoEE Section
1.3 Land Use Conflict and Pollution Management Controls (Cont'd)	h) Noisy operations including manufacturing and loading/ unloading activities should be carried out at reasonable times.	2.3.6, 3.3
	i) Hours of operation and access to the site through residential streets may be restricted where the proposed development involves the generation of noise likely to affect residential areas.	2.3.6, 3.3
	j) An acoustic report from a suitably qualified acoustic consultant may be required where there is a reasonable likelihood that a proposed industrial activity will generate noise that impacts residential amenity.	3.3, Appendix 5
	n) Effective use of landscaping should be used to screen unsightly areas, improve streetscape appearance, and reduce the impact of pollutants emitted from industrial activities.	2.2, 2.7, 3.2, 3.9
1.4 Setback Controls	a) Front setback areas must be a minimum of 8m, incorporating a minimum 3 metre landscaping strip. Front setback areas larger than the minimum are encouraged where this area is used for on-site car parking, or large vehicle manoeuvrability.	Project Site does not abut street.
	c) Industrial buildings should generally be setback 3m from side and rear property boundaries.	No new buildings proposed. Figure 2.1
	e) Zero side and rear setbacks are permitted subject to compliance with the Building Code of Australia and merit issues are deemed acceptable in relation to adjoining or adjacent properties.	
1.5 Building Design and Form Controls	a) Office components should: i. be located at the street frontage of the structure; ii. be architecturally differentiated to break up the facade	2.5.3
	g) Building height should not adversely impact on the visual amenity of the locality.	
1.6 Waste Management Controls	a) Storage areas should be behind the building or another part of the site that cannot be seen from the street or adjoining properties. Alternatively, these areas must be screened from public view.	2.3
	b) Screen fences should be a maximum of 2.4m in height and goods should not be stacked higher than the actual fence.	
	c) Landscaping is generally not an acceptable method of screening unless it is already well established and the applicant can demonstrate that the storage area will be effectively screened. Landscaping may only be used for screening purposes when undertaken in conjunction with fencing and other screening devices.	
	d) The storage of hazardous goods, materials or wastes will not be permitted in areas that adjoin residential or other sensitive land-uses.	N/A
	e) Sufficient space should be provided on-site for the loading and unloading of wastes. This activity is not to be undertaken on any public place.	2.3.1
	f) Industrial activities that generate and discharge liquid trade waste to the reticulated sewerage system must obtain the relevant Liquid Trade Waste approval from Council. The industrial activity must comply at all times with the requirements of the Liquid Trade Waste Regulation Guidelines and any conditions of the Liquid Trade Waste Approval.	N/A
1.7 Fencing Controls	a) Security fencing should provide for the protection of property and should be avoided (where possible) around non-productive and exposed areas of the site such as car parking and landscaped areas.	2.6
	c) Security fencing should preserve safe sight distances for all vehicle entry and exit locations, including those on adjoining properties.	
	d) Mesh security fencing should not be located in front of the main building wall towards the street and must not be erected to a height greater than 2.4m.	

Table 1.3 (Cont'd)
Cowra Shire Development Control Plan 2021 – Relevant Sections

Relevant DCP Clause	Description	SoEE Section
Part M – Parking, Access and Mobility		
Part M Generally	Customers (or contract drivers) generally visit the Project Site for loading activities only. Any in-person sales are completed at the Site Office located at the adjacent concrete batching plant, with product loading occurring adjacent to the relevant material stockpiles.	2.3.3
Part N – Landscaping		
3.4 Industrial Landscape Controls	a) Incorporates a landscape strip in accordance with Section 1.4 of Part I of this Plan.	Project Site does not abut street.
	b) Incorporates techniques where relevant to act as a barrier or buffer to reduce dust, noise and vibration levels from industrial activities.	3.3.5, 3.5.4
	a) Reduces the visual impact of vehicle parking, loading, unloading and manoeuvring areas, particularly where these areas are visible from the public domain.	Project Site does not abut street.
	d) Visually promotes the site and provides a pleasant work environment and recreation space for employees and other users of the site.	3.9.4
	e) Reduces the visual impact of large building masses.	N/A
	f) Retains existing mature trees within development sites where possible.	3.9.4
	g) Promotes public safety.	2.7
	i) Includes an appropriate drip, trickle or spray irrigation system.	3.9.4
	k) Includes tree species that are appropriate for site conditions such as soil, aspect, drainage and micro-climate.	2.7, 3.9.4
	l) Includes native species where possible.	2.7, 3.9.4
	o) Includes appropriate treatment of areas left exposed by development works including cut and fill.	2.2.2
	p) Incorporates appropriate edging techniques to separate hardstand areas (i.e. car parking and manoeuvring areas) from landscaped areas.	2.2.4.2, 2.2.4.4
	q) Incorporates vegetation and landscaping (other appropriate measures) to screen less desirable aspects of industrial development including loading / unloading areas and waste disposal.	2.7
	r) Integrates security fencing (where this is proposed) within or behind landscaped areas.	2.6, Figure 2.1
	s) Integrates all cut scars, fill batters and retaining walls into the landscape with shrubs, trees or ground covers plantings, or combinations thereof.	2.2.4.2, 2.2.4.4
	t) Makes provision for adequate drainage including collection or dispersal of stormwater runoff, prevention of pounding of water on pavements, or discharge of runoff onto adjoining properties or public areas.	2.2.4, 3.2
Part O – Environmental Hazard Management		
1.8 Information to Accompany a Development Application	a) A statement or justification as to why the proposed development is appropriate on flood prone land.	3.2, Appendix 2
	b) A survey plan showing: i) Position of the existing building and/or proposed building. ii) Existing ground levels to AHD around the perimeter of the building, as determined by a registered surveyor. iii) Level of the 1% AEP flood event. iv) Proposed floor levels relative to the 1% AEP flood event.	Figures 1.3, 2.1 & 3.6

Table 1.3 (Cont'd)
Cowra Shire Development Control Plan 2021 – Relevant Sections

Relevant DCP Clause	Description	SoEE Section
1.8 Information to Accompany a Development Application (Cont'd)	c) A report from a suitably qualified engineer that demonstrates that: i) The development will not increase the flood hazard or risk to other properties. ii) The structure of the proposed buildings will be adequate to deal with flooding situations. iii) The proposed building materials are suitable. iv) The buildings are sited at the optimum position to avoid flood waters and allow safe flood access for evacuation. v) The proposed redevelopment will not expose any resident to unacceptable levels of risk, or any property to unreasonable damage.	3.2, Appendix 2
1.9 Flood Controls	e) Solid fences that impede the flow of floodwaters are not permissible. Fences should be at least 50% open to allow the progress of floodwaters.	Noted
	j) All applications should be accompanied by a flood emergency plan. Appropriate warning and advisory signage must be prominently visible at entry/exit points.	3.2
	n) On-site sewage management facilities should be sited and designed to withstand flooding conditions (including consideration of structural adequacy, avoidance of inundation and flushing/leaking into flowing flood waters).	N/A (ED)
	o) Tank and trench style of systems are not permitted on land affected by the Flood Planning Level. All sewer fixtures must be located above the 1% AEP event	2.5.3, Figure 3.6
Part P – Crime Prevention Through Environmental Design		
2.2 Building Orientation	f) Office and administration areas in industrial developments should be located at the front of the building overlooking the street and any car parking areas.	2.5.3
2.7 Security Measures	a) Quality locks should be installed on external windows and doors.	2.6
	e) External storage areas and yards should be secured and well lit.	2.6
N/A (ED) = Deemed not applicable to existing development.		

1.7 Consultation

1.7.1 Government Agencies

1.7.1.1 Council and Environment Protection Authority

On 25 July 2017, an inspection of the Project Site and the adjacent Applicant-owned and operated concrete batching plant was undertaken by officers from Cowra Shire Council (Council) and the Environment Protection Authority (EPA). On 23 October 2017, Council issued a Prevention Notice under Section 96 of the *Protection of the Environment Operations Act 1997* (POEO Act) stating that it suspected that the Company was undertaking an activity at the Project Site in an environmentally unsatisfactory manner. In addition, Council issued a range of orders under Section 121B of the EP&A Act and Section 96 of the POEO Act on 23 October 2017. Since that date, the Applicant has continued to liaise with Council in relation to those orders.

Following receipt of this notice and order, the Applicant reviewed its operations and determined that the Landscaping Materials Yard was operating:

- without development consent; and
- on land controlled by Council and owned by Transport for NSW and managed by John Holland.

In order to rectify the identified issues, the Applicant was requested to:

- prepare a *Site Management Plan* identifying how the site would be managed moving forward, including rectifying a number of matters identified during the agency inspections of the Project Site; and
- prepare an application for development consent.

The *Site Management Plan* was prepared by RWC and submitted to Council on 25 October 2018. This document has been prepared to support an application for development consent.

1.7.1.2 Site Meeting

A meeting between the Applicant, R. Roberts of Garden and Montgomerie, representatives of Council and RWC was held at the Project Site on 20 December 2018. During this meeting, proposed changes to the site layout and key issues to be assessed in the SoEE were discussed. Additionally, the following approaches and responsibilities were determined during the meeting.

- In the absences of a licence agreement between the Applicant and Transport for NSW (or their delegate), land within the railway corridor would be excluded from the Project Site and a revised layout would be detailed by RWC in the EIS. It is noted that an agreement has since been reached with the Rail Corporation of NSW in relation to that land (see **Appendix 1**).
- The Applicant would apply to Council to either occupy, lease or purchase the lots owned by Council within the Project Site.
  - It is understood that such an agreement would be considered during Council's assessment of the development application.
- Council would resolve drainage issues causing runoff from Kite Street and River Street to enter the Project Site at the site entrance.
- A specialist consultant would be engaged by the Applicant to prepare an Erosion and Sediment Control Plan (Soil and Water Management Plan) and high level flood study.

1.7.1.3 Natural Resources Access Regulator

An earlier iteration of the Proposal which included both the Landscaping Materials Yard as well as the Applicant's concrete batching operations was referred to the Natural Resources Access Regulator (NRAR). In Response, NRAR issued several requests for information (dated 22

December 2020, 20 April 2021 and 28 April) seeking clarification on whether the Proposal would be consistent with requirements under the *Guidelines for Controlled Activities on Waterfront Land – Riparian Corridors* (NRAR, 2018).

In response to NRAR's request, the Applicant committed to the establishment of a 10m wide Vegetated Riparian Zone along the southern border of the Project Site (see Section 3.9). A copy of the final correspondence with NRAR (dated 19 May 2021) is included as **Appendix 3**.

1.7.1.4 Railway Corridor Licence

In response to the identification of land within the Project Site which is owned by Transport for NSW (TfNSW) and controlled by John Holland, the Applicant commenced an application for a licence agreement over the railway corridor land in May 2019. A licence fee was provided to the Applicant by TfNSW in January 2020 following valuation of the subject land. A final licence agreement for the railway corridor land within the Project Site was agreed between the Applicant and Rail Corporation NSW on 17 February 2020 (**Appendix 1**).

1.7.2 Local Community

A community consultation pamphlet (**Appendix 4**) was prepared for the Proposal as well as the Applicant's existing concrete batching plant located adjacent to the Project Site. The consultation pamphlet provided information regarding site activities, proposed changes to existing activities, and a request for feedback regarding the existing operation at the Project Site. The pamphlet was distributed to those residences closest to the Project Site, representing the sensitive receivers most likely to experience any adverse impacts associated with the Proposal. The pamphlet was delivered to each of the following residential addresses in April 2019.

- 9 Kite Street
- 11 Kite Street
- 8 Mulyan Street
- 10 Mulyan Street

No feedback was received in response to the community consultation pamphlet.

1.8 Management of Investigations

The preparation of this SoEE has been coordinated by Jack Flanagan (B.Sc., M.Env.Sc.), Environmental Consultant with RWC with assistance from Indigo Devane (B.Sc., Env.Sc) with the same company.

Technical information relating to the Proposal was provided by Mr Garry Bryant of the Applicant.

Strong emphasis has been placed upon a multi-disciplinary team approach to the design of the Proposal, the description of the existing environment, identification of key environmental issues, development of appropriate safeguards and assessment of impacts. The following consultancy firms were commissioned by the Applicant to prepare nominated specialist consultant studies for the Proposal.

- Noise: Spectrum Acoustics Pty Limited
  - Ross Hodge (B.Sc (Hons))
  - Neil Pennington, Dr (Ph.D, B.Sc (Physics), B.Math (Hons))
- Surface Water: Strategic Environmental and Engineering Consulting (SEEC) Pty Ltd
  - Mark Passfield (B.Sc (Eng. Geol)(Hons))
  - Bill Johnson (B.Sc.Eng. (Civil)(Hons), M.Eng.Sc (Civil))
  - Liam O'Rourke (B.Sc.Env.)

2. Description of the Proposal

2.1 Outline of the Proposal

2.1.1 Objectives

The Applicant's principal objectives for the Proposal are to:

- obtain the necessary development consent and rectify issues associated with use of land controlled by Council and Transport for NSW;
- continue to service the construction and landscaping material market in the Cowra region;
- undertake modification to the existing Project Site layout to ensure that environmental risks are minimised to the maximum extent practicable; and
- undertake all activities in a manner to ensure compliance with conditional requirements of all approvals, reasonable community expectations and, to the extent practicable, the objectives of the Cowra LEP.

2.1.2 Overview of the Proposal

The Proposal would include the following key activities (**Figure 2.1**).

- Modifications to the Project Site layout, including establishment of a range of surface water management infrastructure to ensure improved environmental management of the Project Site.
- Sale of small quantities of landscaping and other materials to the general public and small business.
- Recycling of limited quantities of returned concrete material from the Applicant's adjacent concrete batching operations.
- Ancillary activities, including management of surface water and storage of equipment.

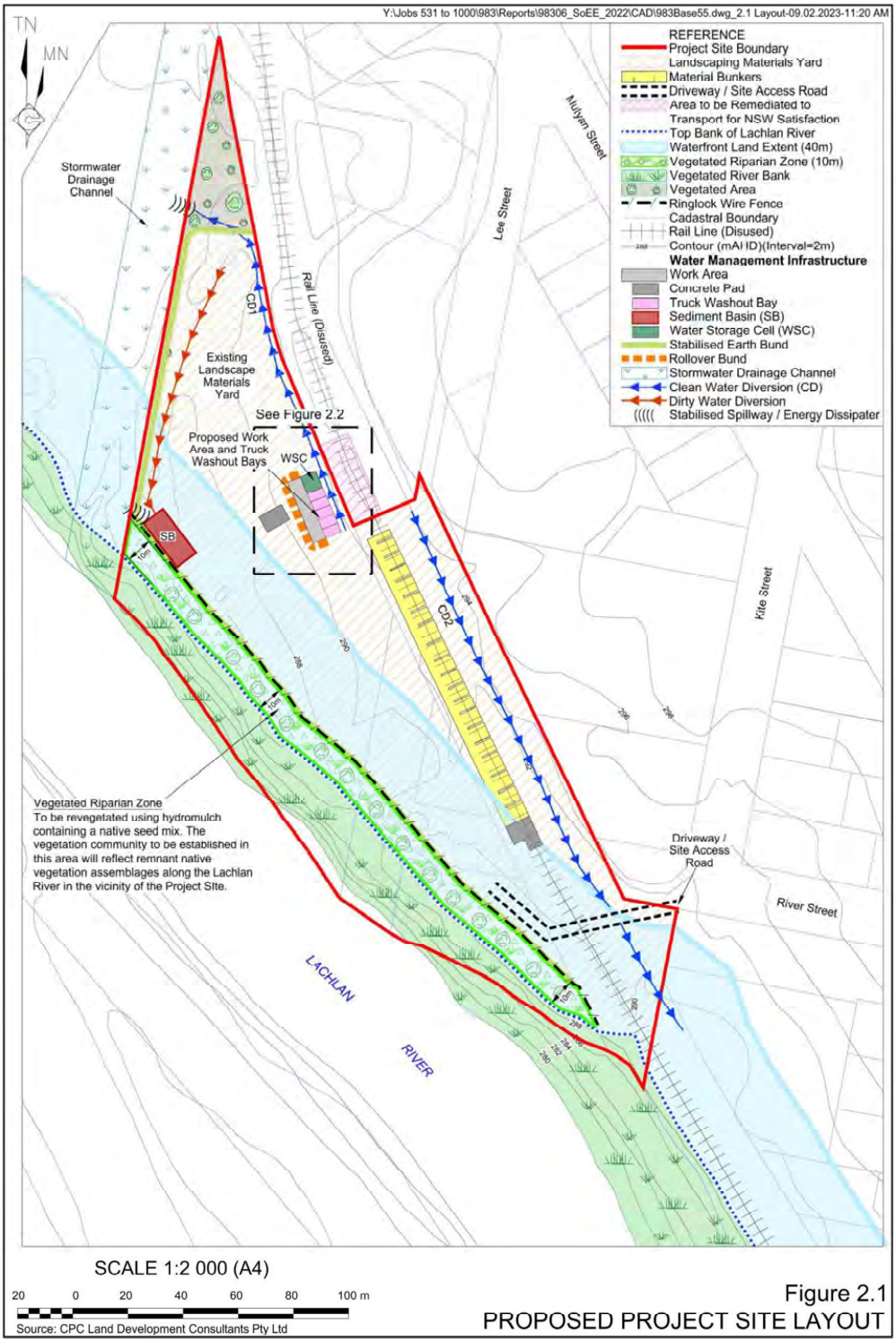


Figure 2.1
PROPOSED PROJECT SITE LAYOUT

2.1.3 Approvals Required

Section 1.6 describes the various planning considerations that apply to the Proposal. In summary, the following approvals would be required for the Proposal.

- Development consent under Part 4, Division 4.3 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Proposal is classified as both Non-Designated, Local Development and Integrated Development. As a result, the development application is accompanied by an SoEE.
- Controlled activity approval under Clause 91(2) of Part 3 of the *Water Management Act 2000* as the Project Site is located adjacent to the top bank of the Lachlan River.

2.2 Project Site Modification Works

2.2.1 Introduction

A range of Project Site modification works are required to address issues associated with:

- remediation of disturbed areas encroaching on land controlled by Transport for NSW (Lot 3905 DP1200283) which is not covered by the licence agreement with the Applicant;
- establishment of a Vegetated Riparian Zone;
- upgrades to existing infrastructure; and
- surface water management.

The following subsections provide a description of the proposed Project Site modifications works, including the proposed timing for each.

2.2.2 Remediation of the Rail Corridor

The Applicant notes that over time, infrastructure associated with existing operations have encroached onto land controlled by Transport for NSW, namely Lot 3905 DP1200283 comprising the disused Cowra – Eugowra Railway corridor. A licence agreement between Rail Corporation NSW (RailCorp), a division under Transport for NSW, and the Applicant for the continued use of the section of the project Site within Lot 3905 DP1200283 was granted on 17 February 2020 (**Appendix 1**).

The section of existing disturbance within Lot 3905 DP1200283 which is not included within the licence agreement would be remediated to the satisfaction of Transport for NSW or their nominee as part of the Proposal (**Figure 1.3** and **Figure 2.2**). Remediation of this area would involve the removal of any product stockpiles, spreading of growth medium, and sowing with a suitable native groundcover seed mix.

Infrastructure associated with the Proposal which is currently located within the subject Lot includes material bunkers and stockpiles, precast concrete blocks and concrete block walls. With the exception of additional material bunkers, no additional infrastructure would be constructed or located within Lot 3905 under the Proposal (**Figure 2.1**).

In the event that the licence agreement is not renewed in the future, the Applicant would, in consultation with Transport for NSW or their nominee, remove all infrastructure from within Lot 3905. Following removal of relevant infrastructure, the Applicant would then remediate the rail corridor to the satisfaction of Transport for NSW or their nominee. In order to ensure that encroachment of Proposal-related activities into the rail corridor does not occur in future, the Applicant would permanently mark on the ground the boundary of the rail corridor using regularly spaced posts or a fence.

2.2.3 Upgrades to Existing Infrastructure

A range of existing infrastructure at the Project Site would be required to be upgraded, including the following.

Concrete Sealed Work Area and Washout Bays

Product delivery trucks and concrete agitator trucks associated with the Applicant's adjacent concrete batching plant are required to be washed out prior to and/or following deliveries. Wash water generated has the potential to have an elevated pH due to mixing with cementitious particles and other raw materials. The concrete work area and associated unlined sump have been identified as not being consistent with best practice, particularly in relation to management of accumulated wash out water. Consequently, the Applicant would remove the existing sump and construct a concrete sealed work area with concrete sealed washout bays, a concrete sealed water storage cell and perimeter rollover bunds (**Figure 2.2**).

In summary, the concrete sealed work area and washout bays would have the following design criteria (**Figure 2.2**).

- Concrete sealed work area adequate to permit use by laden vehicles.
- Concrete lined, in-ground washout bays (maximum depth of two metres) suitable for washing out agitator trucks.
  - The washout bays would be constructed in a manner that would permit retention of aggregate within the washout bay and collection of washout water within an adjacent water storage cell for reuse.
  - The washout bays would be designed to facilitate removal of aggregate using a front-end loader.
- Vehicular access to the concrete sealed work area would be via rollover bunds which would ensure that surface water is not permitted to flow from unsealed work areas to the concrete sealed area or vice versa.
- Surface water within the work area would be directed to flow into the washout bays and water storage cell for reuse.
  - Accumulated water would not be permitted to flow to natural drainage or to the dirty water management system.

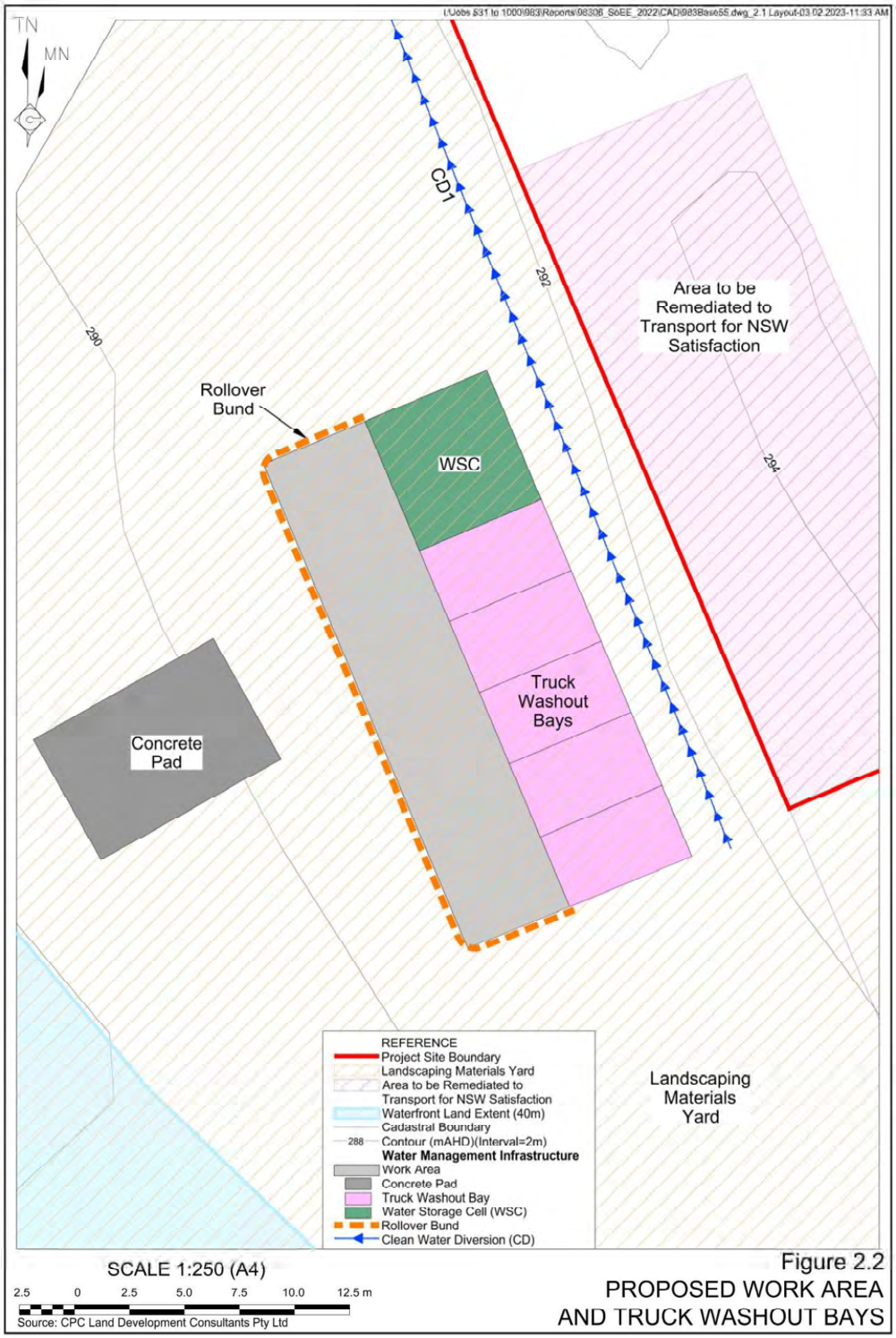


Figure 2.2
PROPOSED WORK AREA AND TRUCK WASHOUT BAYS

- Accumulated water would preferentially be pumped to the Applicant's adjacent concrete batching plant for use in the production of concrete.
- An automatic level controller would be installed to ensure that accumulated water is pumped to the concrete batching plant once a sufficient quantity is available.

2.2.4 Surface Water and Flood Controls

A *Soil and Water Management Plan* (SWMP) detailing surface water and flood controls for the Proposal and the Applicant's adjacent concrete batching plant was prepared by Strategic Environmental and Engineering Consulting Pty Ltd (SEEC) and is presented as **Appendix 2**. This subsection provides a summary of the surface water and flood controls which would be implemented at the Project Site. Detailed designs for the proposed surface water and flood controls would be prepared following approval, with designs to be consistent with requirements outlined in the relevant Natural Resource Access Regulator Guidelines for Controlled Activities on Waterfront Land.

Operations at the Project Site includes the sale of landscaping materials and washout of product delivery trucks and agitator trucks, with these activities largely confined to separate areas of the Project Site. Consequently, it would be possible to isolate and individually address the following three types of runoffs.

- Clean water – any surface runoff originating from areas outside of the Project Site which has not encountered materials stored on site or exposed areas of disturbance.
- Dirty water – water which is potentially sediment laden (primarily inert particles) following contact with Project Site surfaces or stored landscaping materials.
- Contaminated water – water which potentially contains cementitious materials and alkaline salts in suspension following contact with cement products and/or additives.

In order to both minimise the volume of contaminated and dirty water generated by the Project and permit effective treatment of any water retained on site, multiple control measures targeting clean, dirty, and contaminated water are proposed.

Furthermore, as the Project Site is located adjacent to the Lachlan River and within the Cowra LEP 2012 flood planning area (**Figure 1.2**), several measures targeting the management of flood-related risks and impacts are also discussed.

2.2.4.1 Contaminated Water Controls

Figure 2.2 presents the Landscaping Materials Yard concrete-sealed work Area including the concrete pad, truck washout bays, and water storage cell. Activities involving cementitious materials, including washing of agitator trucks, and any concrete waste recycling would be restricted to concrete sealed areas within the Project Site (**Figure 2.2**). The following design

features would prevent the contamination of groundwater and downstream surface water by isolating and storing sediment-laden and/or high pH surface water runoff from the Concrete-sealed Work Area.

- Concrete sealed surfaces (site access, concrete batching plant, and washout bays) – to prevent water infiltration.
- Rollover bunds - to prevent the entry and exit of runoff from concrete sealed areas while permitting vehicle access.
- Sunken washout bays - to capture potentially contaminated water and cementitious sediment generated during agitator truck washdown.
- Concrete lined water storage cell (WSC) - with adequate storage capacity of 20.7m^3 to contain runoff up to the 72-hour, 5-year storm event (i.e. 96.5mm).

In addition to the above design features, the Applicant would ensure that excess contaminated water within the water storage cell is removed within 5 days following a rainfall event to maintain appropriate capacity for runoff capture. Water captured by the water storage cell would be preferentially reused at the Applicant's adjacent concrete batching plant. Once a sufficient volume of water has accumulated in the water storage cell, an automatic level controller would ensure that available water is pumped to the concrete batching plant. Excess water would be permitted to evaporate.

2.2.4.2 Dirty Water Controls

The following design features would prevent the discharge of dirty water into the Lachlan River by diverting and containing potentially sediment-laden runoff generated on site (**Figure 2.1**).

- A raised stabilised earth bund (minimum height of 1m) along the southern and western borders of the Landscaping Materials Yard.
- Sediment basin would be constructed in accordance with the requirements of Landcom (2004) and located at points of low elevation within the Project Site to permit drainage of dirty water diversions.
- Sediment basin (Type D basin) would be constructed with adequate storage to contain runoff up to the 5-day, 95th percentile rainfall event (i.e. 44.9mm) and with a minimum capacity: 607.9m^3 (including a marked 160.0m^3 sediment storage volume).

Where necessary, the following measures would be implemented to manage the sediment basin, including:

- maintenance of sediment basins to remove accumulated sediment (i.e. every 6 months or if sediment accumulates to more than 60% of the marked sediment storage volume);
- use of water stored in sediment basins for site activities (e.g. dust suppression, agitator truck washdown or concrete manufacture);

- treatment of water stored in sediment basins with a gypsum flocculant at a rate suitable to floc and settle suspended sediment where rapid settlement is required prior to discharge; and
- discharge of stored water off site following monitoring to confirm that water quality goals have been met.

Water captured in sediment basins would be used for activities including vehicle washdown, and dust suppression. Where water is required to be discharged from site in order to maintain necessary dirty water storage volumes, water quality monitoring would be undertaken prior to discharge to confirm that discharged water will not adversely impact the receiving environment. Where necessary to encourage rapid settlement of sediment, gypsum (or an alternative flocculant approved by Council and/or the Environment Protection Authority) will be mixed with water and added to sediment basins at a rate suitable to floc and settle suspended sediment. Water from sediment basins would be discharged to the existing stormwater drainage channel immediately to the west of the Project Site from where it would flow to the Lachlan River.

Table 2.1 outlines the target discharge water quality values which would need to be confirmed by testing before water could be discharged off site. These parameters would be measured using a water quality meter within 24-hours prior to discharge, with results recorded and retained on site for a minimum of five years. Initially (i.e. for the first 10 samples), a water sample would be collected and sent to a NATA accredited laboratory for analysis to assist in determining a site-specific correlation between Total Suspended Solids (TSS) and Nephelometric Turbidity Units (NTU). Once a correlation is established, a target NTU value equivalent to a TSS value of approximately 50mg/L will be stipulated in the SWMP.

Table 2.1
Water Quality Target Values

Parameter	Target Value
Turbidity (NTU)	<100
TSS (mg/L)	<50
pH	6.5 – 8.5
Oil and Grease	None Visible
Salinity	<340 µS/cm
Source: SEEC (2023) – After Table 4.	

2.2.4.3 Clean Water Controls

Clean water diversion channels would be constructed along the north-eastern border of the Landscaping Materials Yard (**Figure 2.1**). These structures would capture and/or divert clean runoff originating from adjacent residential and light industrial areas before it enters the Project Site. Clean water would then be directed either southeast towards an existing stormwater drain or northwest towards an existing drainage line, from where it would subsequently enter the Lachlan River.

2.2.4.4 Flood Management

The clean water diversion channels would be designed in accordance with the SWMP to cater for flows associated with the 1 in 20-year Average Recurrence Interval (ARI) flood event (**Table 2.2**). It is anticipated that these controls would protect the Project Site from local flooding associated with runoff from adjacent residential and light industrial areas and minimise the volume of potentially sediment-laden water generated at the Project Site.

Table 2.2
Clean Water Diversion Ditch Design Specifications

	Clean Water Diversion Drain (CD)	
Feature	**CD1[1]**	**CD2[1]**
Base Width (m)	0.5	1.5
Depth (including freeboard) (m)	0.5	0.9
Side Slopes (V:H)	1:2	1:2
Lining	Vegetation	Vegetation
Mannings Roughness Co-Efficient	0.03 – 0.06	0.03 – 0.06
Longitudinal Gradient (%)	2	1.7
Note 1: See **Figure 2.1**.		
Source: SEEC (2023) – After Table 6.		

A stabilised earth bund would be constructed on the southern and western boundaries of the Project Site to divert dirty water generated at the Project Site into a sediment basin. This bund would also act as a flood levee, providing immunity from flooding of the Lachlan River up to the 1:100-year ARI flood level which is estimated to reach 289.18m AHD. As the lowest section of the Landscaping Materials Yard extends down to 288m AHD, the height of the stabilised earth bund at this location would be 1.68m (i.e. 1.18m to the height of the 1:100 year ARI flood level plus 0.5m freeboard).

The height of the stabilised earth bund would vary between a minimum of 1m and a maximum of 1.68m along the southern and western boundaries of the Landscaping Materials Yard, with the top of the bund never falling below an elevation of 298.68m AHD. The stabilised earth bund would be constructed with a side slope of 1:2 (V:H) and would be seeded with a mixture of native grasses to provide a vegetative cover and assist in bund stabilisation.

2.2.5 Indicative Timing

All proposed infrastructure upgrades, water and flood control structure construction and remediation activities would be undertaken within 6 months following the granting of development consent.

2.3 Proposed Operations

2.3.1 Raw Materials Delivery and Receipt

Raw materials, including aggregates and landscaping materials, would continue to be transported to the Project Site by road-registered trucks, predominately in truck-and-dog configuration.

Aggregates are commonly sourced from Forbes and Berrima and approach the Project Site via Lachlan Valley Way, Mid-Western Highway, Redfern Street and River Street (**Figure 2.3**). Landscaping materials are sourced from a variety of locations and would continue to be stored either in stockpiles or within material bunkers in the Landscaping Materials Yard.

Typically, two material delivery trucks would access the Project Site each week, each delivering an average payload of between 26t and 32t.

The standard hours for raw materials delivery are 7:00am to 5:00pm, Monday to Friday. Rarely, product may be delivered on a Saturday between 7:00am and 12:00pm.

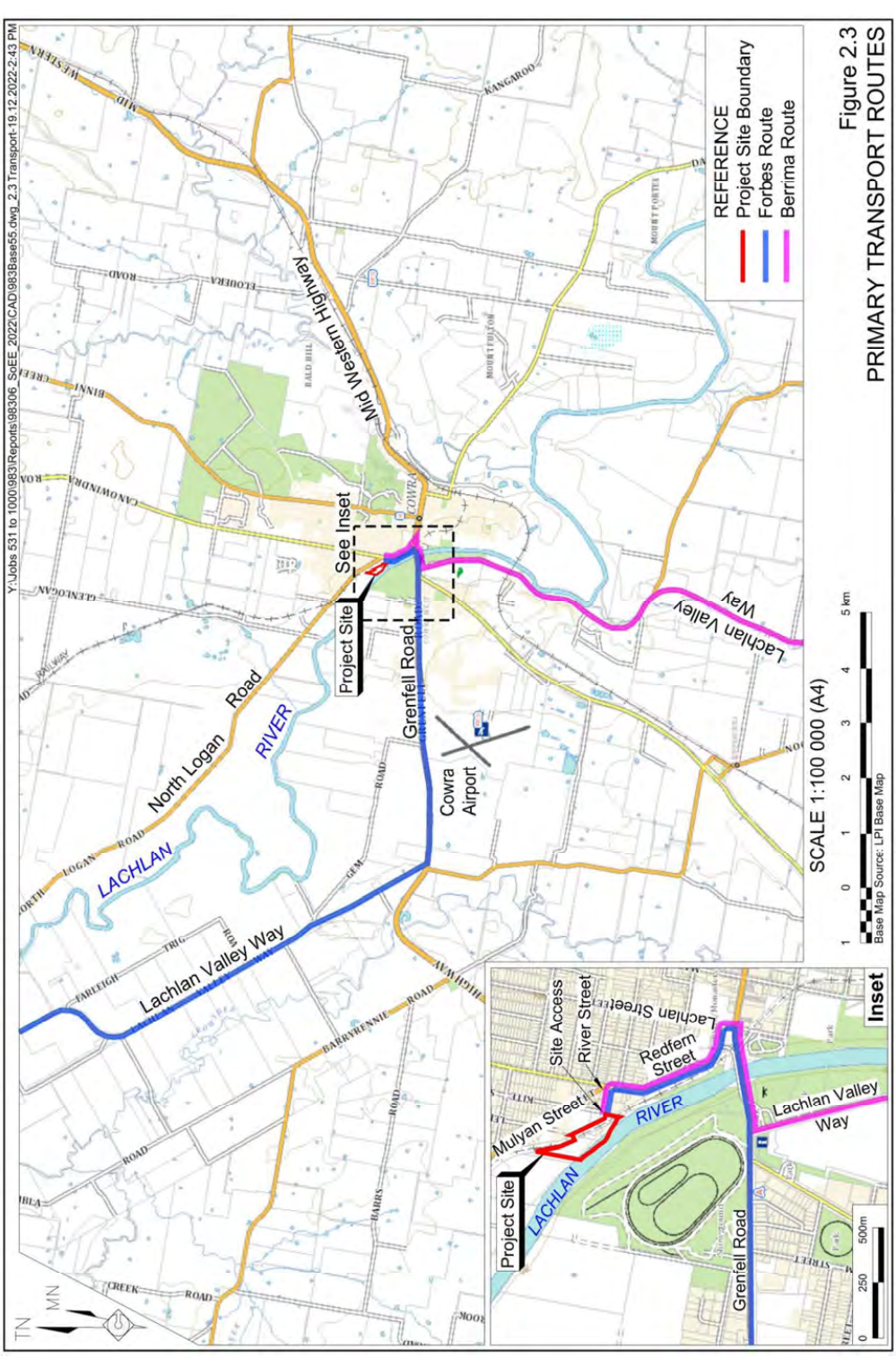
2.3.2 Water Balance

Table 2.3 lists the catchment areas, design rainfall events and water storage volumes for the proposed water management structures at the Project Site.

Table 2.3
Project Site Water Catchments and Storage Capacities

Catchment	Catchment Area (m^2)	Water Storage Structure	Design Event	Minimum Storage Volume (m^3)
Contaminated Water				
Concrete-sealed Work Area (including washout bays and water storage cell)	265	Water Storage Cell	72 hour, 5 year storm event (96.5mm)	26.1[1]
Dirty Water				
Landscaping Materials Yard	17,250	Sediment Basin	5-day, 95th percentile rainfall event (44.9mm)	607.9[2]
Note 1: Includes 20.7m^3 Water Storage Cell capacity and 5.4m^3 first-flush pit.				
Note 2: Includes 160m^3 sediment storage volume and 447.9m^3 water settling volume.				
Source: After SEEC (2023).				

Modelling completed by SEEC (2023) considered the potential water availability from the water storage cell based on mean rainfall, a runoff threshold of 1.5mm and an assumed water demand of 2kL per day. SEEC (2023) anticipate that potentially contaminated water captured on site and stored within the water storage cell would provide for approximately 50% of the annual operational water demand at the Applicant's concrete batching operations adjacent to the Project Site.


BUZZREE PTY LIMITED
Bryant's Landscaping Materials Yard
STATEMENT OF ENVIRONMENTAL EFFECTS
Report No. 983/06
Figure 2.3
PRIMARY TRANSPORT ROUTES
REFERENCE
Project Site Boundary
Forbes Route
Berrima Route
Mid Western Highway
See Inset
Project Site
Grenfell Road
Cowra Airport
Lachlan Valley Way
North Logan Road
LACHLAN RIVER
Lachlan Valley Way
SCALE 1:100 000 (A4)
Base Map Source: LPI Base Map
Inset
Site Access
River Street
Lachlan Street
Redfern Street
Mulyan Street
RIVER
LACHLAN
Lachlan Valley Way
Project Site
Grenfell Road
RWCorkery&co

Water from the sediment basin would preferentially be used for dust suppression and vehicle washdown operations. In the event that the sediment basin is dry, water for dust suppression and washdown activities would be sourced from Council's reticulated supply.

2.3.3 Landscaping Material Retail Sales

Limited volumes of sand, soil and aggregate would continue to be retained within the Landscaping Materials Yard for sale to the general public. Landscaping materials are typically stored within material bunkers or, for larger volumes, in stockpiles on the ground.

Signage at the Project Site entrance would direct incoming vehicles to the Landscaping Materials Yard where orders would be filled.

No odorous materials are stored within the retail sales area or elsewhere on the Project Site.

2.3.4 Transportation Operations

The Project Site is accessed via a concrete driveway leading onto River Street at the intersection with Kite Street (**Figure 2.1**). The principal traffic associated with the Proposal includes:

- trucks associated with the delivery of landscaping products from the Project Site; and
- light vehicles of employees and customers.

All raw materials are transported to the Project Site via road-registered trucks, predominantly in truck and dog configuration, with the average payload being 26t to 32t per load. Typically, two material delivery trucks would access the Project Site per week.

Ultimately, the rate of materials delivery and despatch depends upon multiple factors including:

- the volume of sales;
- the nature of the construction and landscaping activity within Cowra and surrounding areas;
- the weather;
- the size of individual loads; and
- the availability of raw materials from suppliers.

Due to the nature and volume of materials being supplied, no formal parking spaces are required at the Project Site. Customers in light vehicles typically park at the Site Office located at the Applicant's adjacent concrete batching plant to place orders or park adjacent to stockpiled material to facilitate loading. Customers with trucks or contracted truck drivers typically park adjacent to stockpiled material in the Landscaping Materials Yard for loading prior to despatch.

2.3.5 Equipment

Table 2.4 lists mobile equipment that would be used within the Project Site for day-to-day operations, together with the likely use of each piece of equipment.

Table 2.4
Mobile Equipment

Equipment	No.	Function
Front-end Loader	2	Loading trucks and trailers within the Landscaping Materials Yard. Stockpile management activities. Washout bay clean-out.
Agitator Trucks[1]	3 - 5	Enter and exit the Project Site, washing at the Concrete Sealed Work Area
Note 1: Agitator trucks associated with the Applicant's adjacent concrete batching operations would only enter the Project Site for truck washout purposes.		

2.3.6 Hours of Operation

In line with the current hours of operation, the proposed hours of operation would be:

- Monday to Friday: 7:00am to 5:00pm;
- Saturday: 7:00am to 12:00pm; and
- Sunday / public holidays: no operations.

Noting the above, the actual hours of operation would vary based on customer requirements and would depend upon the size, location, and timing of individual concrete pours. Where required, emergency maintenance would be undertaken at any time to address potential hazards at the Project Site.

2.3.7 Workforce

The Landscaping and Materials Yard and the Applicant's adjacent concrete batching operations currently require five employees to manage activities across both areas.

Product delivery truck drivers are typically employed by contract transportation companies or by the Company's customers.

2.4 Waste Management

2.4.1 Nature of Wastes

Wastes requiring management can be sub-divided into non-production and production wastes based upon waste classifications outlined within the *Environment Protection Authority Waste Classification Guideline 2009* (EPA, 2009). With the exception of returned concrete material generated by the Applicant's adjacent concrete batching operations which would either be reused or recycled, no material that may be classified as waste would be accepted at the Project Site.

Limited volumes of returned concrete material generated by the Applicant's adjacent concrete batching operations would be received at the Project Site. As any significant volume of returned concrete would be utilised by the Applicant outside of the Project Site, only small volumes of returned concrete would be received at the Project Site. This returned material would only be deposited in concrete sealed work areas within the Project Site prior to curing and would be stockpiled until a sufficient quantity is available for crushing and recycling.

2.4.2 Production Wastes

2.4.2.1 Solid Wastes

Solid wastes would predominantly comprise coarse aggregates, sand and cement from daily truck wash-outs, together with small amounts of solid waste concrete returned to site.

During washout operations, the vehicle operator would use a hose to wash any remaining material from the agitator truck bowl and delivery truck body. That material would be discharged into the wash out bays, with the solid component permitted to settle within the bay. The washout bay would be permitted to fill with water, with excess water then flowing to the water storage cell.

Each washout bay would consist of a sloping, concrete lined sump that would be sufficiently wide to enable accumulated material to be cleaned out using a front-end loader. Once sufficient material has accumulated, the water would be pumped from the bay and the wash-out bay would be excavated by front-end loader. Recovered material would be sold as a landscaping product or reincorporated into the Applicant's adjacent concrete batching operations.

2.4.2.2 Liquid Wastes

Liquid wastes would consist primarily of the liquid fraction resulting from washout of agitator trucks. The water would comprise sediment and cementitious materials, including alkaline salts, in suspension. The liquid fraction generated during delivery truck and agitator truck washout would be permitted to accumulate within the Washout Bays and, when full, would flow to the water storage cell.

Accumulated water would be re-used at the Applicant's adjacent concrete batching plant. An automatic level controller would be installed to ensure that accumulated water is pumped to the concrete batching plant once a sufficient volume is available. Excess water would be permitted to evaporate.

Surface water from the Landscaping Materials Yard would be managed as described in Section 2.2.4.

2.4.3 Non-production Wastes

Non-production wastes would comprise:

- paper and general waste originating from personnel and contractors at the Project Site;

- waste from routine equipment and vehicle maintenance consumables; and
- sewage.

With the exception of oils and grease, all non-production waste would be placed in appropriate containers for collection as part of Council's waste collection service. Oils and grease would either be removed immediately by service contractors or stored in leak proof containers within a sealed and bunded area to await collection by a licenced recycling contractor.

Personnel would rely on the Applicant's existing ablutions and site office facilities at the adjacent concrete batching plant. Sewage would be directly transferred to the sewer mains.

2.5 Infrastructure and Services

2.5.1 Introduction

The following sub-sections identify the existing infrastructure and services within the Project Site that would continue to be used, as well as any modifications to existing infrastructure and services. An assessment of not proceeding with the Proposal is presented in Section 4.2.4.

2.5.2 Site Access and Parking

The Project Site is primarily accessed via a concrete driveway situated on River Street at the intersection of Kite Street. Both Kite Street and River Street are sealed two-lane local roads with no road markings. The driveway is secured by a lockable gate and forms part of:

- the unformed road reserve associated with River Street under the control of Cowra Shire Council; and
- the disused Cowra – Eugowra Railway corridor controlled by Transport for NSW.

The Applicant has secured a licence agreement with Rail Corporation NSW for the continued use of the disused railway corridor and existing vehicle crossing within the Project Site (**Appendix 1**).

The Applicant proposes to negotiate suitable agreements with Council for ongoing use of the road reserve which contains the existing driveway.

Temporary parking for customers and contract truck drivers loading landscaping materials into vehicles is available in the Landscaping Materials Yard.

2.5.3 Site Office and Amenities

No Site Office or Amenities are present within the boundary of the Landscaping Materials Yard as facilities available at the Applicant's adjacent concrete batching plant are used instead. Those site amenities are connected to Council's reticulated sewage system.

2.5.4 Services

The following existing services would continue to service the Project Site.

- Water – potable water would continue to be provided by the Council-operated water supply network.

2.6 Safety and Security

Current and future site safety and security measures would focus on securing site infrastructure and minimising opportunities for damage to equipment. The following security measures would be maintained on site.

- Security cameras.
- Existing perimeter walls and fences.
- Existing lockable access gates.
- Storage in locked shipping containers.
- Daily removal from site of unsecured equipment.

In addition to the above, the Applicant would construct a ringlock wire fence along the southern border of the Project Site to prevent access to the Project Site via the Lachlan River bank (**Figure 2.1**).

2.7 Remediation

Opportunities to incorporate setbacks and landscaping as specified in the Cowra DCP are constrained by existing site infrastructure and the location of the Site Access driveway on the corner of River Street and Kite Street.

Revegetation associated with remediation works will be undertaken within the disused rail corridor (**Figure 2.1**). This rehabilitation will include the remediation of disturbed areas to the satisfaction of Transport for NSW or their delegate, including the seeding of these areas with a native grass seed mix.

A 10m wide Vegetated Riparian Zone would be established along the southern boundary of the Project Site (**Figure 2.1**). This area would be revegetated through the application of hydromulch containing a native seed mix with species reflecting existing assemblages along the Lachlan River bank. Indicatively, vegetation assemblages would be consistent with those species associated with the following Plant Community Types.

- PCT 278 – Riparian Blakey's Red Gum – box – shrub – sedge – grass tall open forest of the central NSW South Western Slopes Bioregion.
- PCT 266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.

A ringlock wire fence would be erected to delineate the revegetated area and to prevent accidental access to the revegetated area by site personnel and customers. Regular watering would be undertaken during the first two months (minimum) following establishment to encourage seedling germination and survival.

3. Environmental Features, Management Measures and Impacts

3.1 Background Information

3.1.1 Introduction

The descriptions of various environmental aspects of the Proposal throughout this section are reliant upon a range of background information common to many of the key environmental issues. In this subsection, background information is provided on climate, land ownership and residences and land uses surrounding the Project Site.

3.1.2 Climate

3.1.2.1 Source of Data

Meteorological data has been drawn from the Bureau of Meteorology Station No. 065111 (Cowra Airport AWS) (**Table 3.1**), located approximately 2.1km southwest of the Project Site at an elevation of 300m AHD. Additionally, meteorological data relating to wind which was not available for Station No. 065111 has been sourced from the now closed Bureau of Meteorology Station No. 065091 (Cowra Airport Comparison) which operated between 1966 and 2011 and is located approximately 0.8km from Station No. 065111 at the same elevation.

Table 3.1
Meteorological Data

	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Temperature (C°)													
Mean maximum	33.7	31.5	28.4	23.9	18.8	14.9	14.2	15.9	19.7	24.1	27.8	30.9	23.7
Mean minimum	17.3	16.2	13.6	8.8	4.8	3.7	2.4	2.5	4.2	7.3	11.6	14.5	8.9
Rainfall (mm)													
Mean rainfall	46.3	52.9	58.8	37	33.8	52.7	45.2	41.3	47.3	47.1	68.7	61.6	559.9
Highest monthly rainfall	151.6	196.4	178.7	115	74.6	130	111	105.2	163.2	155.8	184.8	177.6	972.6
Lowest monthly rainfall	5.8	3.6	3.2	0	0.6	5.2	5.2	4.2	1.4	0	15.2	5	261.8
Mean number of rain days	7.7	6.7	7.7	5.2	6.4	12.7	13.2	11.2	8.7	8.3	9.3	7.6	104.7
Highest daily rainfall	44.8	58.2	64.6	50.8	42.4	50.4	40	39.6	36.2	36.8	80.2	63.8	80.2

Source: Bureau of Meteorology – Cowra Airport AWS (Station Number: 065111) from 2004 – 2022.

3.1.2.2 Temperature

Mean monthly maximum and minimum temperatures are presented in **Table 3.1**. January is typically the warmest month, with a mean maximum temperature of 33.7ºC and a mean minimum temperature of 17.3ºC. July is typically the coldest month, with a mean maximum temperature of 14.2ºC and a mean minimum temperature of 3.7ºC.

3.1.2.3 Rainfall

Mean monthly rainfall varies between 33.8mm and 68.7mm, tending to be highest during the late spring to early summer period (November to December). The total mean annual rainfall is 559.9mm. The distribution of rain days is relatively even throughout the year, with rain days typically being more frequent during the winter period (June to August) and less frequent during the autumn period (March to May) (**Table 3.1**). The driest year on record was in 2006 when 261.8mm of rainfall was recorded, while the wettest year in record was in 2021 when 972.6mm of rainfall was recorded.

3.1.2.4 Wind

Wind speed and direction data from Bureau of Meteorology Station No. 065091 (Cowra Airport Comparison) between 1966 and 2011 is presented in **Figure 3.1**.

On an annual basis, wind most frequently originates from the west and northwest, with less frequent winds originating from the southwest and southeast. Seasonally, winds originating from the west, northwest and southwest are more dominant during spring and summer, while winds originating from the southeast are more dominant in autumn and winter.

3.1.3 Land Ownership and Land Uses

3.1.3.1 Land Ownership and Surrounding Residences

Land ownership and surrounding residences are presented in **Figure 3.2**. Land within the Project Site is registered to:

- MH Dykes and GT Bryant, the current director of Buzzree Pty Limited;
- Cowra Shire Council; and
- the NSW Government.

A licence agreement has been established between the Applicant and the NSW Government (i.e. Rail Corporation NSW) for the ongoing use of the portion of the Project Site which is within the disused railway line (**Appendix 1**).

The Applicant proposes to negotiate suitable agreements with Council for ongoing use of the road reserve within the Project Site as part of the determination of this application.

The closest residence is located approximately 25m to the east of the Project Site boundary on the opposite side of Kite Street. A further 40 residences are located within 150m to the north, northeast and east of the Project Site boundary.

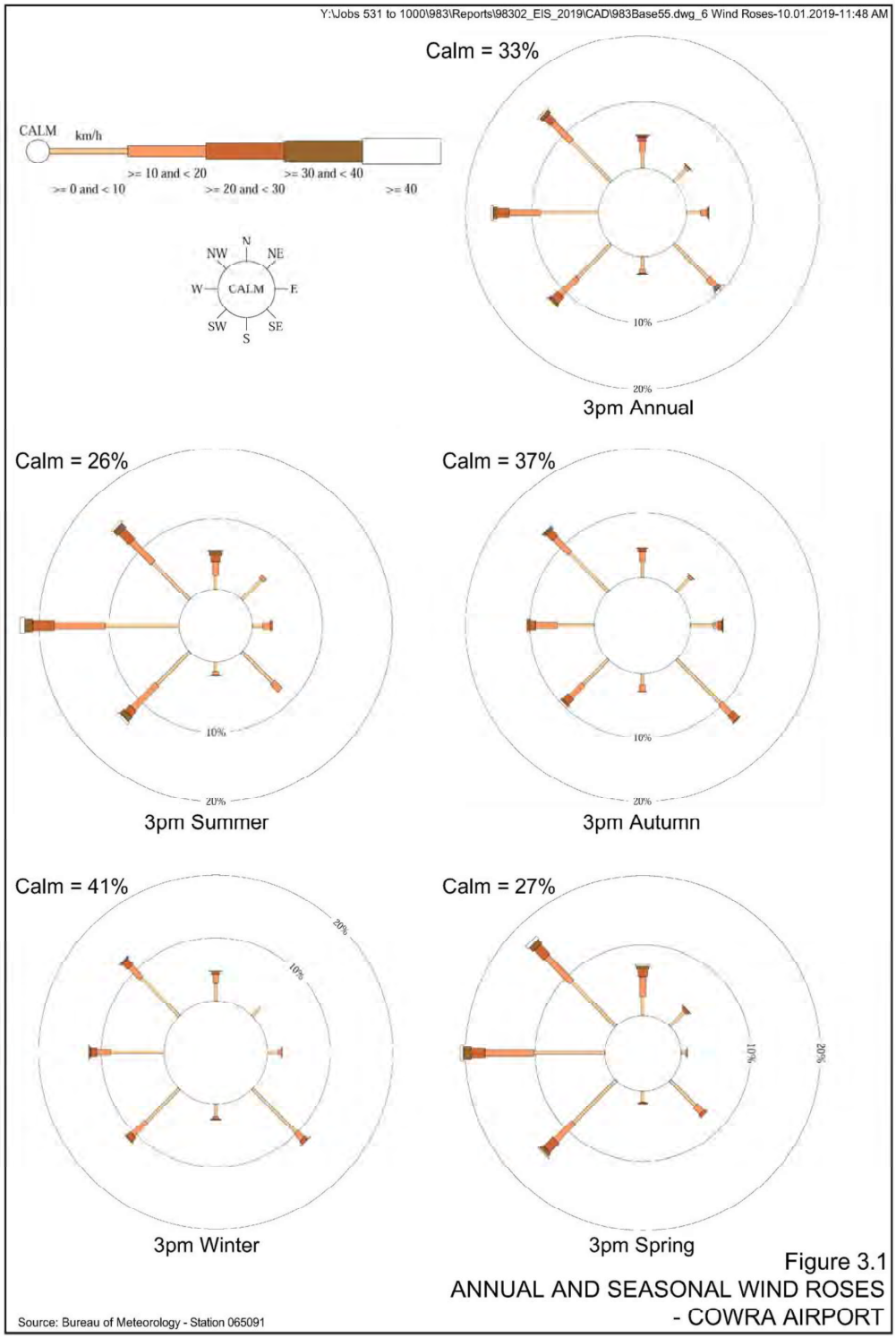


Figure 3.1
ANNUAL AND SEASONAL WIND ROSES
- COWRA AIRPORT

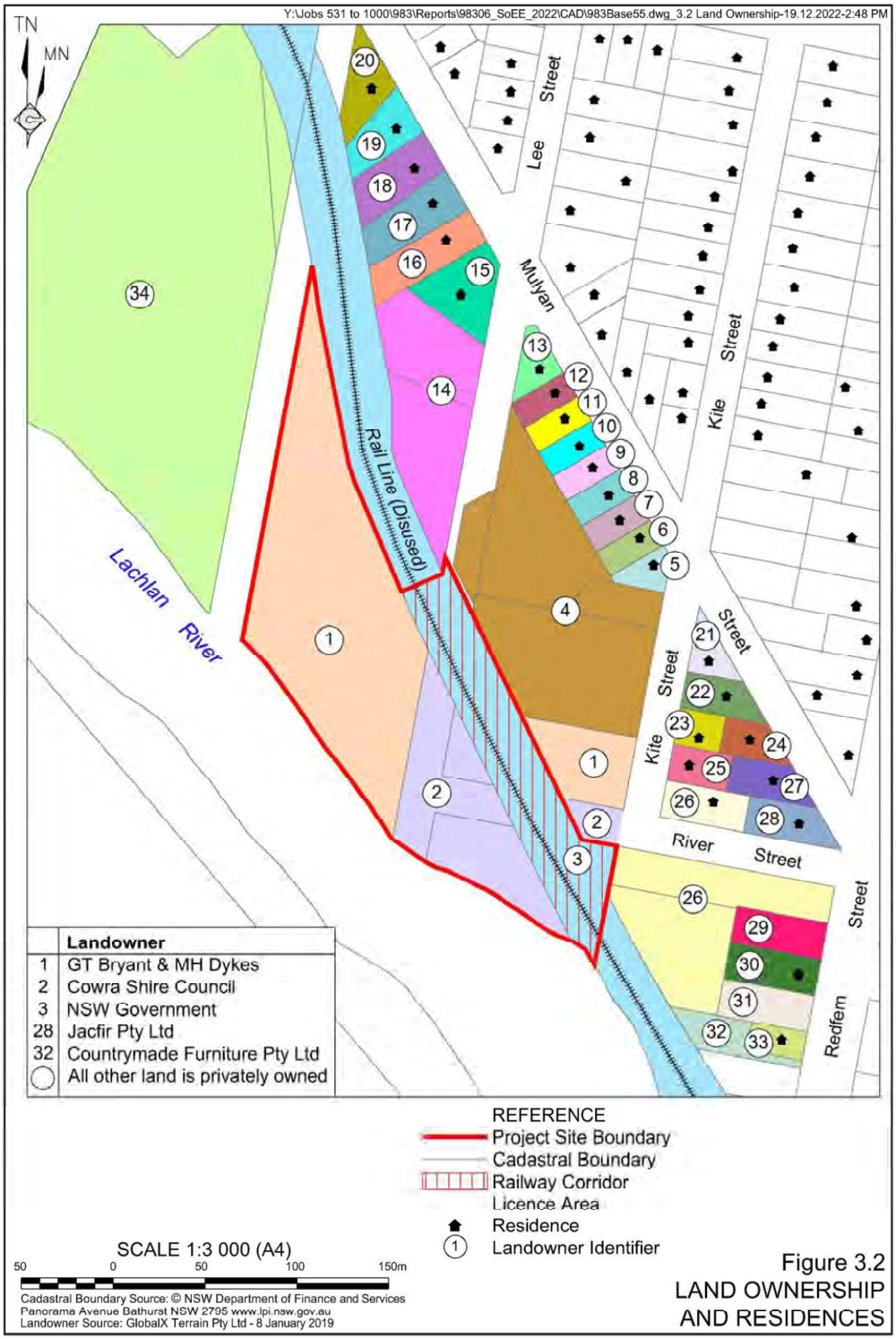


Figure 3.2
LAND OWNERSHIP
AND RESIDENCES

3.1.3.2 Land Use

Land uses within and surrounding the Project Site are presented in **Figure 3.3** and include the following.

- Primary Production (RU1) – primarily cropping with some grazing. The Project Site, including the existing landscaping materials sales yard, also occupies land which is zoned RU1.
- Infrastructure (SP2) – this land represents a disused rail line.
- Light Industrial (IN2) – this land is occupied by a mustard seed oil plant as well as the Applicant's existing concrete batching plant located on Lot 1011 DP1124153.
- General Residential (R1) – residential properties within Cowra township.
- Business Development (B5) – mixed residential and business land uses adjoining Redfern Street.
- Recreational Waterways (W2) – the Lachlan River and adjacent riparian areas.
- Public Recreation (RE1) – a narrow strip of parkland dominated by riparian vegetation on the southwest bank of the Lachlan River.
- Private Recreation (RE2) – land of heritage significance within the Cowra Showground.

3.1.4 Topography, Drainage and Flooding

3.1.4.1 Regional Topography and Drainage

The topography of the region surrounding the Project Site is variable, encompassing:

- flat to gently undulating areas adjacent to the Lachlan River and Cowra township;
- undulating hills to the north and east of Cowra; and
- steep slopes associated with the Broula Range to the west and the Illunie Range to the south (**Figure 3.4**).

The Lachlan River, flowing from the southeast to northwest, represents the primary drainage line within the region surrounding the Project Site. Binni Creek flows into the Lachlan River from the northeast and Neila Creek, Morongla Creek and Crowther Creek flow into the Lachlan River from the south in the vicinity of Cowra.

3.1.4.2 Local Topography and Drainage

Land surrounding the Project Site generally slopes towards the Lachlan River (**Figure 3.5**), with land to the northeast of the Project Site sloping to the southwest and land to the southwest sloping to the northeast.

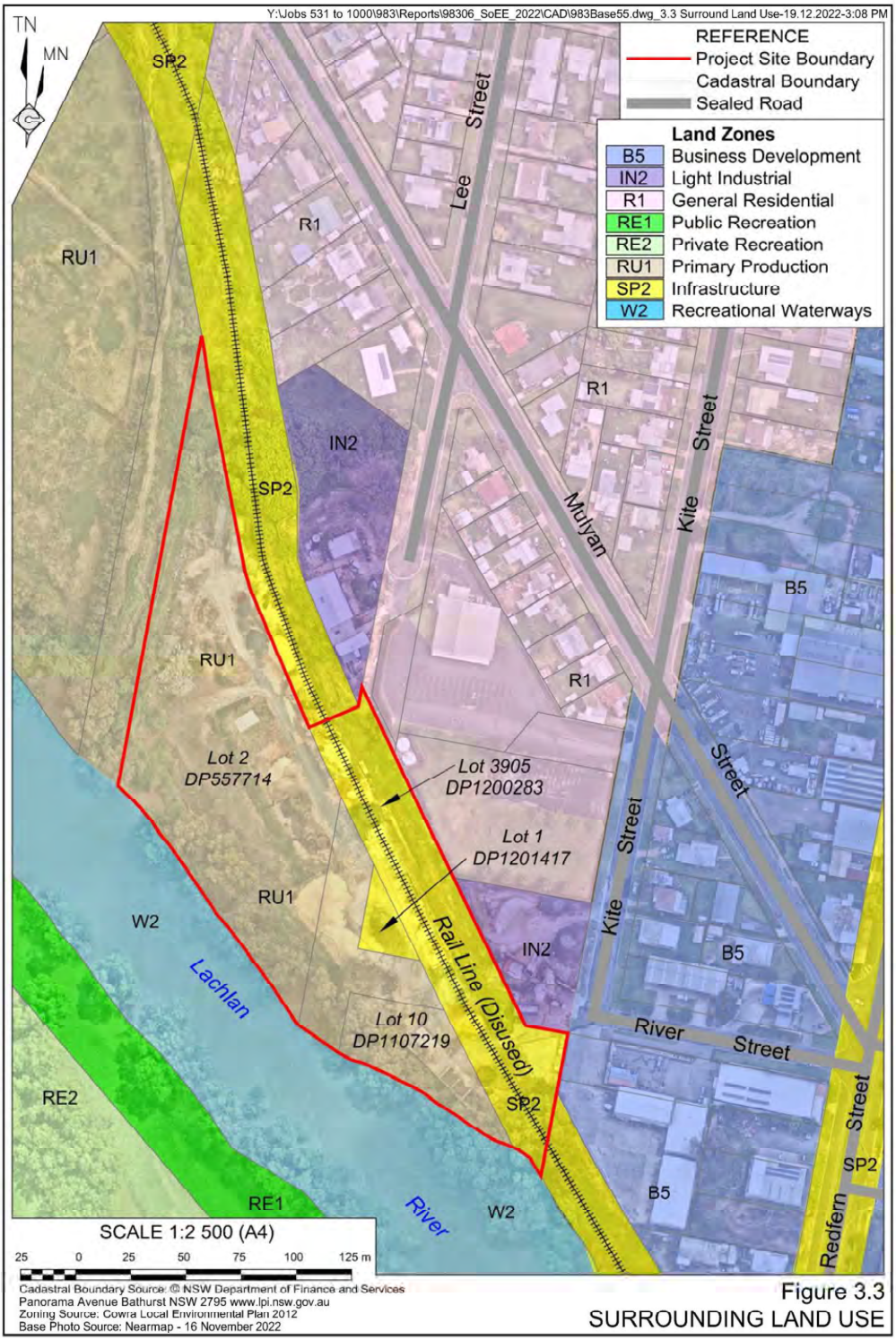


Figure 3.3
SURROUNDING LAND USE

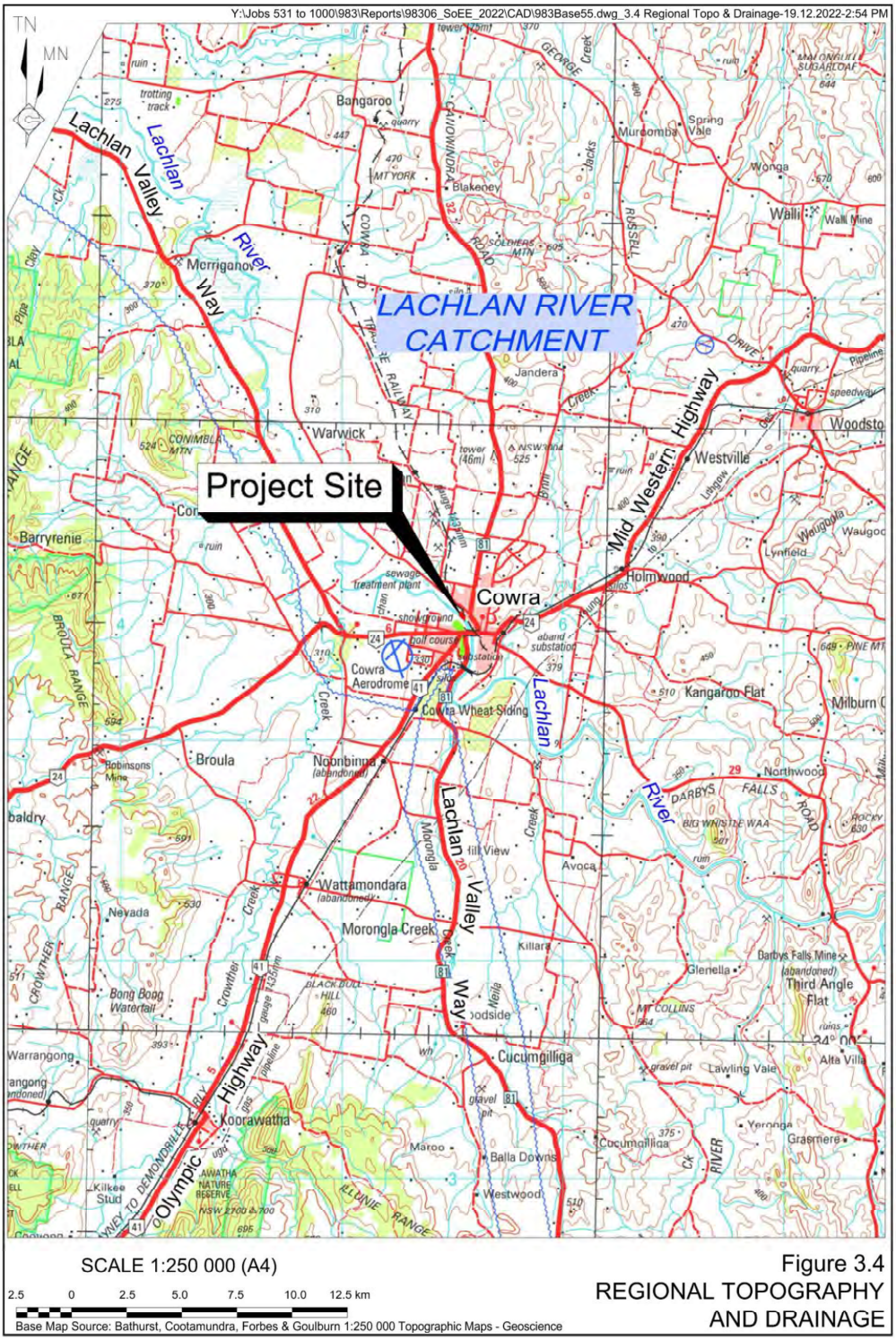


Figure 3.4
REGIONAL TOPOGRAPHY AND DRAINAGE

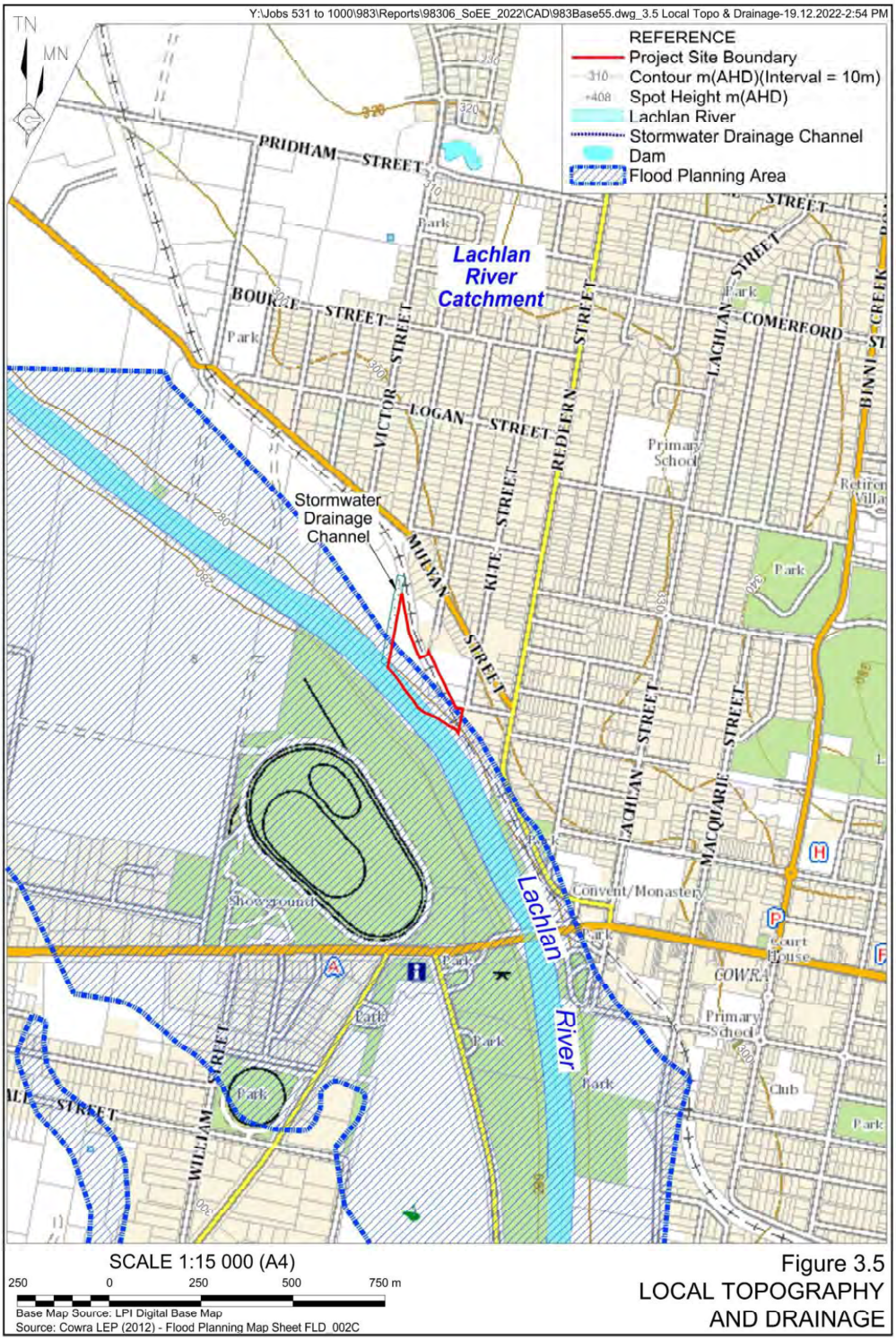


Figure 3.5
LOCAL TOPOGRAPHY AND DRAINAGE

The Project Site slopes from a maximum elevation of 298m AHD in the northeast corner of the site to a minimum elevation of 278m AHD at the southwest boundary of the site. The majority of the Project Site occupies elevations between 296m AHD and 288m AHD. The southwest margin of the Project Site encompasses the steep slope of the bank of the Lachlan River (**Plate 1**).

The Lachlan River represents the primary drainage line associated with the Project Site, with the channel passing parallel to the Project Site's southwestern border. An ephemeral drainage channel is located immediately west of the Project Site and drains directly into the Lachlan River (**Plate 2** and **Figure 1.3**). An existing culvert passes under the railway immediately to the southeast of the Project Site.

Water which enters the Project Site from the northeast by passing under the disused railway line typically accumulates in the western and southwestern areas at the lowest points of the Project Site. Runoff entering the Project Site from Kite Street and River Street runs either to the western and southwestern sections of the Landscaping Materials Yard or into an existing informal drainage line which enters an existing culvert immediately southeast of the Project Site (**Plates 3** and **4**).

3.2 Surface Water and Flooding

3.2.1 Introduction

This section provides an overview of existing site surface water and drainage conditions and addresses potential impacts on surface water and flooding associated with the Proposal, including the following.

Strategic Environmental Engineering and Consulting (SEEC) prepared a Soil and Water Management Plan (SWMP) for the Proposal. The resulting report, hereafter referred to as SEEC (2023), is presented as **Appendix 2**.

3.2.2 Existing Environment

3.2.2.1 Water Sharing Plan

The Project Site lies within the Lachlan Regulated River Water Source under the *Water Sharing Plan for the Lachlan Regulated River Water Source 2016*. This water sharing plan identifies that domestic and stock access accounts for 12 502 ML of water per year, local water utility access licences account for 15 545ML per year, conveyance access licences account for 17,911 unit shares per year and high, and general security access licences account for 27,680ML and 592 801ML per year respectively.

A search of the NSW Water Register maintained by WaterNSW indicates that 1,627 Water Access Licences (WALs) have been issued under the Lachlan Regulated River Water Source.

The Proposal would not require additional surface water or water allocations under the above Water Sharing Plan. Water required for the Proposal would be sourced from on-site water storages (i.e. the proposed water storage cell and sediment basin) and from Council's reticulated supply.


Y:\Jobs 531 to 1000\983\Reports\98302_EIS_2019\CAD\983Base55.dwg, Plates 1-4-11.06.2020-5:21 PM
Plate 1: Lachlan River and existing perimeter block wall and material bunkers
Date of Photo - 31 October 2017
(Ref: E983A_012)
Plate 2: Ephemeral drainage channel
Date of Photo - 31 October 2017
(Ref: E983A_048)
Plate 3: Drainage line to existing culvert
Date of Photo - 31 October 2017
(Ref: E983A_003)
Plate 4: Existing culvert southeast of Project Site
Date of Photo - 31 October 2017
(Ref: E983A_004)

3.2.2.2 Water Quality Setting

The Project Site is situated on the top bank of the Lachlan River, with discharge from the Project Site entering the Lachlan River channel via the existing ephemeral drainage line to the west or the existing culvert to the southeast (**Figure 2.1**). **Table 3.2** lists the relevant water quality objectives for the Lachlan River. SEEC (2023) note that the water quality trigger values would likely be exceeded in the Lachlan River during periods of moderate to high flow following rainfall events.

Table 3.2
Water Quality Objectives – Lachlan River

Objective Type	Aim	Parameter[1]	Water Quality Trigger
Aquatic Ecosystems	Maintaining / improving the ecological condition of water bodies and their riparian zones long term.	Total Phosphorous	50µg/L
		Total Nitrogen	500µg/L
		Turbidity	50 NTU
		Salinity	340µS/cm
		Dissolved Oxygen	85% - 110%
		pH	6.5 – 8.5
Visual Amenity	Aesthetic qualities of waters.	Natural visual clarity	Reduction of >20%
		Natural hue	Change of >10 points on the Munsell Scale
		Natural reflectance	Change of >50%
		Oils and Petrochemicals	Noticeable as a visible film or detectable by odour
		Debris	Free from floating debris / litter
Secondary Contact Recreation	Maintaining / improving water quality for recreational activities with low probability of water being swallowed.	Chemical Contaminants	Chemicals toxic or irritating to the skin or mucous membranes
		Visual Clarity and Colour	See visual amenity guidelines
		Surface Films	
Primary Contact Recreation	Maintaining / improving water quality for recreational activities with high probability of water being swallowed.	Turbidity	6 NTU
		Other	See secondary contact guidelines.
Drinking Water	Refers to the quality of drinking water drawn from the raw surface and groundwater sources before treatment.	Turbidity	Site-specific.
		Salinity	<1 500µS/cm
		Dissolved Oxygen	>6.5mg/L (>80% saturation)
		pH	6.5 – 8.5
Note 1: Only triggers relevant to inert substances are listed as no organic materials are stored at the Project Site.			
Source: SEEC (2023) – After Table 1.			

3.2.2.3 Local Flood Setting

Council has adopted the 1-in-100-year flood Annual Exceedance Probability (AEP) as its Flood Planning Level in the Cowra DCP 2014. Areas below the Flood Planning Level, referred to as the Flood Planning Area, are outlined in Cowra LEP 2012.

Figure 3.5 displays the Flood Planning Area in relation to the Project Site, showing that part of the Project Site would be subject to flooding at the designated Flood Planning Level. This area is also classified as a High Hazard Floodway by the Cowra DCP 2014, which indicates that:

- these areas would experience significant discharges of water during flooding;
- water in these areas would have a high velocity and could cause significant damage to buildings; and
- development in these areas could cause significant redistribution of flood flows.

In addition to Cowra LEP 2012 and Cowra DCP 2014, Council also specified that the Water Resource Commission Flood Plain Atlas – Flood Inundation Map for Cowra 1978 (WRC 1978) should be consulted regarding local flood inundation areas. This resource delineates areas which would experience inundation during 20-, 50-, and 100-year flood events. Areas subject to flooding according to this resource have also been included on **Figure 3.6**.

3.2.3 Management and Mitigation Measures

The Applicant would implement the following management and mitigation measures to ensure that the Proposal would minimise impacts on surface water and flooding to acceptable levels.

- Construct the surface water and flood controls as detailed in Section 2.2.4 and the SWMP (**Appendix 2**) within 6 months of receiving development consent.
- In the event that flood warnings are issued or in the event that flooding may exceed the 50-year ARI flood level, implement all reasonable and feasible measures to relocate materials from the Landscape Materials Yard to areas of the Project Site above the 100 year ARI flood level where safe to do so.
- In the event that flood warnings are issued or that flooding may exceed the 50-year ARI flood level and it is unsafe to remain within or access the Project Site, evacuate all personnel from the Project Site.
- Manage surface water and flood control structures (e.g. water storage cell, sediment basin, diversion drains, etc.) in accordance with the SWMP (**Appendix 2**).
- Undertake controlled discharge from the Project Site only when monitoring confirms that water quality is within the target discharge water quality value range as specified in the SWMP (see **Table 3.3** and **Appendix 2**).
- Ensure that water stored in the water storage cell is preferentially used in the production of concrete, with any excess to be allowed to evaporate.
- Ensure that water stored in sediment basins is preferentially used for appropriate on-site activities (e.g. dust suppression, vehicle washdown).
- Ensure that product stockpiles are located away from concentrated flow paths and diversion drains, as far as practicable.
- Regularly inspect water management and flood control structures and undertake repairs as soon as practicable following identification of any issues.

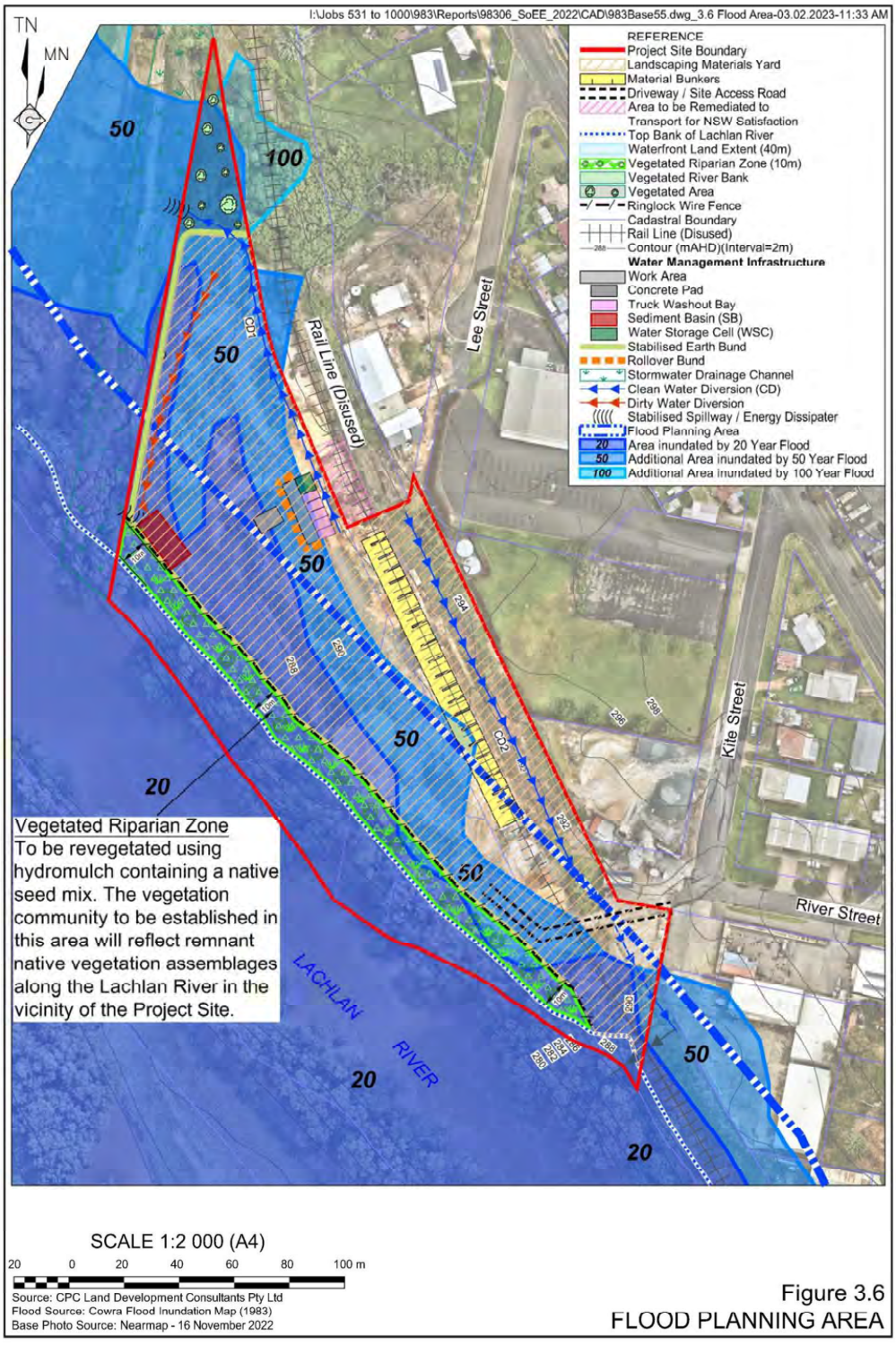


Figure 3.6
FLOOD PLANNING AREA

- Maintain an adequate supply of flocculant on site to permit the treatment of water stored in sediment basins.

Table 3.3
Target Discharge Water Quality

Parameter	Target	
	Percentile	Value
Turbidity	90th	<100 NTU
Total Suspended Solids	90th	<50mg/L
pH	100th	6.5 – 8.5
Oil and Grease	100th	None Visible
Salinity	90th	<340mg/L
Source: SEEC (2023) – After Table 4.		

3.2.4 Surface Water Impacts

Surface water control structures, including stabilised earth bunds, water diversion structures and sediment basins, would be designed to prevent the discharge of sediment-laden and contaminated water from the Project Site while minimising impacts on flood water entry and exit. The designs for these structures and their relative impacts on flood waters are detailed in the SWMP for the Project Site (**Appendix 2**).

Runoff from the Landscaping Materials Yard (i.e. dirty water) would be generated in response to incident rainfall and would potentially contain sediment. No toxicants or heavy metals would be present, and the runoff would have an almost neutral pH (SEEC, 2023). Dirty water would be captured by a sediment basin constructed in accordance with Landcom (2004) to contain runoff up to the relevant design rainfall event (5-day, 95th percentile storm event of 44.9mm).

Controlled discharges from the sediment basin would only occur following confirmation that water quality parameters are in accordance with those identified in **Table 3.3**. Uncontrolled discharges would occur where rainfall exceeds the design rainfall event (see Section 2.2.4.2), with water from the sediment basin being discharged to either diversion ditches or existing drainage lines via stabilised spillways and entering the Lachlan River.

Runoff from the Concrete-sealed Work Area (i.e. contaminated water) would be generated in response to incident rainfall and vehicle washout activities. This water would contain sediment and may have an elevated pH (SEEC, 2023). Contaminated water would be captured by the water storage cell constructed to cater for the 72-hour, 5-year storm event of 96.5mm. If rainfall exceeds the design rainfall event, overflow from the water storage cell would flow into the sediment basin which would dilute the high pH water prior to any uncontrolled discharge to the Lachlan River via stabilised spillways.

Potential impacts on water quality associated with the Proposal were modelled by SEEC (2023) using MUSIC stormwater modelling software. The following assumptions were incorporated into modelling undertaken by SEEC (2023).

- Water management and mitigation measures outlined in Sections 2.2.4 and the SWMP (**Appendix 2**) would be implemented at the Project Site.

- The Landscaping Materials Yard was conservatively assumed to be 100% impervious and was assumed to have a rainfall threshold of 6mm (i.e. earthen base).
- Treatment of sediment basins with flocculant reduces TSS in discharge to 50mg/L, reduces phosphorous concentrations to the same degree as it does sediment load (i.e. 75%), and does not affect nitrogen concentrations.

The results of MUSIC modelling are presented in **Table 3.4**. In summary, the proposed water management measures including clean, dirty and contaminated water catchment separation, water storage and treatment would result in an approximate flow reduction of 10% and a reduction in sediment (and associated phosphorous) leaving the Project Site in runoff of over 90%.

Table 3.4
Water Quality Management and Treatment Effectiveness

Parameter	Sources	Residual Load	% Reduction
Flow (ML/yr)	5.59	5.15	7.8
TSS (kg/yr)	7,200	253	96.5
Total Phosphorous (kg/yr)	3.23	0.256	92.1
Total Nitrogen (kg/yr)	13.3	8.82	33.9
Gross Pollutants (kg/yr)	174	0	100
Source: SEEC (2023) – After Table 5			

While nitrogen and phosphorous concentrations would remain above the water quality objectives for the Lachlan River, SEEC (2023) note that the relatively small contribution from the Project Site combined with the mixing effect of the river would mean that actual impacts are likely to be negligible. Furthermore, the proposed water management infrastructure and treatment system would result in reductions of 92.1% and 33.9% for total phosphorous and total nitrogen respectively compared to runoff from the existing Project Site.

3.2.5 Flood Impacts

Clause 1.8(iv) of the Cowra DCP requires that "buildings are sited at the optimum position to avoid flood waters and allow safe flood access for evacuation." Sections of the Project Site are within the Flood Planning Area. The Applicant contends that structures and activities within these areas would not impact on flood behaviour or be inconsistent with the Cowra LEP or DCP for the following reasons.

- All structures have been designed to minimise impacts on flood behaviour, including the following.
  - The existing material bunkers have been constructed in the most elevated section of the Landscaping Material Yard, with the openings of these bunkers on the downslope side, permitting entry and exit of flood waters with minimal obstruction.

  - The concrete wash out bays and water storage cell would be recessed into the ground and lined with concrete, permitting the free passage of flood waters over the tops of these structures and not obstructing flood waters.
  - All structures extending above the ground surface within the Flood Planning Area would be earth bunds or would be constructed using concrete blocks. In the event that these structures are subjected to high velocity flood waters, the concrete blocks may be displaced short distances, but would not form debris that would result in damage downstream of the Project Site.
- The Applicant would relocate as much landscaping materials from lower sections of the Project Site to higher sections in advance of potential flooding. This would limit the potential for that material to be entrained in flood waters.

SEEC (2023) utilised a flood model for the Lachlan River developed by Lyall & Macoun Consulting Engineers in 1999 to assess potential flooding-related impacts associated with the Proposal. **Table 3.5** presents the results of flood modelling undertaken by SEEC (2023).

Table 3.5
Flood Modelling Results

Average Recurrence Interval	Cross Section[1] Flood Level		Average Flood Level (m AHD)
	XS 7.166	XS 7.72	
1:20 year	287.75	287.34	287.55
1:50 year	288.59	288.18	288.39
1:100 year	289.39	288.97	289.18
Note 1: Cross section location as identified by the Mike-11 flood model developed by Lyall & Macoun Consulting Engineers in 1999. Cross sections occur every 300m to 500m along the Lachlan River channel, with the Project Site situated approximately halfway between cross sections XS 7.166 and XS 7.72.			
Source: SEEC (2023) – After Table 7			

Flood modelling indicates that the 1:100 year Annual Recurrence Interval (ARI) flood level would be approximately 289.18mAHD in the vicinity of the Project Site, with a peak channel flow of 4 200m^3/s and a velocity of approximately 2.2m/s (SEEC, 2023). At the 1:100 year ARI flood level, sections of the Landscaping Materials Yard would be inundated by up to 1.2m.

To provide flood immunity from flood events up to the 1:100 year ARI flood level, a stabilised perimeter bund would need to be constructed to a maximum height of between 1m and 1.68m (i.e. up to the 1:100 year ARI flood level plus 0.5m freeboard) along sections of the western and southwestern Project Site boundary.

Assuming that the stabilised bund was constructed to the 1:100 year ARI flood level to provide flood immunity for the Project Site, the total area lost for flood conveyance would be approximately 11.5m^2 or <0.3% of the total channel cross section of 3 922m^2 (SEEC, 2023). The associated increase in flood levels in the vicinity of the Project Site would be approximately 10mm, an increase which is not expected to have a significant adverse impact on neighbouring properties (SEEC, 2023). The proposed stabilised bund would have no impact at flood levels consistent with the 1:20 year ARI flood event (SEEC, 2023).

Proposal-related impacts on flooding would therefore be negligible and the development would be consistent with the requirements of Clause 7.2(3) of the Cowra LEP (see Section 1.7.4).

3.3 Noise

3.3.1 Introduction

As the Proposal does not propose any activities that are not already undertaken at the Project Site, Spectrum Acoustics Pty Limited (Spectrum) undertook operational noise monitoring at the Project Site (including the Applicant's adjacent concrete batching plant) rather than modelling of theoretical impacts. The resulting report, hereafter referred to as Spectrum (2019), is presented as **Appendix 5**. This subsection provides an overview of the operational noise setting at the Project Site and describes the management and mitigation measures to be implemented by the Applicant.

3.3.2 Local Setting and Relevant Noise Criteria

The Proposal represents an existing landscaping materials sales yard situated in close proximity to areas zoned for light industrial, primary production, recreational waterway, infrastructure (rail), general residential, and business development land uses. The closest residential receivers to the Project Site, located on Kite Street opposite the Project Site, are located approximately 25m from the Project Site boundary.

The nominated Project Noise Trigger Levels (PNTLs) for the Proposal, as determined by Spectrum (2019) based on the relevant guidelines outlined in the *Noise Policy for Industry* (EPA 2017), are presented in **Table 3.6**. The Proposal PNTLs reflect the Project Amenity Noise Level (PANL) for an industrial development in a suburban area plus and additional 3dB to standardise time periods for intrusiveness and amenity noise levels. See **Appendix 5** for further detail surrounding the determination of relevant noise criteria for the Proposal.

Table 3.6
Proposal Noise Level Criteria

Period	PANL dB(A)L_{eq}	PNTL dB(A)$L_{eq\ (15\ min)}$
Day[1]	50	53
Night[2]	35	38
Note 1: Day: 7:00am to 6:00pm, Monday to Saturday, 8:00am to 6:00pm Sundays.		
Note 2: Night: 10:00pm to 7:00am, Monday to Saturday, 10:00pm to 8:00am Sundays.		
Source: Spectrum (2019)		

3.3.3 Changes to Noise Generating Activities and Potential Constraints

The Proposal, as it represents an existing noise source and does not include changes to activities within the Project Site, would not introduce any additional noise sources to the local setting. Additionally, the Proposal would not involve any changes to hours of operation or to the volume of traffic generated.

Key existing noise generating activities associated with the Proposal include the following.

- Loading and unloading of trucks at the Project Site.
- Operation of the sprinkler system used to wet raw material stockpiles.
- Movement of laden trucks on public roads.

3.3.4 Existing Noise Levels

Operational noise monitoring was undertaken at five locations surrounding the Project Site on 21 February and 22 February 2019 (see **Figure 3.7**). Noise levels were measured using a Brüel & Kjær Type 2250 Precision Sound Analyser and were analysed using Brüel & Kjær "Evaluator" software. Atmospheric conditions were acceptable for noise monitoring during both survey days. Spectrum (2019) noted that for logistical reasons, some noise measurements were made over relatively short periods to ensure that infrequent noise events, such as delivery of raw materials, were captured across a number of representative locations.

Results of the operational noise monitoring undertaken at the Project Site are presented in **Table 3.7**. In summary, the following activities exceeded the relevant PNTL at Monitoring Location 1.

- Operation of the sprinkler system used to wet material stockpiles in the Raw Materials Stockpile Yard (47 dB(A)$_{Leq(15\ min)}$) exceeded the night time PNTL (38 dB(A)$_{Leq(15\ min)}$) when operating before 7:00am.

Table 3.7
Project Site Noise Monitoring Results

Noise Source	Assumed Duration (mins)	Monitoring Location	dB(A) $_{Leq\ (Duration)}$	dB(A) $L_{eq\ (15\ min)}$	Relevant PNTL dB(A)$L_{eq\ (15\ min)}$
Sprinkler system[1]	15	1	47	47	38
Red = exceedance of PNTL.					
Note 1: Sprinkler wetting down stockpiles prior to 7:00am.					
Source: Spectrum (2019)					

3.3.5 Management and Control Measures

The Applicant would implement the following noise management and mitigation measures throughout the life of the Proposal.

- Ensure that the operation of the sprinkler system is restricted to daytime periods (i.e. 7:00am to 6:00pm, Monday to Saturday).
- Comply with the hours of operation outlined in Section 2.3.9.
- Actively engage with the surrounding community and neighbours to ensure any concerns over noise or vibration are identified and addressed.

3.3.6 Assessment of Impacts

The Proposal represents an existing noise source which has been operating at the Project Site since the early 1970s. No additional noise sources or changes to exiting hours of operations would be introduced as a result of the Proposal, with the exception of ensuring that the sprinkler system is not operated prior to 7:00am.

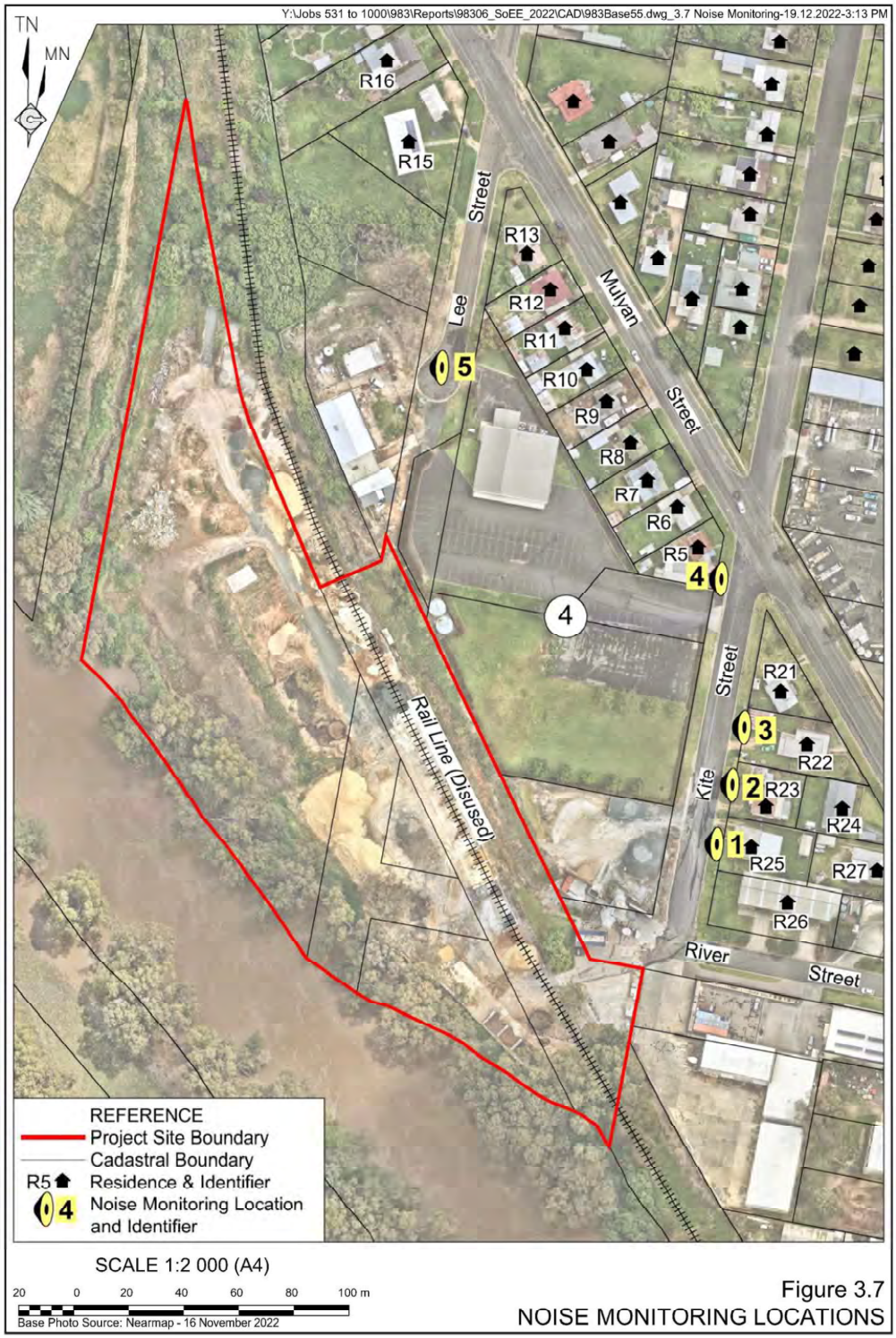


Figure 3.7
NOISE MONITORING LOCATIONS

Providing that the management and mitigation measures outlined in Section 3.3.5 are implemented, it is anticipated that the Proposal would result in reduced noise levels compared to those generated by existing operations by minimising overlap of noise generating activities. Additionally, by limiting the operation of the sprinkler system to daytime periods only, noise associated with sprinkler system operation would not exceed the relevant PNTL.

Finally, it is noted that the Applicant has not received a noise-related complaint since they assumed control of the Project Site in 2007. Furthermore, no noise-related issues were raised by surrounding residents following the distribution of a community consultation newsletter which specifically requested feedback with regards to noise generated by existing operations at the Project Site.

3.4 Transportation and Traffic

3.4.1 Introduction

This subsection has been prepared by RWC and considers the existing traffic and transportation at the Project Site and the proposed management and mitigation measures targeting traffic and transportation-related impacts.

3.4.2 Existing Road Network and Use

The Project Site is located on the western side of Kite Street and at the western end of River Street, both sealed two-lane two-way roads with no road markings. Site Access is via a concrete driveway located at the corner of Kite Street and River Street. Traffic associated with the Project Site (see Section 2.3.7) typically exits via River Street before entering Redfern Street. Depending on the destination of products being delivered, deliver vehicles turn left or right at the T intersection of River Street and Redfern Street.

Aggregates and raw materials are typically sourced from Forbes and Berrima and approach the Project Site via Lachlan Valley Way, Mid-Western Highway, Redfern Street, and River Street (**Figure 2.3**).

The existing landscaping materials yard at the Project Site typically requires two material delivery trucks to access the Project Site per week. Delivery trucks are typically truck and dog vehicle configurations and provide an average load of between 26t and 32t of product.

3.4.3 Proposed Changes to Traffic Environment

The Proposal does not include any changes to the existing traffic environment or to transport routes associated with the Project Site.

3.4.4 Design Features, Operational Safeguards and Controls

The following management measures would be implemented to ensure that adverse impacts upon the local road network would not be experienced as a result of the Proposal.

- Ensure that delivery truck drivers and agitator truck drivers regularly accessing the Project Site are briefed regarding the updated layout of the Project Site.
- Ensure that delivery truck drivers and agitator truck drivers are instructed on the proper use of the concrete sealed work area and truck washout bays.

3.4.5 Assessment of Impacts

Potential traffic and transportation-related impacts include the following:

- *Inadequate road conditions result in increased risk of traffic-related accident, injury or fatality.*

  The Applicant has been operating the Landscaping Materials Yard at its existing location for 13 years, with its associated traffic without issue. Levels of such traffic would not increase under the Proposal. As a result, this issue is likely to pose a negligible constraint.

- *Poor driver fatigue management results in increased risk of traffic-related accident, injury or fatality.*

  Driver fatigue associated with employee access to site, and with raw material and product deliveries, would need to be an actively managed. As a result, this issue is likely to pose a minor constraint.

- *Increased road traffic levels result in increased road maintenance costs.*

  The Proposal would not result in road traffic levels additional to those associated with the historical operation of the existing landscaping materials supply business. As such, this issue is likely to pose a negligible constraint.

Overall, the Applicant contends that the Proposal would not result in additional adverse traffic-related impacts.

3.5 Air Quality

3.5.1 Introduction

This subsection has been prepared by RWC and considers the existing air quality environment and the proposed management and mitigation measures targeting air quality-related impacts.

3.5.2 Local Setting and Existing Air Quality

Sources of particulate matter within the area surrounding the Project Site include:

- the adjacent concrete batching plant:
- other industrial and commercial operations;
- local building and construction activities; and
- traffic on local roads.

In addition to these industrial and commercial emission sources, other emission sources which contribute to existing ambient dust concentrations in the Cowra area include:

- dust emissions from agricultural activities;
- wind generated dust from exposed areas within the surrounding region;
- dust entrainment due to vehicle movements along unsealed and sealed town and rural roads;
- seasonal emissions from household wood burning; and
- episodic emissions from vegetation fires.

3.5.3 Potential Changes to Particulate Emission Generating Activities and Constraints

As the Proposal represents an existing landscaping materials supply yard, it is not anticipated that there would be any changes to particulate emissions or particulate emission generating activities during regular operations.

Key existing particulate emission generating activities associated with the Proposal include the following.

- Dust from dry product stockpiles.
- Dust generated by delivery vehicles unloading raw materials.
- Dust from hardstand areas due to sediment tracked by delivery vehicles and agitator trucks.

Whilst the Proposal would not result in long term increases in particulate matter emissions, proposed upgrades to Project Site infrastructure including the construction of water diversion structures and a concrete sealed wash out area would result in temporary increases to particulate matter emissions during the 6 month construction period.

3.5.4 Air Quality Control Measures

The Applicant would implement a dust control strategy throughout the life of the Proposal incorporating the following components.

- Conduct routine sweeping and housekeeping practices to minimise wind-blown dust and particulate emissions on site that would otherwise occur from hardstand areas.
- Raw materials would be regularly watered through a series of fixed sprays to maintain a moisture content prior to transfer and loading to the concrete batching plant.
- Monitor dust generation at the Project Site visually an implement a corrective action protocol to report and action upon any identified issues relating to air emissions.
- Ensure that site activities are adjusted, and the source of any dust is investigated and addressed, in response to any complaints received regarding air quality.

It is predicted that implementing the above control measures would limit the potential for deposited dust to be created and in turn, limit the potential for PM_{10} particulates to also be created. In addition to the above the following mitigation measures would be implemented during construction activities required for upgrades to Project Site infrastructure.

- Wet surfaces and material stockpiles during construction to minimise the generation of dust.
- Ensure that construction activities are not undertaken during windy conditions, where practicable.
- Apply native seed mix and/or hydromulch to areas which are to be revegetated (i.e. earth bunds, Vegetated Riparian Zone) as soon as possible following surface preparation.
- Apply water to revegetated areas regularly during the first two months following seed or hydromulch application to encourage the survival and development of plant cover.

3.5.5 Assessment of Impacts

Potential air quality-related impacts associated with the existing Project Site include airborne and deposited dust impacts at surrounding residences.

The Applicant would implement the management and mitigation measures outlined in Section 3.5.4 to minimise the amount of dust originating from the Project Site. Assuming that these measures are implemented, this issue is likely to pose a moderate constraint due to the close proximity of surrounding residences.

The Applicant notes that no complaints have been received with regards to dust emissions from the Project Site and that no additional dust generating activities are proposed beyond temporary emissions associated with site upgrade works.

As a result, the Applicant contends that the Proposal would not result in additional adverse air quality-related impacts.

3.6 Groundwater

3.6.1 Introduction

This subsection has been prepared by RWC and considers the groundwater environment at the Project Site and the proposed management and mitigation measures targeting potential groundwater-related impacts.

A Groundwater Contamination Assessment was undertaken at the Project Site by Ground Doctor Pty Ltd in response to a direction issued by Council on 17 August 2022. This assessment, hereafter referred to as GD (2020), is presented as **Appendix 6**.

3.6.2 Local Groundwater Setting

3.6.2.1 Water Sharing Plan

The Project Site lies within the Lachlan Unregulated and Alluvial Water Source – Upper Lachlan Alluvial under the *Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources 2012*. This water sharing plan identifies that domestic and stock access licences account for 2,040ML of water per year, local water utility access licences account for 13,721ML per year, unregulated river access licences account for 46,671 unit shares per year, aquifer access licences account for 169,203 unit shares per year and high security aquifer access licences account for 8,491 unit shares per year.

A search of the NSW Water Register maintained by WaterNSW indicates that a total of 396 WALs have been issued for the Upper Lachlan Alluvial Groundwater Source for a total of approximately 174,366.5 ML.

The Applicant does not hold a WAL under the Upper Lachlan Alluvial Groundwater Source.

3.6.2.2 Existing Groundwater Bores

The groundwater environment surrounding the Project Site is likely to be characterised by two separate, distinct aquifers as follows.

- Fractured rock aquifer associated with more elevated land to the east of the Project Site.
  - This aquifer is likely to be characterised by relatively impermeable host rock, with water bearing fractures and fissures with limited interconnectivity.

- The piezometric surface is likely to be a muted reflection of the surface topography.
- Permeability and porosity is likely to be limited.

- Alluvial aquifer associated with the Lachlan River.
  - This aquifer is likely to be characterised by high permeability and porosity, with the groundwater intimately associated with water within the Lachlan River.

Figure 1.1 displays groundwater bores within a 1km radius of the Project Site. As the Project Site occupies the north-eastern bank of the Lachlan River, it is not anticipated that activities associated with the Proposal would have any impact on groundwater bores located to the south-west of the Project Site on the other side of the Lachlan River. Groundwater bores located to the northwest of the Project Site are detailed in **Table 3.8**.

Table 3.8
Local Groundwater Bores

Bore ID	Drill Date	Depth (m)	Standing Water Level (m)	Yield (L/s)	Purpose	Comments
GW092102	20/02/1997	5.85	-	-	Monitoring	Proposed Drill log: 0-6m sandy clay loam
GW059491	01/02/1983	17.4	-	-	Irrigation	Drill log: 0-13.71m clay, 13.71-17.38m sand/gravel
GW704612	20/03/2013	19	11	0.126	Household Water Supply	Drill log: 0-1m topsoil, 1-2m clay, 2-19m granite (decomposed)
GW092101	20/02/1997	8.6	8.2	-	Monitoring	Proposed Drill log: 0-2m loam, 2-3m sandy clay load, 3-7m sandy clay
GW047956	01/03/1983	20.1	7.3	-	Water Supply	Proposed Drill log: 0-4.3m soil, 4.3-18m clay, 18-19.5m gravel, 19.5-20.1m granite (decomposed)
GW092103	21/02/1997	5.5	-	-	Monitoring	Proposed Drill log: 0-1m clay loam, 1-6m sandy clay loam

Source: Bureau of Meteorology - Australian Groundwater Explorer & WaterNSW (realtimedata.waternsw.com.au/water.stm)

3.6.2.3 Groundwater Dependent Ecosystems

The Bureau of Meteorology Groundwater Dependent Ecosystem Atlas identifies the following Groundwater Dependent Ecosystems (GDEs) in the vicinity of the Project Site.

- Riparian Blakely's Red Gum – box – shrub – sedge – grass tall open forest of the central NSW South Western Slopes Bioregion.
  - Low potential GDE associated with the North Western Unregulated and Fractured Rock groundwater management area.

- River Red Gum riparian tall woodland / open forest wetland in the Nandewar Bioregion and Brigalow Belt South Bioregion.
  - High potential GDE associated with the North Western Unregulated and Fractured Rock groundwater management area.

These GDEs are associated with riparian vegetation which occupies the banks of the Lachlan River.

3.6.2.4 Groundwater Contamination

An assessment of contamination was undertaken by GD (2020) to determine whether existing activities at the Project Site had resulted in local contamination of groundwater, surface water and soils. Key outcomes of the groundwater contamination assessment include the following.

- Analysis of groundwater samples indicated that concentrations of copper (location MW4), zinc (locations MW1 – MW4), nitrate (N) (locations MW1 – MW4) and nitrite (NO2) (locations MW2 and MW4) exceeded the relevant groundwater investigation levels (GD, 2020).
- As all exceedances were identified to occur in an upgradient groundwater monitoring bore (MW4) which is considered to be indicative of background conditions, it is considered that the above exceedances are associated with background sources rather than operations on site (GD, 2020).
- The results of groundwater sample analysis indicate that the suspected pollution incident has not resulted in unacceptable impacts to groundwater quality (GD, 2020).

In addition to the above, analysis of water samples collected from the Lachlan River in the vicinity of the Project Site indicated that existing activities were not contributing to identifiable deterioration of water quality downstream of the Project Site (GD, 2020).

3.6.3 Potential Changes to Groundwater and Constraints

Whilst the Proposal does not involve the extraction of groundwater for any purposes, minor interactions with the underlying groundwater table could occur due to the construction of an in-ground sediment basin and wash out bays.

No groundwater bores occur within 200m of the Project Site and the shallowest depth to standing water level in those bores is 7.3m. Additionally, excavations within the Project Site would remain significantly above the elevation of the Lachlan River channel. As the in-ground depth of water management structures associated with the Proposal would not exceed 2m, the Applicant does not anticipate that groundwater will be intercepted.

The primary issue requiring management would be ensuring that water containing cementitious particles and therefore with a potentially high pH is contained within water management structures and does not contaminate groundwater.

3.6.4 Environmental Groundwater Goals

The environmental goals of this Proposal associated with groundwater align with the following objectives, as outlined in Clause 7.6 of the Cowra LEP (see Section 1.6.4.1).

- "To maintain the hydrological functions of key groundwater systems.
- To protect vulnerable groundwater resources from depletion and contamination as a result of development."

3.6.5 Assessment of Impacts

Potential groundwater-related impacts and constraints include the following.

- *Interception or extraction of groundwater from an aquifer.*

  No groundwater would be extracted or intercepted and therefore no aquifer interference or other groundwater approval or licence is required. As a result, this issue poses a negligible constraint.

- *Contamination of groundwater through the discharge of high pH or contaminated water.*

  Truck wash out activities would be undertaken in areas of the Project Site which are concrete sealed to prevent infiltration of potentially contaminated water. The Applicant would ensure that potentially contaminated water would drain to the concrete-lined water storage cell which would be constructed to ensure that contaminated water does not seep through to reach the water table. Assuming that these measures are implemented, this issue is likely to pose a minor constraint.

- *Contamination of groundwater from hydrocarbon leaks or spills.*

  The Applicant would implement appropriate hydrocarbon management procedures. As a result, this issue is likely to pose a negligible constraint.

- *Impacts on groundwater dependent ecosystems.*

  On the basis that groundwater would not be affected by the Proposal, groundwater dependent ecosystems would not be impacted, and so this issue is likely to pose a negligible constraint.

Assuming that water management measures outlined in Section 2.2.4 and **Appendix 2** are implemented, it is not anticipated that the Proposal would have any impact on groundwater resources and is therefore consistent with the objectives of the Cowra LEP.

3.7 Waste Management

3.7.1 Introduction

This subsection has been prepared by RWC and considers waste management at the Project Site and the proposed waste management measures to be implemented by the Applicant.

3.7.2 Waste Management Measures

3.7.2.1 General Waste

General solid waste would be deposited in covered bins within the Project Site, with the bins being collected regularly and the contents disposed of at a licenced waste disposal facility.

3.7.2.2 Production Waste

As the Applicant does not produce anything in the Project Site, no production related wastes would be directly generated by the Proposal. Any concrete waste received on site would be a by-product of the Applicant's operations from the adjacent concrete batching plant.

Residual raw materials in delivery trucks and concrete within agitator trucks would be washed out into the wash out bays, with water used for this process collecting in the adjacent water storage cell. Accumulated water within the water storage cell containing cementitious particles would either be allowed to evaporate or would be transferred to the adjacent concrete batching plant for use in concrete production. Accumulated material within the wash out bays would be regularly mucked out and reused.

3.7.3 Assessment of Impacts

Table 3.9 considers the Proposal against the targets outlined in the NSW Waste Avoidance and Resource Recovery Strategy 2014-21 (EPA 2014).

Table 3.9
NSW Waste Avoidance and Resource Recovery Targets

Key Result Area	Proposal Impacts
Avoid and reduce waste generation. Target: *By 2021-22, reduce the rate of waste generation per capita.*	Minimal waste will be produced at the Project Site and some waste will be reused.
Increase recycling. Target: *By 2021-22, increase recycling rates for:* *municipal solid waste from 52% (in 2010-11) to 70%;* *commercial and industrial waste from 57% (in 2010-11) to 70%; and* *construction and demolition waste from 75% (in 2010-11) to 80%.*	The Applicant would reuse or recycle all waste returned to the Project Site.
Divert more waste from landfill. Target: *By 2021-22, increase the waste diverted from landfill from 63% (in 2010-11) to 75%.*	The Proposal would reuse or recycle all returned waste as well as waste cementitious material which accumulates in wash out bays.
Manage problem wastes better. Target: *By 2021-22, establish or upgrade 86 drop-off facilities or services for managing household problem wastes state-wide.*	This target has no relevance to the Proposal.
Reduce litter. Target: *By 2016-2017, reduce the number of litter items by 40% compared with 2011-12 levels and then continue to reduce litter items to 2021-22.*	The Applicant has acknowledged that the Proposal would generate general solid wastes and would provide for appropriate methods of managing waste to prevent litter.
Reduce illegal dumping. Target: *From 2013-14, implement the NSW Illegal Dumping Strategy 2014-16 to reduce incidence of illegal dumping state-wide.*	The Applicant would require the return of any unused material to the Project Site for reuse or recycling.
Source: EPA 2014	

On the basis that the Applicant would reuse or recycle all returned material and that general solid waste would be disposed of at a licenced waste disposal facility, the Proposal would not generate significant waste-related impacts.

3.8 Hazard Management

3.8.1 Introduction

This subsection has been prepared by RWC and considers potential hazards and risks associated with the Proposal and the proposed management and mitigation measures aimed at minimising impacts on hazards and risk.

Section 1.6.3.2 provides a justification that the Proposal is not classified as either potentially hazardous or offensive development under the Resilience and Hazards SEPP.

3.8.2 Handling, Storage and Disposal of Hydrocarbons and Chemicals

Limited volumes of hydrocarbons would be required for the Proposal to permit fuelling of water pumps required for the management of water volumes stored in sediment basins and water storage cells. These hydrocarbons would be stored outside of the project Site at the Applicant's adjacent concrete batching plant.

All hydrocarbons and chemicals stored for use at the Project Site would be stored in a bunded area or within self-bunded containers, undercover and within concrete-sealed areas within the existing concrete batching plant site office area. The handling, storage and disposal of chemicals would be undertaken in accordance with manufacturer instructions and the relevant chemical safety data sheets. The handling and storage of hydrocarbons would be undertaken in accordance with the relevant Australian Standard (*AS1940 – The Storage and Handling of Flammable and Combustible Liquids*).

3.8.3 Bush Fire Hazard

The Project Site is bordered to the southwest by a strip of riparian vegetation which occupies the bank of the Lachlan River. The Project Site has largely been cleared of vegetation and no additional buildings would be constructed as part of the Proposal.

As such, bush fires are considered to pose a negligible risk to the Proposal. The Applicant does not anticipate that the Proposal would increase the risk of fire at the Project Site.

3.9 Biodiversity

3.9.1 Introduction

This subsection has been prepared by RWC and considers the biodiversity environment at the Project Site and the proposed management and mitigation measures targeting potential biodiversity-related impacts.

3.9.2 Local Setting

The Project Site, occupied by the existing landscaping materials sales yard, has been subject to extensive vegetation clearing and surface disturbance. As a result, no native vegetation or habitat remains within the Project Site with the exception of a single tree located on the south-eastern boundary of the site.

The Project Site is bordered on the south-eastern side by a strip of riparian vegetation which occupies the bank of the Lachlan River. This habitat is identified in the Cowra LEP as having biodiversity value and is shown on **Figure 1.2** as 'Biodiversity Area'.

3.9.3 Operational Safeguards, Controls and Management Measures

The Applicant would adopt the following operational controls and management measures to avoid, minimise, and mitigate impacts on local biodiversity.

- No clearing of native vegetation would be undertaken as part of the proposed upgrades to the Project Site.
- All personnel would be made aware that disturbance to native vegetation outside of the Project Site is prohibited.
- Establish a 10m wide Vegetated Riparian Zone, delineated by a fence, along the southern boundary of the Project Site (see **Figure 2.1**).
- Plant species associated with PCT 278 and PCT 266 to form the Vegetated Riparian Zone.
- Apply water regularly to revegetated areas including the Vegetated Riparian Zone for at the least the first two months following establishment.

3.9.4 Assessment of Impacts

In accordance with Section 7.3 of the BC Act, the Proposal is not likely to significantly affect any threatened species, endangered ecological communities or their habitats as the Proposal would not involve clearing of native vegetation and would not increase the existing disturbance footprint of the development within the Project Site. Consequently, the Applicant does not anticipate that the Proposal would have any adverse impacts upon biodiversity.

In response to consultation with the Natural Resources Access Regulator, the Applicant has committed to the establishment of a 10M wide Vegetated Riparian Zone along the southern boundary of the Project Site (**Figure 2.1**). This area would be revegetated through the application of hydromulch containing a native seed mix, with regular watering to be undertaken during the first two months following establishment to encourage seedling germination and survival.

The vegetation community to be established in this zone would reflect remnant native vegetation communities present on the banks of the Lachlan River in the vicinity of the Project Site. Indicatively, vegetation assemblages would be consistent with those species associated with the following Plant Community Type.

- PCT 278 – Riparian Blakey's Red Gum – box – shrub – sedge – grass tall open forest of the central NSW South Western Slopes Bioregion.
- PCT 266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.

As no vegetation would be removed and a Vegetated Riparian Zone would be established, the Proposal would result in a positive outcome for local biodiversity.

3.10 Aboriginal and Non-Aboriginal Heritage

3.10.1 Introduction

This subsection has been prepared by RWC and considers potential heritage-related impacts associated with the proposal and the proposed management and mitigation measures to be implemented.

3.10.2 Local Setting

The Project Site has been subject to extensive disturbance and is currently occupied by an existing landscaping materials sales operation.

The Cowra Showground grand stand, located to the southwest of the Project Site within Lot 400, DP 40191 on the opposite side of the Lachlan River, is identified as a heritage item under the Cowra LEP.

A search of the Aboriginal Heritage Information Management System (AHIMS) database, completed on 3 June 2020, confirmed that no Aboriginal sites or places have been recorded within or in the immediate vicinity of the Project Site.

3.10.3 Management and Mitigation Measures

As no Aboriginal sites, cultural heritage values, or historic heritage items are known to occur within the Project Site, the only potential impacts associated with the Proposal include impacts to unknown sites or objects of Aboriginal or historic heritage value.

In the event that unanticipated Aboriginal objects are discovered as a result of construction or operations, all ground-disturbing activities in the area of discovery would be postponed pending advice from the relevant authority.

3.10.4 Assessment of Impacts

As there are no known Aboriginal sites, cultural heritage values, or historic heritage items within the Project Site, there would be no impact to these sites or values from the Proposal.

On the basis of the above, the impact of the Proposal on Aboriginal and historic heritage is assessed to be negligible.

3.11 Socio-economic Profile

3.11.1 Local Setting

Cowra Shire Local Government Area (LGA) is located in central New South Wales, approximately 230km west of the Sydney CBD and 160km north-north-west of Canberra. The LGA is bounded by Cabonne Shire to the north, Blayney Shire to the north-east, Bathurst Region to the east, Upper Lachlan Shire to the south-east, Hilltops Council to the south, Weddin Shire to the west, and Forbes Shire to the northwest.

Cowra Shire LGA is predominately rural, with the major centre being Cowra in which approximately 81% of the LGA's 12,460 inhabitants reside. Between 2011 and 2016, the population of the LGA increased by 2.6% (12 147 to 12 460), while median weekly household income has increased by approximately 18.1% ($785 to $959).

Table 3.10 presents the 2021 Census results for the Cowra Local Government Area. For the purpose of comparison, data from NSW as a whole is also presented. The percentage of people engaged in full-time employment in Cowra Shire LGA and the percentage of people engaged in part-time employment was higher than NSW as a whole. Additionally, the personal median weekly income in Cowra Shire LGA ($606) is significantly lower than that of NSW as a whole ($813).

The Project Site represents an existing source of employment within the main population centre of Cowra Shire LGA.

Table 3.10
2021 Census results: Cowra Local Government Area

.	Cowra Local Government Area	NSW
Population		
Males	6,316 (49.6%)	3,984,166 (49.4%)
Females	6,409 (50.4%)	4,087,995 (50.6%)
Total	12,724	8,072,161
Employment		
Employed – Full-time	3,060 (56.2%)	2,136,610 (55.2%)
Employed – Part-time	1,764 (32.4%)	1,151,660 (29.7%)
Unemployed	277 (5.1%)	189,852 (4.9%)
Median weekly income		
Personal	$606	$813
Family	$1,447	$2,185
Household	$1,112	$1,829
Source: ABS – 2021 Census		

3.11.2 Assessment of Impacts

The Applicant anticipates that the Proposal would continue to employ five full-time employees to manage activities within the Project Site. Additionally, the Proposal would continue to provide opportunities for contractors and product truck drivers who are typically employed either directly, by contract transportation companies, or by the Company's customers.

Given that the Landscaping Materials Yard represents an existing operation with established ties to the local community and businesses, failure to obtain development consent would result in moderate adverse impacts upon the local socio-economic climate.

4. Evaluation of the Proposal

4.1 Introduction

This section concludes the *Statement of Environmental Effects*. The Proposal, including the ongoing operation of the Landscaping Materials Yard and changes to site infrastructure, is evaluated and justified through consideration of its potential impacts on the environment and potential benefits to the local and broader community.

The evaluation of the Proposal is undertaken firstly by considering the relevant biophysical and socio-economic issues applicable to the proposed activities. The Proposal has also been evaluated against the principles of Ecologically Sustainable Development (ESD) in order to provide further guidance as to the acceptability of the Proposal.

Section 4.3, which represents the justification of the Proposal, considers the Objects of the *Environmental Planning and Assessment Act 1979* and assesses the consequences of not proceeding with the Proposal.

4.2 Evaluation of the Proposal

4.2.1 Biophysical Considerations

The Proposal has been designed in a manner that would:

- utilise the existing layout and associated disturbance footprint of the existing operations within the Project Site, to the greatest extent practicable;
- rehabilitate disturbed areas of the rail corridor which would be excluded from the Project Site;
- minimise the potential for activities to result in adverse impacts on surface water, groundwater and receiving water quality; and
- minimise impacts on flood waters at modelled the 1:100 year ARI flood level.

Inevitably, despite the proposed operational controls and safeguards to be implemented by the Applicant, there remains the potential for some residual impacts on the biophysical environment to occur. The assessed biophysical impacts that the Proposal would have on the local environment are set out below.

Soil and Water Resources

It has been assessed that the Proposal, including the ongoing operation of the existing landscaping materials sales business, could be undertaken without any significant adverse impact on soil and water resources. Assuming the implementation of the proposed design features, operational safeguards, controls and management measures, including the implementation of the SWMP presented as **Appendix 2**, the Proposal would:

- provide for erosion and sediment control during operation;
- effectively categorise and separate clean, dirty and potentially contaminated water;
- provide for appropriate controls to ensure runoff on the Project Site is captured and delivered to appropriate water management structures;
- treat stored water to achieve target water quality values prior to discharge from the Project Site;
- avoid uncontrolled discharge of dirty or contaminated water from the Project Site, as far as practicable; and
- maximise the reuse of water harvested on the Project Site, thereby reducing to the greatest extent possible reliance on town water supply.

Flooding

The Project Site is located within the 1:100 year ARI flood level area, with sections of the Landscaping Materials Yard modelled to be subject to inundation during these events. Based on the proposed design and management of the Proposal, the only materials exposed to flood waters would be the inert aggregates and landscaping materials stored in the landscaping materials stockpile yard.

The proposed 1.68m to 1m high stabilised earth bund along the western and southwestern borders of the Project Site would permit the capture and redirection of potentially sediment laden water to sediment basins and provide immunity from flooding impacts up to the 1:100 year ARI flood level (plus 0.5m freeboard). Flood modelling which considered a bund capable of providing immunity from the 1:100 year ARI flood event indicated that the impact of the Proposal would be equivalent to a 10mm rise in flood waters for neighbouring properties.

Based on the results of flood modelling, it is assessed that the Proposal would not have a significant adverse impact on the environment or community as a result of impacts to flood waters.

Noise

The Proposal would not introduce additional noise sources within the local setting. Based on the implementation of the proposed noise management and mitigation measures, it is anticipated that the Proposal would result in reduced noise levels at nearby residential receivers compared to existing operations.

Air Quality

The Proposal would not result in additional dust generation within the local setting. Based on the implementation of dust mitigation measures, it is not anticipated that dust levels associated with the Proposal would have an unacceptable impact on local air quality.

Transportation and Traffic

The Proposal would not generate additional traffic or alter the established hours of operation at the Project Site.

Other Impacts

Impacts on biodiversity values would be positive as a result of the establishment of a 10m wide Vegetated Riparian Zone.

Impacts upon Aboriginal heritage, historic heritage, waste and other hazards associated with the Proposal would be negligible.

4.2.1.1 Socio-Economic Considerations

As the Proposal represents an existing Landscaping Materials Yard, it is not anticipated that any additional negative impacts on the socio-economic local or regional setting would eventuate.

The Proposal would, however, have the following ongoing benefits.

- Ongoing employment for five staff at the Project Site, in addition to the ongoing provision of employment opportunities to contract agitator truck drivers.
- Ongoing impacts on the existing level of competition in the landscaping materials supply market, maintaining competitive prices for local construction projects.
- Ongoing indirect flow-on benefits to the local and regional economy through the expenditure of wages paid to employees, and through the purchase of goods and services for the operation of the Proposal.

Considering the potential direct and indirect socio-economic benefits against existing adverse impacts, it is assessed that failure to approve the Proposal would result in a net loss of socio-economic benefits.

4.2.2 Section 4.15 Considerations

Section 4.15 of the *Environmental Planning and Assessment Act 1979* requires the consent authority, when determining a development application, to take into consideration the following matters:

a) the provision of:

i. any environment planning instrument;

The relevant environmental planning instruments being:

- *State Environmental Planning Policy (Resilience and Hazards) 2021*
- *State Environmental Planning Policy (Transport and Infrastructure) 2021*

- *State Environmental Planning Policy (Primary Production) 2021*
- *State Environmental Planning Policy (Biodiversity and Conservation) 2021; and*
- *Cowra Local Environmental Plan 2012.*

Each of these instruments are addressed in full in Section 1.6 of this document.

ii. any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved); and

The Applicant is not aware of any proposed instruments that are relevant to the Proposal.

iii. any development control plan; and

The relevant Development Control Plan is the *Cowra Shire Council Development Control Plan 2014.* This plan is discussed in Section 1.6.4.2 of this document.

iii. a) any planning agreement that has been entered into under Section 7.4, or any draft planning agreement that a developer has offered to enter into under Section 7.4; and

The Applicant is not aware of any planning agreements relevant to the Proposal.

iv. the regulations (to the extent that they prescribe matters for the purposes of this paragraph); and

The Proposal is not classified as Designated Development under the EP&A Regulation.

b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality; and

The likely impacts of the Proposal, including environmental impacts on both the natural and built environments and social and economic impacts, are assessed in Section 3 of this document.

c) the suitability of the site for the development; and

The suitability of the Project Site for the Proposal, including a description of surrounding lands and land uses, is discussed in Section 1.6.3.2 and Section 3.

d) any submissions made in accordance with this Act or the regulations; and

The Applicant anticipates that submissions related to the Proposal will be provided following completion of the neighbour notification or public exhibition period and that it will be provided with an opportunity to respond to those submissions at that time.

e) the public interest.

Information relating to community and socioeconomic setting of the Proposal and the Proposal-related contributions to the local and regional economies is presented in Section 3.11 within this document. Overall, the Applicant contends that the Proposal would satisfy public interest.

4.2.3 Consequences of Not Carrying out the Development

The consequences of not proceeding with the Proposal include the following.

- The opportunity to maintain five employee positions at the existing Landscaping Materials Yard, in addition to employment opportunities for contract delivery drivers, would be forgone.
- Competition in the local and regional landscaping material supply industry would be reduced, potentially resulting in price increases for these products.
- Existing environmental issues at the Project Site, including inadequate water management measures, would not be rectified.

It is considered that the benefits of proceeding with the Proposal therefore far outweigh the impacts on the environment that would result. The nominated consequences of not proceeding with the Proposal also weigh heavily in favour of proceeding with the Proposal.

4.3 Justification of the Proposal

In assessing whether the Proposal is justified, consideration has been given to potential adverse impacts and benefits, and the consequences of not proceeding with the Proposal.

The Proposal is assessed to be justified as:

- the location of the existing Landscaping Materials Yard is adjacent to existing industrial areas and is proximal to established markets;
- it would be operated in accordance with the identified principles of Ecologically Sustainable Development;
- it would satisfy matters for consideration outlined in Section 4.15 of the EP&A Act;
- it would involve the management and mitigation of existing adverse impacts upon the local environment; and
- the consequences of not proceeding weigh heavily in favour of proceeding with the Proposal.

4.4 Conclusion

The Proposal as presented in this document has been designed to provide for the supply of landscaping materials to the local area and surrounding region in an efficient and environmentally responsible manner. It has been assessed that the Proposal would provide for landscaping materials to the local market with managed adverse impacts on the surrounding environment.

On the basis of this assessment, it has been concluded that the Proposal is consistent with the features which distinguish an ecologically sustainable approach to development.

Overall, the socio-economic benefits of the Proposal, through the provision of employment and flow-on economic effects, outweigh the identified residual impacts that would occur.

5. References

Cowra Shire Council (2021) *Cowra Shire Council Development Control Plan 2021.*

Department of Planning and Environment (DPE) (2021) *Planning for a more resilient NSW - A strategic guide to planning for natural hazards*

Department of Planning (DoP) (2011) *Multi-Level Risk Assessment.*

Environment Protection Authority (EPA) (2009) *Waste Classification Guideline 2009.*

Environment Protection Authority (EPA) (2014) *NSW Waste Avoidance and Resource Recovery Strategy 2014-21.*

Environment Protection Authority (EPA) (2017) *Noise Policy for Industry.*

IGAE (1992) *Intergovernmental Agreement on the Environment.*

Landcom (2004) *Managing Urban Stormwater: Soils and Construction – Volume 1.*

National Transport Commission (2011) *Australian Code for Transportation of Dangerous Goods by Road and Rail* (Dangerous Goods Code).

Natural Resources Access Regulator (NRAR) (2017). *Guidelines for Controlled Activities on Waterfront Land – Riparian Corridors*.

Spectrum Acoustics Pty Limited (2019) *Noise and Vibration Impact Assessment* Prepared for Buzzree Pty Ltd.

Strategic Environmental and Engineering Consulting Pty Ltd (SEEC) (2023) *Soil and Water Management Plan* Prepared for Buzzree Pty Limited.

Water Resource Commission Flood Plain Atlas (WRC) (1978) *Flood Inundation Map for Cowra 1978.*

Appendices

Appendix 1 Extract of Transport for NSW Licence Agreement

Appendix 2 Soil and Water Management Plan prepared by Strategic Environmental and Engineering Consulting Pty Limited

Appendix 3 Natural Resources Access Regulator Consultation

Appendix 4 Community Consultation Sheet No. 1

Appendix 5 Noise and Vibration Impact Assessment prepared by Spectrum Acoustics Pty Limited

Appendix 6 Groundwater Contamination Assessment prepared by Ground Doctor Pty Ltd

Appendix 1

Extract of Transport for NSW Licence Agreement

(Total No. of pages including blank pages = 5)

A1

AGR - 13294

CRN Basic Property Licence

Dated 17 FEBRUARY 2020

Parties

Rail Corporation New South Wales
ABN 59 325 778 353

and

Buzzree Pty Ltd trading as Byrant's Concrete
86 125 534 367

Reference Schedule

LICENCE INFORMATION

ITEM 1 **Licensee**	Buzzree Pty Ltd trading as Bryant's Concrete 86 125 534 367 C/ Tester Porter Services Pty Ltd 24 Cloete Street Young NSW 2594
ITEM 2 **Contractor**	John Holland Rail Pty Ltd ABN 61 009 252 653 Level 1 20 Smith Street Parramatta NSW 2150
ITEM 3A **Land**	*Part Lot 3905 DP 1200283 off the corner of Kite Street and River Street, Cowra.*
ITEM 3B **Licensed Area**	That part of the Land outlined in red on the plan annexed at Schedule 3, approximately 9,681m², Being part lot 3905 DP 1200283, off Kite and River Street, Cowra.
ITEM 4 **Commencement Date**	1st December 2019
ITEM 5 **Expiry Date**	30th November 2024
Option	5 year Option commencing 1st December 2024, ending 30th November 2029
ITEM 6 **Licence Fee**	[redacted]cl. GST) per annum (subject to review pursuant to **clause 4**.)
ITEM 6A **Payment Date**	The Commencement Date and each anniversary of the Commencement Date.
ITEM 7A	Not applicable

DATED 17 FEBRUARY 2020

Signed for and on behalf of **Rail Corporation New South Wales** by the authorised delegate for Transport for NSW as agent for Rail Corporation New South Wales in the presence of:

[redacted]

Signature of Witness

NATALIE HILD

Name of Witness

[redacted]

Signature of Delegate

LYNELLE WHITCOMBE

Name of Delegate

Signed for and on behalf of **Buzzree Pty Ltd trading as Bryant's Concrete** in accordance with Section 127 of the *Corporations Act 2001* (Cth):

[redacted]

Signature of Director

GARY BRYANT

~~Signature of Director/Secretary~~

Name of Sole Director

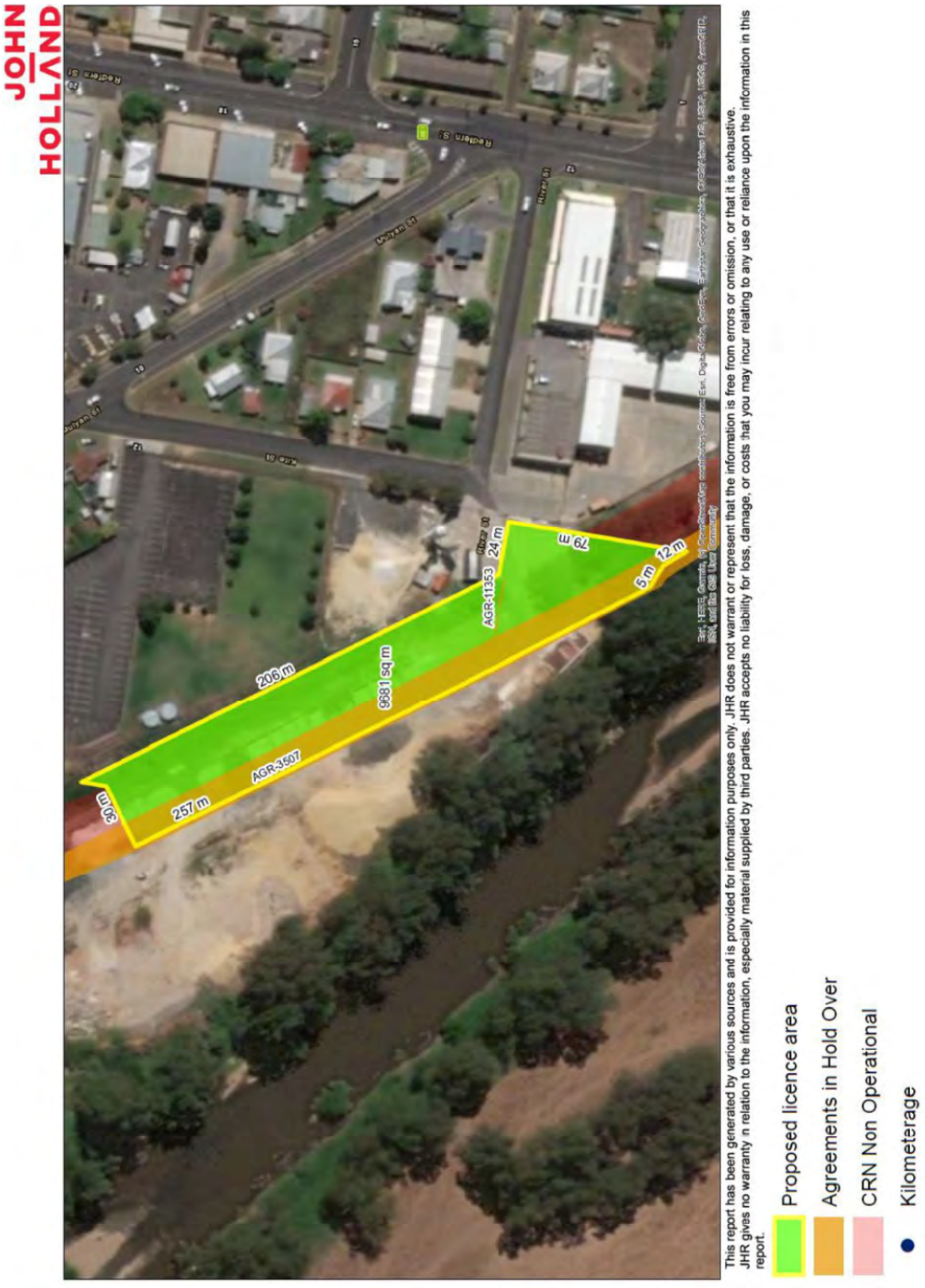
Name of Director (print)

Name of Director/Secretary (print)

AGR-13294 – Buzzree Pty Ltd trading as Bryant's Concrete – Off Kite and River Street, Cowra

Schedule 3

Plan of Licensed Area



[Type here]

Appendix 2

Soil and Water Management Plan

prepared by Strategic Environmental and Engineering Consulting Pty Limited

(Total No. of pages including blank pages = 48)

A2

Buzzree Pty Ltd
ABN: 86 125 534 367

Bryant's Landscaping and Materials Yard

Soil and Water Management

Prepared by

Strategic Environmental & Engineering Consulting (SEEC) Pty Ltd

February 2023

Specialist Consultant Studies
Appendix 2

This page has intentionally been left blank

Buzzree Pty Ltd
ABN: 86 125 534 367

Soil and Water Management

Prepared for: R.W. Corkery & Co. Pty Limited
Level 1, 12 Dangar Road
PO Box 239
BROOKLYN NSW 2083

Tel: (02) 9985 8511
Email: brooklyn@rwcorkery.com

On behalf of: Buzree Pty Limited
54 Redfern Street
Cowra, New South Wales 2794

Tel: (02) 6341 1288
Email: bryantsconcrete1@bigpond.com

Prepared by: SEEC Pty Ltd
PO Box 1098
Bowral NSW, 2576

Tel: (02) 4862 1633
Email: reception@seec.com.au

February 2023

Strategic Environmental and Engineering Consulting (SEEC)

SEEC

CONTENTS

SEEC

CONTENTS

Page

FIGURES

TABLES

EXECUTIVE SUMMARY

SEEC have been commissioned by Buzzree Pty Limited, owners of Bryant's Landscaping Materials Yard, Cowra, to prepare this Soil and Water Management Plan. The Plan will describe how surface water runoff from the continued operation of, and proposed upgrades to, the yard will be managed to mitigate any impact on the nearby Lachlan River. It also discusses the impact the modified development could have on major flood conditions.

A "Type D" sediment basin will receive runoff from the Landscape Materials Yard. The basin would drain to an existing drainage easement along the north-western boundary of the Project Site.

Discharges from the sediment basin will be monitored for sediment (turbidity), salinity (electrical conductivity), pH. Surface films and debris such as oil and grease will be visually monitored and identified if detectable by odour. Modelling using MUSIC stormwater quality software shows that, if adequate flocculation is achieved, concentrations of sediment and associated phosphorous and nitrogen should be reduced in discharged water to levels that are not expected to have a significant impact on the Lachlan River, considering the water quality in it would be affected by the same rainfall events. Salinity is not expected to be an issue, as only non-saline materials are stockpiled on site.

The Project Site is subject to potential flooding from local and regional sources. Local flows from upstream catchments to the north east are to be managed by intercepting flows and directing them north and south to existing channels/gullies around the project site.

The Project Site is within the Cowra Shire Council Flood Planning Area and is subject to regional flooding from the Lachlan River. The lower portion of the Project Site is expected to be inundated during large events with the 1:100 year ARI flood level reaching an estimated height of 289.18m AHD. A small bund will provide immunity from large flood events up to the 1:100 year ARI flood level for the Project Site. This will result in the loss of a small cross sectional area (<0.3%) which is estimated to result in a potential negligible increase of around 10mm in flood water from the Lachlan River and floodplain adjacent to the Project Site. It is anticipated that such as small increase in flood level would be dissipated within a short distance from the Project Site.

SPECIALIST CONSULTANT STUDIES
Appendix 2

Buzzree Pty Limited
2 Kite Street, Cowra, NSW 2794

This page has intentionally been left blank

1. INTRODUCTION

SEEC have been commissioned by Buzzree Pty Limited, owners of Bryant's Concrete Products, Cowra, to prepare this Soil and Water Management Plan which will accompany an application for development consent to Cowra Shire Council (Council) to operate an existing landscape supplies business at 2 Kite Street, Cowra, NSW ("the Proposal"). The Plan will describe how surface water runoff from the continued operation of, and proposed upgrades to the yard will be managed to mitigate any impact on the nearby Lachlan River. It also discusses the impact the modified development could have on major flood conditions.

2. THE DEVELOPMENT

The Project Site is located on land zoned as follows under the *Cowra Local Environmental Plan 2012* (Cowra LEP).

- RU1 – Primary Production.
- SP2 – Infrastructure.

The Proposal is classified as:

- "Non-Designated, Local Development" as it does not meet the relevant thresholds for Designated or State Significant Development; and
- "Integrated Development" under the *Environmental Planning and Assessment Act 1979* as it would require a Controlled Activity Approval under the *Water Management Act 2000*.

The Proposal therefore requires development consent to be issued by Council.

The Proposal would include the following activities.

- Modifications to the Project Site layout, including establishment of a range of surface water management infrastructure to ensure improved environmental management of the Project Site.
- Sale of small quantities of landscaping and other materials to the general public and small business.
- Recycling of limited quantities of returned concrete material from the Applicant's adjacent concrete batching operations.
- Ancillary activities, including management of surface water and storage of equipment.

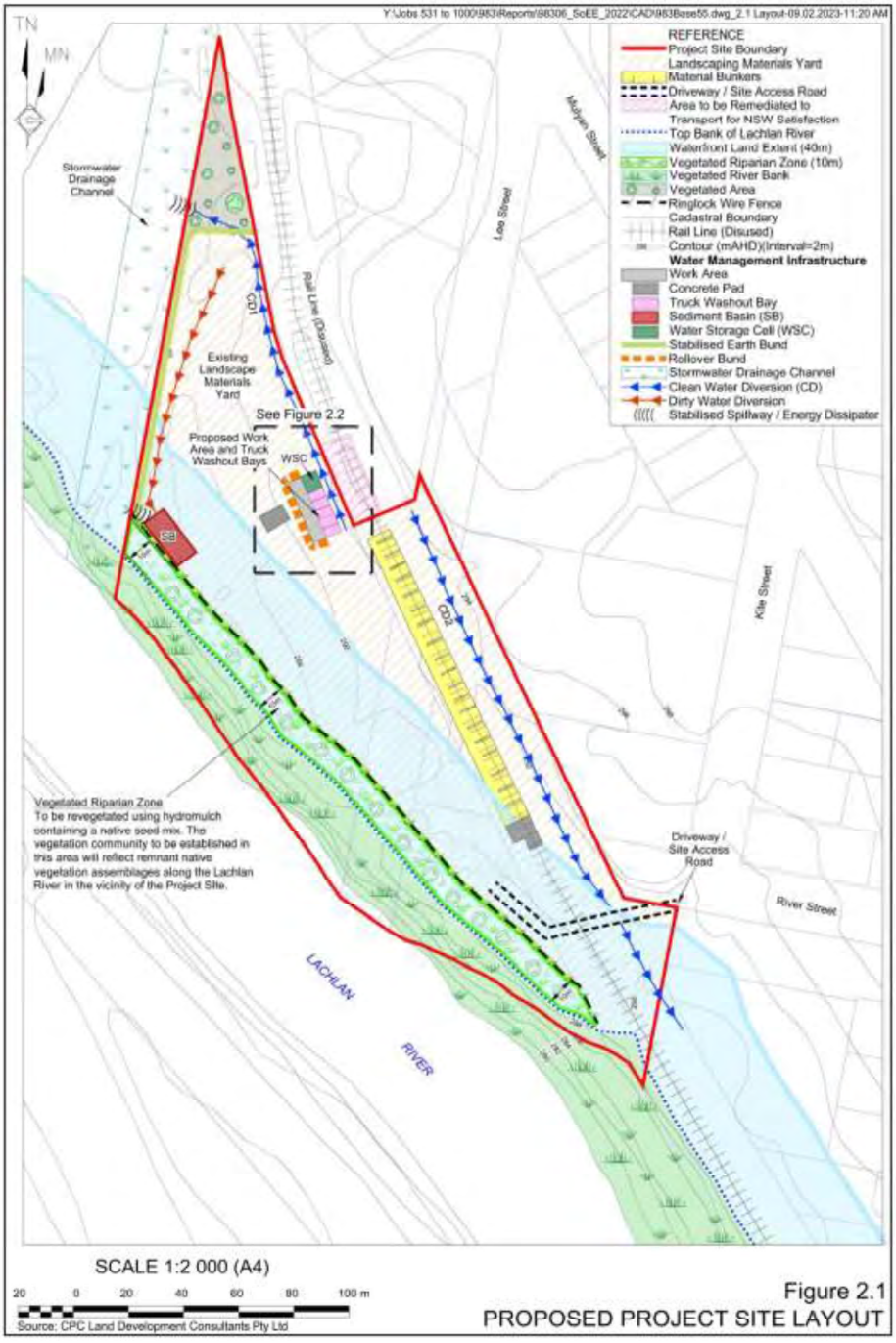


Figure 1 –Proposed Site Plan

3. THE PROJECT SITE'S ENVIRONMENT

3.1 GENERAL DESCRIPTION

The Project Site covers an area of approximately 2.9ha on the eastern bank of the Lachlan River, just west of the main bridge into Cowra and near to its central business district (Figure 2). A landscape materials yard has been operating at the Project Site since the early 1970's. Prior to this, the Project Site formed part of a gravel extraction operation involving the extraction of gravel from the bed and banks of the adjacent Lachlan River.

Features adjacent to the Project Site include the Lachlan River to the south and west, agricultural land to the west and northwest, and light industrial, residential, and business zones to the north, northeast, and east.

The Project Site slopes from a maximum elevation of 298m AHD in the northeast corner of the Project Site to a minimum elevation of 278m AHD at the southwest boundary of the Project Site. The majority of the Project Site occupies elevations between 296m AHD and 288m AHD. The southwest margin of the Project Site encompasses the steep slope of the bank of the Lachlan River.

The Lachlan River represents the primary drainage line associated with the Project Site, with the channel passing parallel to the Project Site's southwestern border. An ephemeral drainage channel is located immediately west of the Project Site and drains directly into the Lachlan River. An existing culvert passes under the railway immediately to the southeast of the Project Site.

The Project Site is occupied by a Landscaping Materials Yard adjacent to the upper bank of the Lachlan River, with the southwestern and western boundaries defined by a combination of concrete block walls and an earth bund. Infrastructure which forms part of the existing Landscaping Material Yard includes the following.

- Two concrete pad work areas, including one with an adjacent unlined sump used for truck washout and water storage.
- Material bunkers constructed using concrete blocks and panels.
- Various material stockpiles.
- Surface water management infrastructure including earth bunds and concrete block walls along the southern and western perimeter of the Project Site.
- A concrete-sealed driveway and level crossing.

The Applicant's principal activity within the Project Site is the sale of small quantities of sand, gravel, aggregate and other landscaping products to retail and small business customers, within Cowra and the surrounding areas. In summary, existing activities include the following.

- Receipt of raw materials deliveries within the Landscaping Materials Yard.
  - Typically, two material delivery trucks would access the Project Site per week.
- Washout of product trucks and agitator trucks.
- Recycling of waste concrete (i.e. stockpiling and crushing on a campaign basis) sourced from adjacent concrete batching operations.

- Sale of small quantities of landscaping and other materials to the general public and small businesses.
- Ancillary activities, including stockpile watering to minimise dust, storage of equipment, and management of surface water.

No mulch or compost is processed or stored on site. All materials for sale are kept in the open.

Figure 2 – Site Location

3.2 OFF SITE RUN-ON

The Project Site is subject to significant run-on. At the time of inspection surface water derived from the junction of River Road and Kite Street was observed entering the Project Site entrance; the owner advises this is a frequent occurrence (**Figure 3**). The owner advises that water also enters the Project Site from:

- The railway easement in the vicinity of a building located at the end of Lee Street. It is probably derived from the stormwater system in Lee Street and from the building itself; and
- A large sealed area just east of the Materials Yard.

Run-on will be prevented from entering the Project Site by installing diversion drains within the disused railway easement (CD1 & CD2). CD2 will divert upslope flows to the southeast and into an existing stormwater culvert located under the rail line, while CD1 will divert upslope flows northwest into an existing drainage easement (Refer to Appendix 1 SEEC drawing 19000032_P01_SWMP01).

Figure 3 – Significant run-on occurs from the street junction onto the Project Site entrance

3.3 RECEIVING WATERS, WATER QUALITY OBJECTIVES

The Project Site drains to the Lachlan River which lies immediately to the west. The Lachlan River is classified as a major regulated lowland river within the Murray-Darling Basin by the

NSW Water Quality Objectives (WQOs). The WQOs and trigger values that apply to it are summarised in Table 1. These triggers apply in the receiving waters, they are not applied to runoff from the Project Site. Further, it is likely these trigger values would be exceeded in the river under conditions of moderate to high flow after rainfall.

Table 1 – Water Quality Objectives in the Lachlan River

Objective	Aim	Water Quality Triggers[1]
Aquatic Ecosystems	Maintaining or improving the ecological condition of waterbodies and their riparian zones over the long term.	Total Phosphorous (TP) = 50µg/L Total Nitrogen (TN) = 500µg/L Turbidity = 50NTU Salinity = 340 µS/cm [2] Diss. Oxygen = 85-110% pH = 6.5 – 8.5 Chemical contaminants - See ANZECC 2000 Guidelines, chapter 3.4 and table 3.4.1.
Visual Amenity	Aesthetic qualities of waters	Natural visual clarity should not be reduced by more than 20%. Natural hue of the water should not be changed by more than 10 points on the Munsell Scale. The natural reflectance of the water should not be changed by more than 50%. Oils and petrochemicals should not be noticeable as a visible film on the water, nor should they be detectable by odour. Waters should be free from floating debris and litter.
Secondary contact recreation	Maintaining or improving water quality for activities such as boating and wading, where there is a low probability of water being swallowed	Chemical contaminants: Waters containing chemicals that are either toxic or irritating to the skin or mucous membranes are unsuitable for recreation. Toxic substances should not exceed values in tables 5.2.3 and 5.2.4 of the ANZECC 2000

[1] Given no organic materials are processed or stored on site only those triggers that relate to inert substances are listed.
[2] Based on the mean salinity measured at the nearby WaterNSW gauging station. Salinity in the Lachlan River is reasonably consistent; the 10th percentile is 210 µS/cm and the 90th percentile is 514 µS/cm (online WaterNSW river data).

Objective	Aim	Water Quality Triggers[1]	
			Guidelines.
		Visual clarity and colour	Use visual amenity guidelines.
		Surface films	Use visual amenity guidelines
Primary contact recreation	Maintaining or improving water quality for activities such as swimming in which there is a high probability of water being swallowed	See secondary contact recreation triggers Turbidity = approx. 6NTU	
Livestock water supply	Protecting water quality to maximise the production of healthy livestock	Salinity (electrical conductivity)	Recommended concentrations of total dissolved solids in drinking water for livestock are given in table 4.3.1 (ANZECC 2000 Guidelines).
		Chemical contaminants	Refer to Table 4.3.2 (ANZECC 2000 Guidelines) for heavy metals and metalloids in livestock drinking water. Refer to Australian Drinking Water Guidelines (NHMRC and NRMMC 2004) for information regarding pesticides and other organic contaminants, using criteria for raw drinking water.
Irrigation water supply	Protecting the quality of waters applied to crops and pasture.	Salinity (electrical conductivity)	To assess the salinity and sodicity of water for irrigation use, a number of interactive factors must be considered including irrigation water quality, soil properties, plant salt tolerance, climate, landscape and water and soil management. For more information, refer to Chapter 4.2.4 of ANZECC 2000 Guidelines.

Objective	Aim	Water Quality Triggers[1]	
		Heavy metals and metalloids	Long term trigger values (LTV) and short-term trigger values (STV) for heavy metals and metalloids in irrigation water are presented in table 4.2.10 of the ANZECC 2000 Guidelines.
Drinking water	Refers to the quality of drinking water drawn from the raw surface and groundwater sources before any treatment	Turbidity	Site-specific determinant.
		Salinity (electrical conductivity)	<1500 µS/cm > 800 µS/cm causes a deterioration in taste.
		Dissolved oxygen	> 6.5 mg/L (> 80% saturation)
		pH	6.5-8.5
		Chemical contaminants	See ANZECC 2000 guidelines, section 6.2.2.

3.4 CLIMATE

3.4.1 Rainfall

A number of rainfall stations are in the vicinity of the Project Site. Based on the BOM Cowra Ag Research Station number 63022, Cowra has a mean annual rainfall of 628.3mm and a median annual rainfall of 618.6mm (**Table 2** and **Figure 4**). The climate is generally warm to hot in summer with lower rainfall (**Figure 5**). Winters are mild to cool. Good quality daily rainfall data is also available from the period 1/5/1943 to 2/04/2019 (BOM stations 65023 (to 2011) and 65111 (2011 to 2023) (Figure 6).

Table 2 – Cowra Rainfall Data (Ag research Station 63022)

Summary statistics for all years

Information about climate statistics

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	58.5	47.7	49.2	43.0	46.1	52.5	51.7	52.2	51.1	57.8	56.0	57.0	628.3
Lowest	0.0	0.0	0.0	0.0	0.0	2.3	3.4	1.3	1.5	0.0	0.0	0.0	215.5
5th %ile	8.2	1.1	2.2	1.0	4.3	8.7	8.7	11.8	12.9	7.9	6.3	2.9	340.2
10th %ile	10.8	3.8	5.8	3.8	10.1	15.7	12.2	15.9	14.8	18.4	13.2	10.8	419.2
Median	50.3	33.0	35.4	30.6	37.6	47.9	48.4	49.4	46.6	50.3	42.9	45.2	618.6
90th %ile	108.0	116.8	104.5	102.1	86.4	98.3	92.9	95.8	95.4	102.1	108.6	111.5	855.1
95th %ile	167.4	147.9	124.9	130.3	109.0	122.4	95.0	108.5	113.4	120.7	136.0	138.6	1022.2
Highest	229.2	222.8	190.8	246.8	177.6	201.0	143.8	121.5	153.2	188.4	206.7	230.8	1142.5

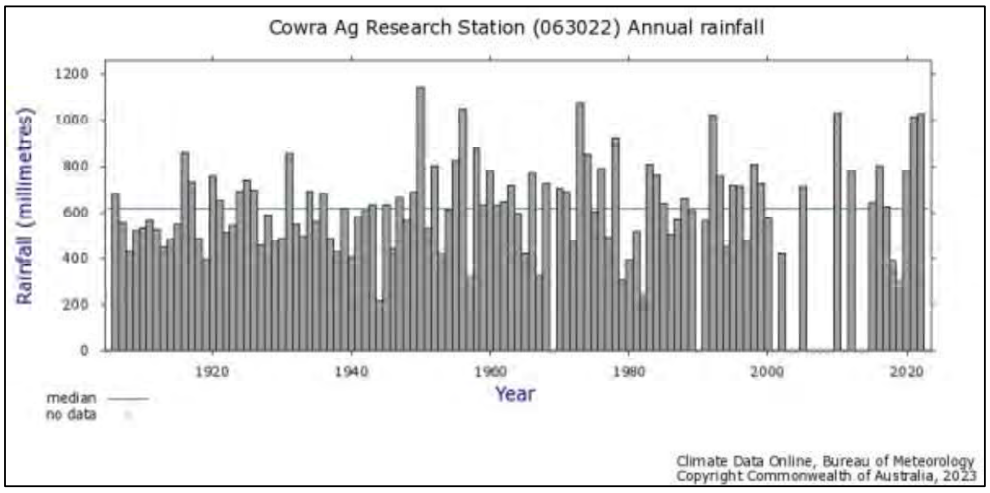


Figure 4 – Cowra Annual Rainfall

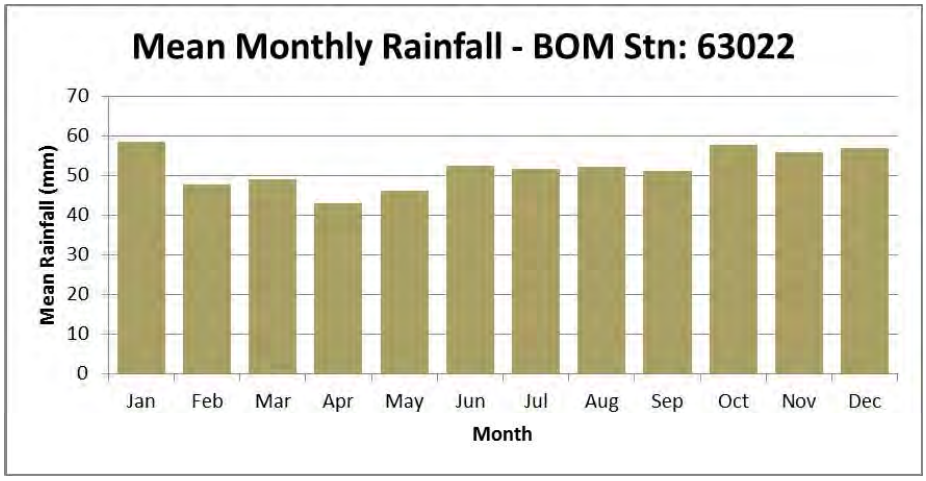


Figure 5 – Mean Monthly Rainfall

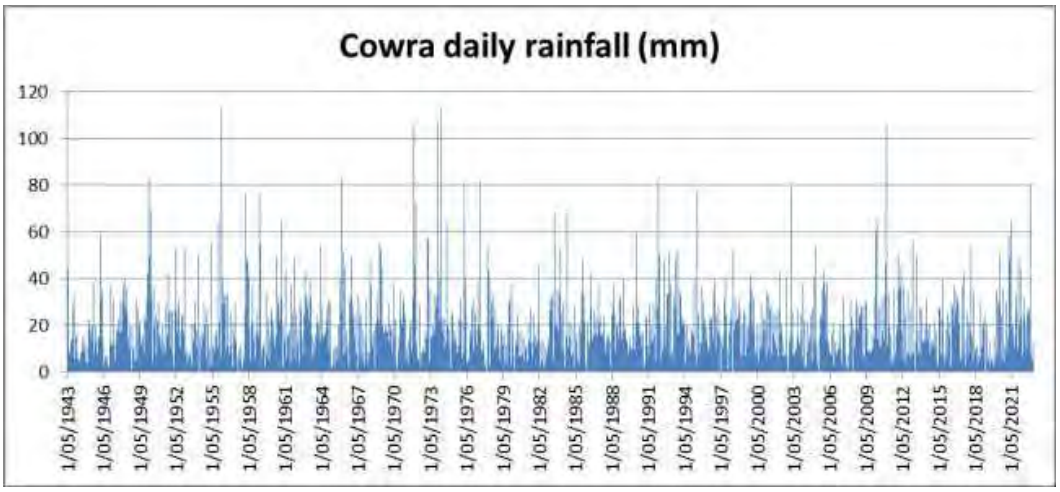


Figure 6 – Daily Rainfall Data

Six-minute time step, Pluviougraph, rainfall data is also available from the same BOM rainfall station for the period 1943 to 2010. A six-year extract from this data was made from June 1961 to December 1966 and is used in the stormwater Quality Modelling in Section 6.1. This period was chosen because it has good complete data from a period of overall about average rainfall but including a significantly drier (1963, 423mm) and a significantly wetter (1966, 768mm) year. **Figure 7** gives the time series graph for the adopted period and also shows the adopted potential areal evapotranspiration which was estimated using the BOM's climate atlas data. See also **Table 3**.

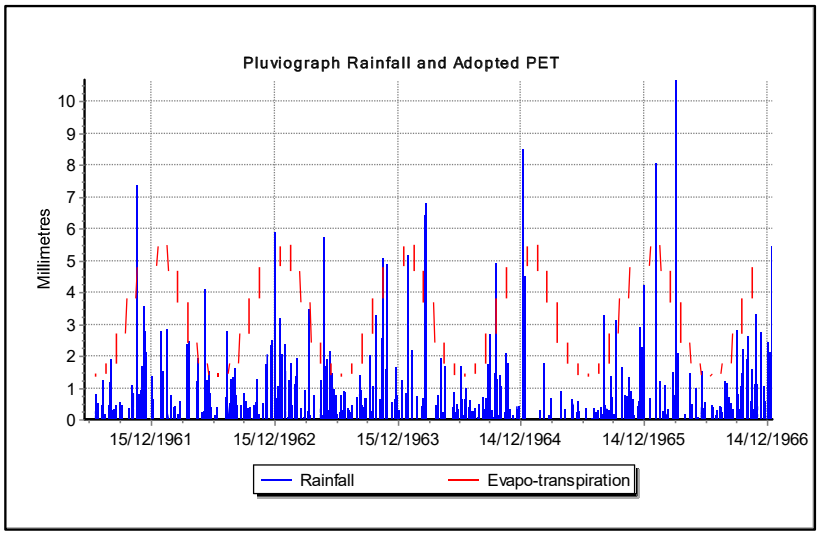
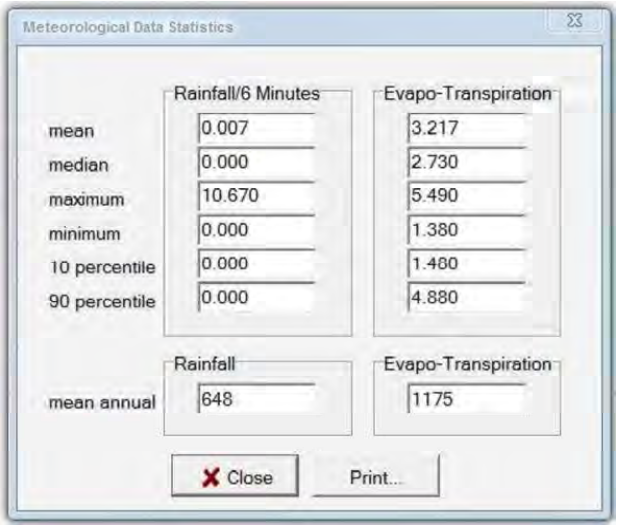


Figure 7 – Pluviougraph and PET Data Used in Water Quality Modelling

Table 3 - Pluviougraph and PET Data Used in Water Quality Modelling



3.4.2 IFD Data

Intensity Frequency and Duration (IFD) for frequent and infrequent storms data was obtained from the BOM and is shown in **Figure 8**. The six-hour, 2-year storm (0.5 EY) is 6.45 mm/h which yields a rainfall erosivity R-factor of 1120 which is low.

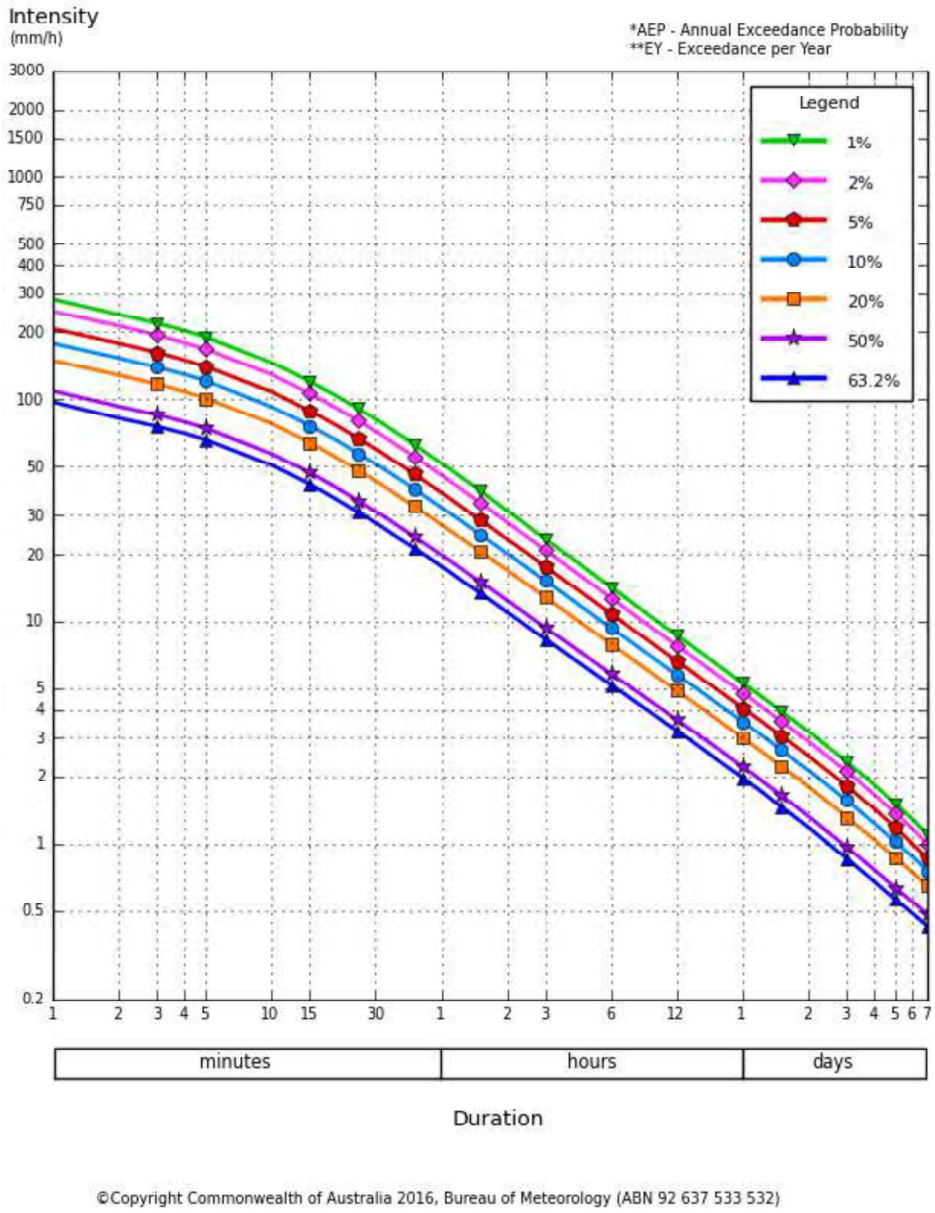


Figure 8 – IFD Data Graph (frequent and infrequent)

4. MATERIAL AND RUNOFF CHARACTERISATION

4.1 RAW MATERIALS

The Project Site accepts, stores, processes, uses and sells a variety of sand, soil and gravel products. All the products are classified as one of the following:

- Excavated natural materials (ENM); or
- Recovered Aggregates

ENM materials are managed under the Excavated Natural Materials Order 2014. Where applicable recovered aggregates are managed under the Recovered Aggregate Order 2014, although some of the aggregate products are decorative landscaping gravels. All materials are inert and contain nil or minor quantities of organic material. Mulches and composts are not processed or stored onsite. Runoff derived from stockpiles of these materials is only expected to contain sediment and to have an almost neutral pH. Further, it is not expected to contain any toxicants such as heavy metals. Runoff volumes from the storage areas of these materials would be in direct response to incident rainfall.

5. PROPOSED WATER MANAGEMENT

5.1 THE PROJECT SITE ENTRANCE

Run-on entering the Project Site from the nearby junction of River Road and Kite Street will be managed by Council who will, most likely, install a new stormwater pit in the road and provide a formalised street access.

5.2 LANDSCAPING MATERIALS YARD

The Landscaping Materials Yard occupies an area of about 17,250m^2. It generally drains west towards a raised perimeter bund parallel to the Lachlan River. The bund will be extended to direct surface runoff north and into a sediment basin. A raised perimeter bund and dirty water diversion drain would be built along the north-western property boundary (Appendix 1 drawing referenced 19000032_P01_SWMP01) to direct surface runoff south and into the sediment basin.

Run-on from the east will be diverted away from the area by installing diversion drains (CD1 & CD2); these will effectively divert run-on along the former railway easement. Given the flat nature of the railway easement, some run-on would be diverted north into a drainage easement whilst some would be diverted south, to join the offsite run-on collected near the Project Site entrance (Section 5.1).

The sediment basin would be a 'Type D' basin as described in Landcom (2004). The design rainfall event for the basin is 44.9 mm (5-day, 95th%ile). Therefore, it is assumed the basin will overflow in an event of more than 44.9 mm over any 5-day period. Within 5 calendar days of the conclusion of any rainfall event causing runoff, the basin must be empty, ready for the next rainfall event. If rainfall (causing runoff) occurs again within 5-days of the previous rain event, the 5-day requirement re-sets.

Flocculation can be achieved using gypsum at a rate of approximately 30 kg/100 m^3 of stormwater. Alternative flocculating agents can only be used by approval. Refer to manufacturers guidelines for dosage details. Ensure the flocculant/coagulant is thoroughly mixed/diluted with water prior to spreading evenly over the entire sediment basin surface for proper treatment of water.

Additional volume can be provided within the sediment basin for storing water if so desired.

The dimensions and properties of the basin are given in Appendix 1 (drawing referenced 19000032_P01_SWMP01). The sediment basin will discharge into the existing incised drainage easement along the north-western boundary via a spillway designed to be hydraulically stable in the 100 year time of concentration storm event.

The target discharge water quality is given in **Table 4**. All parameters (except TSS) would be measured on site using hand-held equipment and logged for submission in the annual environmental management report. TSS would initially be tested at a laboratory and a correlation between it and turbidity would be developed with the aim that turbidity could be solely used in the future (as it can be measured instantly on site).

Periodically (approximately every 6-months) or whenever sediment accumulates to more than 60% of the Sediment Storage Volume (delineated by a permanent marker stake), trapped and settled sediment would be removed from the basin, stockpiled within the Landscape Materials Yard, drained, and sold as product (after blending if necessary).

Table 4 – Target Discharge Water Quality

Parameter	Target	
	Percentile	**Value**
Turbidity	90th	<100 NTU[3]
Total suspended solids	90th	< 50mg/L
pH	100th	6.5 – 8.5
Oil and grease	100th	None visible
Salinity	90th	<340 µS/cm

5.3 WATER STORAGE CELL

Contaminated water from the truck wash bay will directed to a water storage cell located within the proposed concrete-sealed work area. This water would be preferentially used in the manufacture of concrete in the Applicant's concrete batching plant adjacent to the Project Site.

The water storage cell is designed to contain runoff up to the 72-hour, 5-year storm event (96.5mm); the volume would be 20.7m^3 for the truck wash bay area. A first flush pit sized to contain the first 20mm of runoff (4.3 m^3) plus 1.1 m^3 sediment storage volumes would be installed at the inlet to the water storage cell. Water will drain from the first flush pit to the water storage cell through concrete baffles.. Overflow from the water storage cell would be diverted via the raised perimeter bund to the sediment basin where it would be mixed with a much larger volume of water.

The concrete sealed work area and washout bays would have the following design criteria

- Concrete sealed work area adequate to permit use by laden vehicles.
- Concrete lined, in-ground washout bays (maximum depth of two metres) suitable for washing out agitator trucks.
  - The washout bays would be constructed in a manner that would permit retention of aggregate within the washout bay and collection of washout water within an adjacent water storage cell for reuse.
  - The washout bays would be designed to facilitate removal of aggregate using a front-end loader.

[3] IECA (2008).

- Vehicular access to the concrete sealed work area would be via rollover bunds which would ensure that surface water is not permitted to flow from unsealed work areas to the concrete sealed area or vice versa.
- Surface water within the work area would be directed to flow into the washout bays and water storage cell for reuse.
  - Accumulated water would not be permitted to flow to natural drainage or to the dirty water management system.
  - Accumulated water would preferentially be pumped to the Applicant's adjacent concrete batching plant for use in the production of concrete.
  - An automatic level controller would be installed to ensure that accumulated water is pumped to the concrete batching plant once a sufficient quantity is available.

6. IMPACT ASSESSMENT

6.1 WATER QUALITY MODELLING

MUSIC stormwater modelling has been undertaken to estimate the impact of the development on water quality using the climate data for the Project Site (see Section 3.4). The following assumptions and model set up parameters were adopted:

- The landscape materials yard is devoid of vegetation and so was modelled as 100% impervious. The landscape materials yard is assumed to have a rainfall threshold of 6mm, as it has mostly an earthen base[4].
- The stormwater concentration parameters used for the landscape materials yard are MUSIC default values for an unsealed road (to represent the loose, dusty nature).
- The water quality measures described in Sections 5.2 are included in the model.
- The performance of the flocculation system at the sediment basin is simulated with a generic treatment node that:
    - Reduces the concentration of TSS in outflows to the target 50 mg/L.
    - Reduces phosphorous to the same degree as sediment (75%, on the assumption that phosphorous would be closely associated with sediment).
    - Does not affect nitrogen.
- The water quality targets are those given in **Table 4**.

The pollutant concentration result for TSS is given in **Figure 9**, although, of course, that is a function of the generic node limiting the TSS concentration to 50mg/L as that will be the target after flocculation.

The pollutant concentrations for Total Phosphorous (TP) and Total Nitrogen (TN) are given in **Figure 10** and **Figure 11** respectively. They suggest runoff will contain concentrations of these pollutants above the WQO triggers given in **Table 1**. However, given the small contribution of this catchment to the entire Lachlan River Catchment, the mixing effect in the River would most likely ensure there would be little, if any, impact.

[4] This yields an overall runoff coefficient of about 50% which is reasonable for such an area that contains a significant proportion of pervious stockpiles.

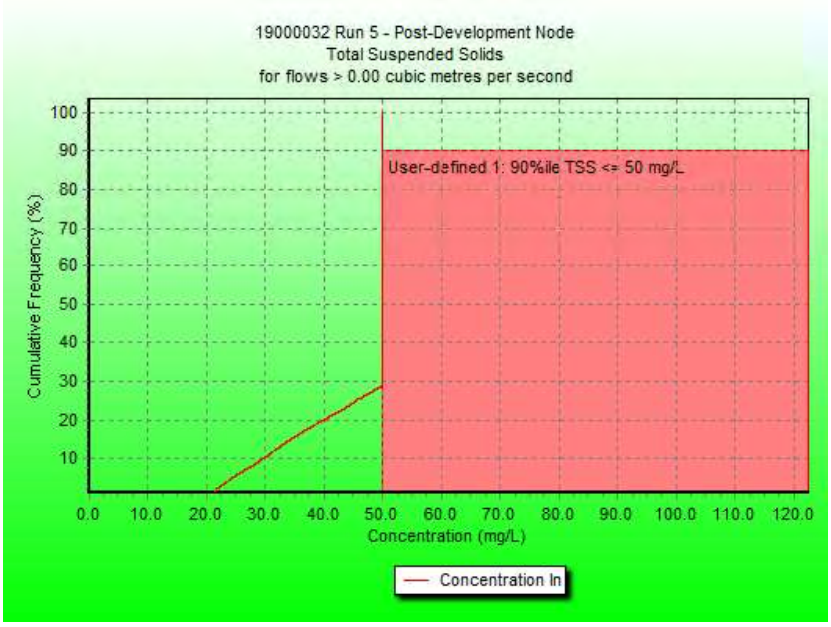


Figure 9 – Cumulative Frequency Graph for TSS

Figure 10 - Cumulative Frequency Graph for TP

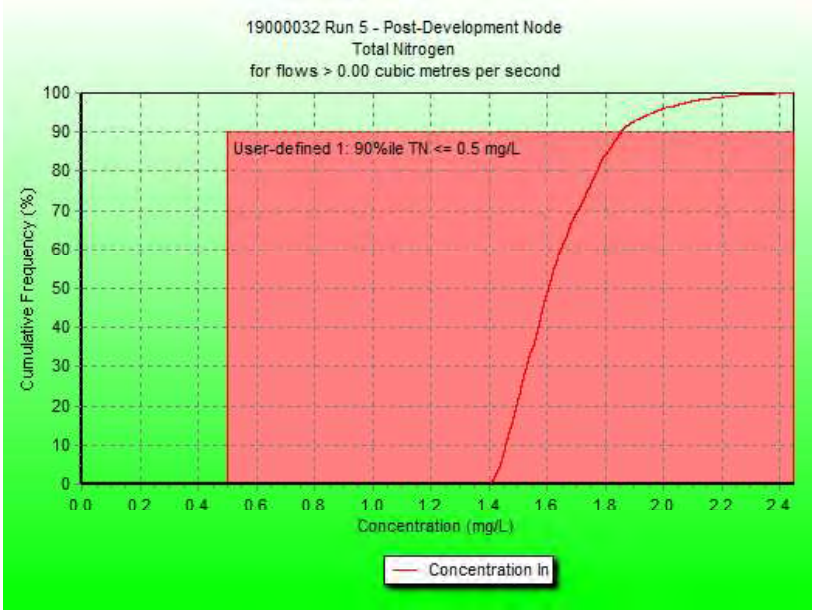


Figure 11 - Cumulative Frequency Graph for TN

6.2 TREATMENT TRAIN EFFECTIVENESS

The treatment train (water storage cell and sediment basin) effectiveness of the proposed measures is estimated in **Table 5**. Sediment, and therefore associated phosphorous, is expected to be reduced by more than 90%[5]. Flow would be reduced by 10%.

Table 5 – Treatment Train Effectiveness

	Sources	Residual Load	% Reduction
Flow (ML/yr)	5.59	5.15	7.8
Total Suspended Solids (kg/yr)	7200	253	96.5
Total Phosphorus (kg/yr)	3.23	0.256	92.1
Total Nitrogen (kg/yr)	13.3	8.82	33.9
Gross Pollutants (kg/yr)	174	0	100

[5] Compared to doing nothing

6.3 SALINITY

The salinity in the Lachlan River is reasonably consistent (**Table 1**) with a mean value of 340 µS/cm. Given the inert nature of the material stockpiles it is unlikely that runoff derived from them will be saline but it will be measured as part of the discharge monitoring regime at Sediment Basin 2. Saline runoff is not likely to occur and so it is unlikely there will be an impact on the Lachlan River.

6.4 FLOODING

The Project Site has the potential to be impacted by both local flooding and regional flooding. Local flooding could be caused by run-on flow from an external catchment or local run-off within the Project Site that has been poorly managed. Regional flooding may be caused from a major external source such as the Lachlan River overtopping its banks and flooding the Project Site. Both types of flood can occur independently or be combined/interact depending on the spatial extent, duration and intensity of the storm event

6.4.1 Local Flooding

As described in Section 3.2, local runoff from the adjacent residential and light industrial areas to the north and northeast of the Project Site from Kite Street and River Street is directed towards the Project Site. It is proposed to intercept any run-on water in clean water diversion channels and redirect flows north and south to existing drainage. One channel (CD1) will collect runoff on the western side of the disused rail corridor and flow to the north. Another channel (CD2) will collect runoff on the eastern side of the rail corridor and flow to the south east corner of the project site before discharging into an existing culvert which passes under the rail line. The existing channel and culvert opening flowing south from the Project Site is shown in Figure 12.

Figure 12 – Existing Clean Water Diversion Channel Flowing South

The channels would be designed to cater for the 1 in 20 year ARI event with the following characteristics as provided in **Table 6**.

Table 6 – Clean Water Channel Characteristics

	CD1	CD2
Catchment Area (ha)	0.7	8.3
Peak Flow Rate – 1 in 20 Yr ARI (m^3/s)	0.24	2.7
Base Width (m)	0.5	1.5
Depth (incl. freeboard) (m)	0.5	0.9
Side Slopes (1 in x)	2	2
Lining	Vegetation	Vegetation
Mannings Roughness Co-efficient	0.03-0.06	0.03-0.06
Longitudinal Gradient (%)	2	1.7
Velocity (m/s)	1.2	2.1

Other flows generated on site will be managed via the on-site drainage system that includes open channels and perimeter bunds. The channels are to be designed to cater for the 1 in 20 year event and direct all runoff to water quality treatment devices as described in Section 5.

6.4.2 Regional Flooding

The project site is located adjacent to the Lachlan River which has a catchment area at Cowra of around 11,000km^2. Cowra has experienced several major floods with the highest reported flood in 1870, however the 1952 flood is the highest flood for which reliable records are available (SMEC, 2006).

The Cowra Local Environmental Plan (LEP) 2012 and associated maps identify land within a "Flood planning area" and land below the flood planning level of the 1:100 year Average Recurrence Interval (ARI) flood event plus 0.5m freeboard. A portion of the Project Site is situated within the flood planning area as shown in Figure 13.

A Mike-11 flood model was developed by Lyall & Macoun Consulting Engineers in 1999 with cross sections every 300m-500m. The Project Site is roughly halfway between the flood cross sections 7.166 and 7.720 with the results of the flood model shown in the **Table 7**.

Table 7 – Flood Model Results

	XS 7.166	XS 7.72	Average Flood Level (m AHD)
1:20 year ARI	287.75	287.34	287.55m
1:50 year ARI	288.59	288.18	288.39m
1:100 year ARI	289.39	288.97	289.18m

Based on the results of the flood model, the 1:100 year flood level near the Project Site is approximately 289.18m AHD (average flood level of both sections). The peak flow in the river is approximately 4200m^3/s with a velocity around 2.2m/s. The 1:50 year flood level is approximately 288.39m AHD and the 1:20 year flood level is 287.55m.

The Project Site generally slopes towards the southwest with the elevation ranging from 297m AHD to around 277m AHD with the current area of the landscaping yard extending down to RL 288m AHD. This indicates that the existing landscape yard could be inundated by up to around 1.2m for a 1:100 year flood event.

(Ref: LEP 2012 Flood Planning Map – Sheet FLD_002)

Figure 13 – LEP Flood Planning Area Map Extract

It is proposed to erect a stabilised bund along the western edge of the existing landscape yard. The bund will serve two purposes, it will direct dirty water to Sediment Basin 2 and act as flood levee for large storm events in the Lachlan River. The bund will need to extend to a height of around 289.18m AHD to protect the yard from the 1:100 year ARI flood event (without any freeboard). The levee is to be approximately 1.68m tall at the lowest point of the Landscaping materials Yard to provide immunity from the 1:100 year ARI event (plus 0.5m freeboard).

The levee will partially block a small portion of the river floodplain during large flood events. Figure 14 below highlights the extent that the river cross section will be blocked. Assuming that the levee extends to the 1:100 year ARI flood level, the flood area lost for conveyance would be approximately 11.5m^2 out of a total cross sectional are of 3,922m^2 (<0.3%). As the flooded section is approximately 1200m long, the flood level would need to rise around 10mm to account for the lost area. This is not expected to be a nuisance for neighbouring properties. The proposed levee would have no impact on the 1:20 year ARI flood event.

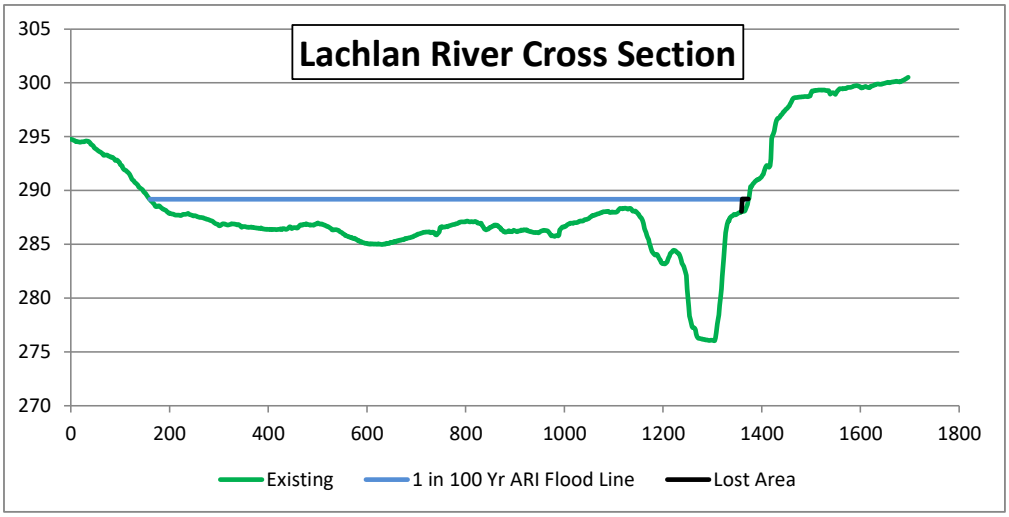


Figure 14 – Lachlan River Cross Section

Clause 7.2 of the LEP indicates that development within the Flood Planning Area must satisfy the following:

a) is compatible with the flood hazard of the land, and
b) is not likely to significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and
c) incorporates appropriate measures to manage risk to life from flood, and
d) is not likely to significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and
e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.

The proposed levee and potential impact to adjacent properties is expected to meet Clause 7.2 of the LEP as stated above.

6.5 POTENTIAL IMPACT SUMMARY

Table 8 provides a summary of the potential impacts and their mitigation.

Table 8 – Summary of Potential Impacts and Their Mitigation

Water Quality Objective	Aim	Mitigation Measures	Impact Expected?
Aquatic Ecosystems	Maintaining or improving the ecological condition of waterbodies and their riparian zones over the long term.	Separating clean and dirty water, including upslope clean water diversion. Separating dirty and sediment-laden water. First Flush Pit Water Storage Cell (90% re-use of dirty water) Sediment Basin Flocculation of Sediment Basin Monitoring of discharges and reporting thereon.	No
Visual Amenity	Aesthetic qualities of waters		No
Secondary contact recreation	Maintaining or improving water quality for activities such as boating and wading, where there is a low probability of water being swallowed.		No
Primary contact recreation	Maintaining or improving water quality for activities such as swimming in which there is a high probability of water being swallowed		No
Livestock water supply	Protecting water quality to maximise the production of healthy livestock		No
Irrigation water supply	Protecting the quality of waters applied to crops and pasture.		No
Drinking water	Refers to the quality of drinking water drawn from the raw surface and groundwater sources before any treatment		No
Flooding	Minimise impacts to adjacent property owners. Minimise the influx of floodwater onto the Project Site.	Minimal changes to the existing flood volumes and conveyance capacity.	No

7. SITE MONITORING

7.1 WATER QUALITY

Discharge water quality will be measured at the sediment basin for the suite of parameters given in **Table 4** prior to discharge. The Project Site manager will measure all parameters (except Total Suspended Solids (TSS)) with a calibrated water quality meter prior to dewatering. Should the water quality within the basin change between testing and discharge (e.g. additional rainfall, resuspension of settled sediment), additional samples will be needed to confirm water quality prior to discharge. Initially (the first year) a sample from each event will be sent to a NATA registered laboratory to measure TSS. Once at least 10 such samples have been tested, it should be possible to provide a correlation between TSS and NTU. The required NTU can then be adjusted to correspond to 50mg/L of TSS and used from that time forward, without the need for further TSS monitoring[6].

7.2 GENERAL SITE MANAGEMENT

The Project Site will generally be kept in an organised well-managed condition:

- Stockpiles will be located away from concentrated flow paths.
- Raised perimeter bunds and drains (clean and dirty water) will be regularly inspected and repaired as necessary.
- Sediment basin and diversion drain outlets will be regularly inspected and repaired as necessary.
- Adequate flocculant will be stored on site and regularly replaced; flocculation tools will be regularly maintained.
- Sediment will be removed from the sediment basins and first flush pit as soon as more than 60% of their sediment storage volumes are compromised.
- Trucks will only be washed down in the truck wash bays.
- All pumps, filters etc. associated with re-using water from the water storage cell will be regularly maintained.

[6] NTU can be measured instantly on site.

APPENDIX 1 – DRAWING 19000032_P01_SWMP01

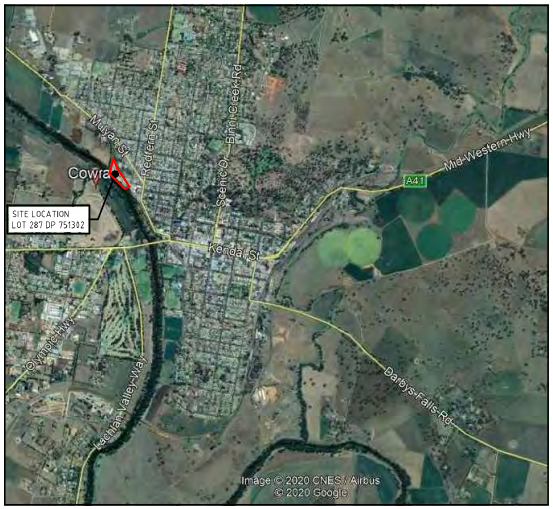
BYRANT'S LANDSCAPING MATERIALS YARD
COWRA, NSW
CIVIL WORKS

SOIL AND SURFACE WATER MANAGEMENT PLANS

FINAL

DRAWING SCHEDULE

DRG. No.	DRAWING TITLE
SWMP00	TITLE SHEET, LOCALITY PLAN AND DRAWING SCHEDULE - SHEET 1 OF 8
SWMP01	SURFACE WATER MANAGEMENT PLAN - OPERATIONAL PHASE - SHEET 2 OF 8
SWMP02	SURFACE WATER MANAGEMENT PLAN - DETAILS & SECTIONS - SHEET 3OF 8
SWMP03	SURFACE WATER MANAGEMENT PLAN - DETAILS & SECTIONS - SHEET 4 OF 8
SWMP04	SOIL AND WATER MANAGEMENT PLAN - GENERAL REQUIREMENTS & NOTES - SHEET 5 OF 8
SWMP05	SOIL AND WATER MANAGEMENT PLAN - CONSTRUCTION PHASE - SHEET 6 OF 8
SWMP06	SOIL AND WATER MANAGEMENT PLAN - STANDARD DRAWINGS - SHEET 7 OF 8
SWMP07	SOIL AND WATER MANAGEMENT PLAN - STANDARD DRAWINGS - SHEET 8 0F 8



LOCALITY PLAN
NOT TO SCALE

NOT FOR CONSTRUCITON

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
02	17/02/23	L.O.	L.O.	B.J.	FINAL ISSUE - AMENDED TO REFLECT CLIENT COMMENT
01	16/02/23	L.O.	L.O.	B.J.	UPDATED TO REMOVE CONCRETE BATCHING PLANT
00	17/06/20	L.O.	L.O.	B.J.	FINAL ISSUE
A	19/05/20	L.O.	L.O.	B.J.	DRAFT ISSUE

DRAWING STATUS
DESIGN BY: L.O.
DRAWN BY: L.O.
FINAL APPROVAL: B.J.
SCALE: (on A3 Original) N.T.S.
FINAL

North

CLIENT: rwcorkery&co

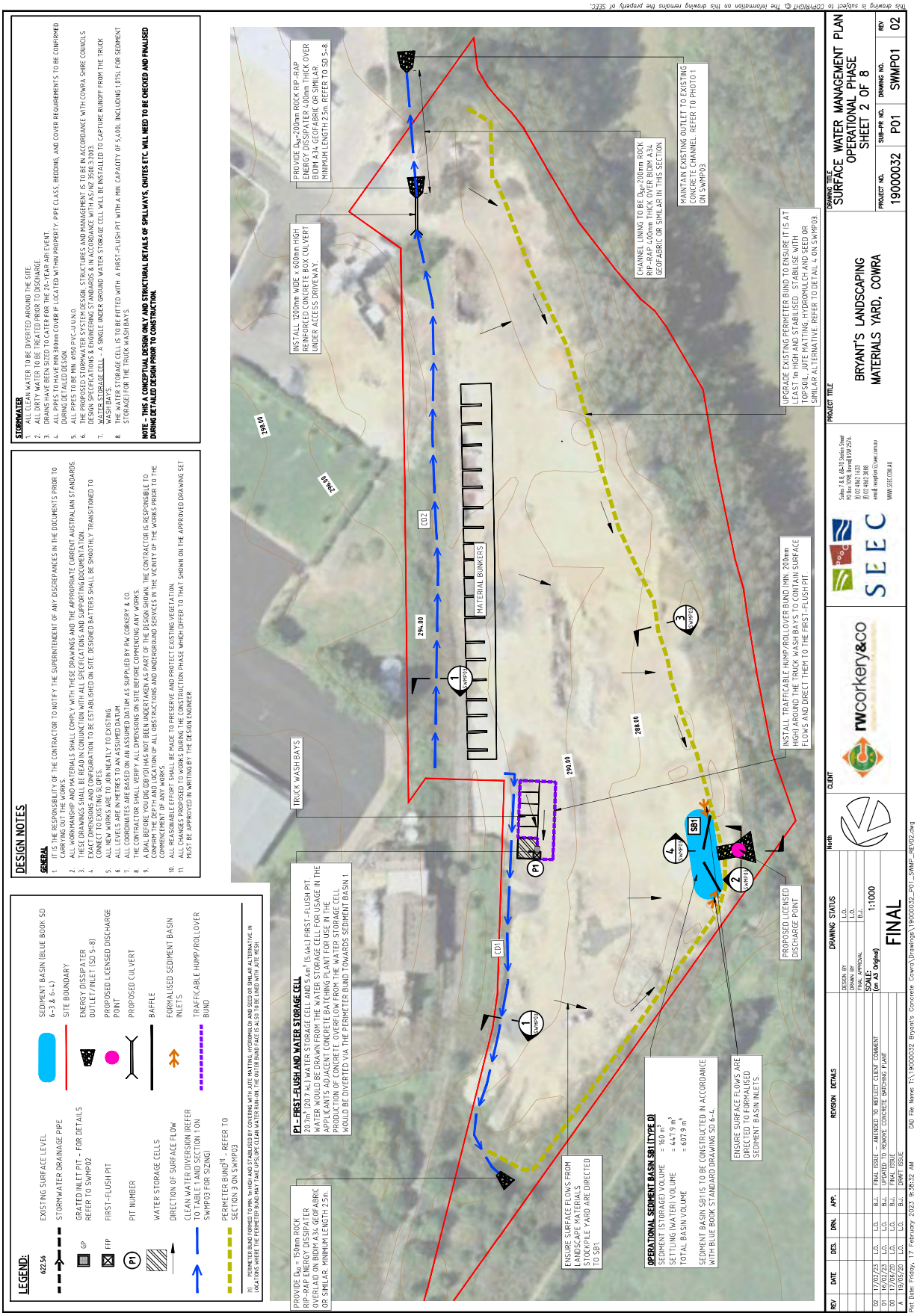
SEEC
Suites 7 & 8, 68-70 Station Street
PO Box 1098, Bowral NSW 2576
(t) 02 4862 1633
(f) 02 4862 3088
email: reception@seec.com.au
WWW.SEEC.COM.AU

PROJECT TITLE: BRYANT'S LANDSCAPING MATERIALS YARD, COWRA

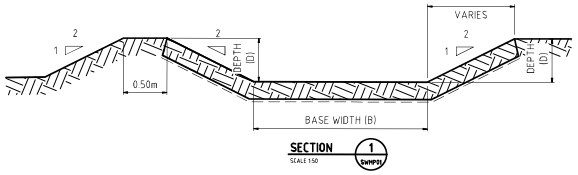
DRAWING TITLE: TITLE SHEET, LOCALITY PLAN AND DRAWING SCHEDULE SHEET 1 OF 8

PROJECT NO.	SUB-PR NO.	DRAWING NO.	REV
19000032	P01	SWMP00	02

Plot Date: Friday, 17 February 2023 9:35:43 AM CAD File Name: T:\19000032 Bryant's Concrete Cowra\Drawings\19000032_P01_SWMP_REV02.dwg

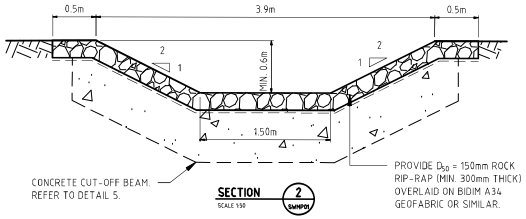


TRAFFICABLE HUMP/BUND (MIN. 200mm HIGH) TO CONTAIN SURFACE FLOWS WITHIN CEMENTIOUS AREA AND DIRECT FLOWS TOWARDS GRATED PIT.
PROVIDE HIGH FLOW WEIR OVERFLOW IN DIVERSION PIT SET AT EXISTING GROUND LEVEL.
Ø150mm INLET PIPE FROM GRATED PITS IN CEMENTIOUS AREAS
CONCRETE BAFFLE TO WATER STORAGE CELL
Ø225mm RCP OVERFLOW PIPE TOWARDS SEDIMENT BASIN SB1
P1
900 x 1200mm GRATED INLET PIT
SCALE 1:50
5.4m³ (5.4kL) FIRST-FLUSH VOLUME
1.0m³ (1.1kL) SEDIMENT STORAGE VOLUME
20.7m³ (20.7kL) WATER STORAGE CELL
TYPICAL CROSS SECTION THROUGH 5.4m³ (5.4kL) FIRST-FLUSH PIT AND 20.7m³ (20.7kL) WATER STORAGE CELL FOR TRUCK WASH BAYS
SCALE 1:50
NOTE - THIS A CONCEPTUAL DESIGN ONLY AND STRUCTURAL DETAILS OF SPILLWAYS, CHUTES ETC. WILL NEED TO BE CHECKED AND FINALISED DURING DETAILED DESIGN PRIOR TO CONSTRUCTION.
REV DATE DES. DRN. APP. REVISION DETAILS
02 17/02/23 L.O. L.O. B.J. FINAL ISSUE - AMENDED TO REFLECT CLIENT COMMENT
01 16/02/23 L.O. L.O. B.J. UPDATED TO REMOVE CONCRETE BATCHING PLANT
00 17/08/20 L.O. L.O. B.J. FINAL ISSUE
A 19/05/20 L.O. L.O. B.J. DRAFT ISSUE
Plot Date: Friday, 17 February 2023 9:41:01 AM CAD File Name: I:\19000032 Bryants Concrete Cowra\Drawings\19000032_P01_SWMP_REV02.dwg
DRAWING STATUS
DESIGN BY L.O.
DRAWN BY L.O.
FINAL APPROVAL B.J.
SCALE AS SHOWN
(on A3 Original)
FINAL
North
CLIENT
rwcorkery&co
SEEC
Suites 7 & 8, 68-70 Station Street PO Box 1098, Bowral NSW 2576 (T) 02 4861 1678 (F) 02 4861 3098 email: reception@seec.com.au WWW.SEEC.COM.AU
PROJECT TITLE
BRYANT'S LANDSCAPING MATERIALS YARD, COWRA
DRAWING TITLE
SURFACE WATER MANAGEMENT PLAN DETAILS & SECTIONS SHEET 3 OF 8
PROJECT NO. 19000032
SUB-PR NO. P01
DRAWING NO. SWMP02
REV 02
This drawing is subject to COPYRIGHT © The information on this drawing remains the property of SEEC.



TYPICAL CROSS SECTION THROUGH CLEAN WATER DIVERSION DRAINS CD1 & CD2

SCALE 1:50

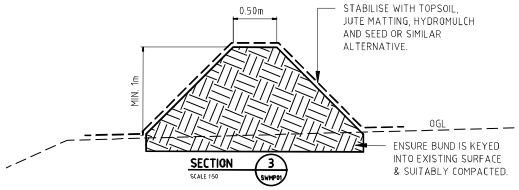


TYPICAL CROSS SECTION THROUGH SB1 SPILLWAY

SCALE 1:50

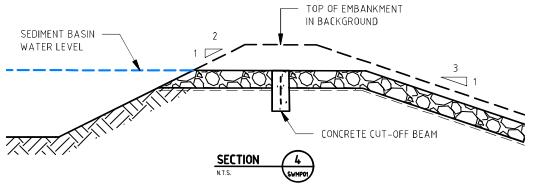
TABLE 1 - TEMPORARY DIVERSION DRAIN/BUND SIZING

DRAIN SIZING	Refer to 'Detail 1' above	
Structure Name	CD1	CD2
Area (ha)	0.7	8.3
Channel/bund depth, D (m)	0.5	0.9
Channel base width, B (m)	0.5	1.5
Channel side slope (H:V)	2	2
Channel top width, (m)	2.5	4.7
Flow depth (m)	0.24	0.6
Grade (%)	2	1.7
Velocity (m/s)	1.2	2.1
1 in 20 Discharge (m^3/s)	0.24	2.7
Lining (see below for further details)	Vegetated	Vegetated
Ensure drains grade at no less than 1%.		



TYPICAL CROSS SECTION RAISED PERIMETER BUND

SCALE 1:50



LONG SECTION THROUGH SB1 SPILLWAY

NOT TO SCALE - REFER TO BLUE BOOK SD 6-4

DRAIN/BUND STABILISATION AND LINING

Soil preparation prior to lining

- Place topsoil over entire drain surface to a minimum depth of 75mm.

Drain lining:

- Seeding + biodegradable soil polymer (i.e. Vital Stonewall or similar) + Jute matting.
  - Vital Stonewall to be applied at a maximum dilution of 1:10.
- Seeding to be a combination of a cover crop (e.g. Rye grass for winter months/Japanese Millet for summer months) and a suitable perrenial (long term) local native grass mix.

Watering

- Regular watering required where rainfall is insufficient; and
- Ensure water is applied gently (not with a pressure spray).

PHOTO 1 - EXISTING CD2 OUTLET INTO EXISTING CULVERT

NOTE - THIS A CONCEPTUAL DESIGN ONLY AND STRUCTURAL DETAILS OF SPILLWAYS, CHUTES ETC. WILL NEED TO BE CHECKED AND FINALISED DURING DETAILED DESIGN PRIOR TO CONSTRUCTION.

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
02	17/02/23	L.O.	L.O.	B.J.	FINAL ISSUE - AMENDED TO REFLECT CLIENT COMMENT
01	16/02/23	L.O.	L.O.	B.J.	UPDATED TO REMOVE CONCRETE BATCHING PLANT
00	17/06/20	L.O.	L.O.	B.J.	FINAL ISSUE
A	19/05/20	L.O.	L.O.	B.J.	DRAFT ISSUE

DRAWING STATUS

DESIGN BY	L.O.
DRAWN BY	L.O.
FINAL APPROVAL	B.J.
SCALE: (on A3 Original)	AS SHOWN

FINAL

North

CLIENT: rwcorkery&co

SEEC
Suites 7 & 8, 68-70 Station Street
PO Box 1098, Bowral NSW 2576
(t) 02 4862 1633
(f) 02 4862 3088
email: reception@seec.com.au
WWW.SEEC.COM.AU

PROJECT TITLE: BRYANT'S LANDSCAPING MATERIALS YARD, COWRA

DRAWING TITLE: SURFACE WATER MANAGEMENT PLAN DETAILS & SECTIONS SHEET 4 OF 8

PROJECT NO.	SUB-PR NO.	DRAWING NO.	REV
19000032	P01	SWMP03	02

Plot Date: Friday, 17 February 2023 9:46:47 AM CAD File Name: T:\19000032 Bryant's Concrete Cowra\Drawings\19000032_P01_SWMP_REV02.dwg

GENERAL REQUIREMENTS

EROSION AND SEDIMENT CONTROL DESIGN

This Soil and Water Management Plan (SWMP) has been prepared in accordance with the Blue Book Volume 1 (Landcom, 2004).

The predicted soil loss has been determined in accordance with the following:

A = R x K x LS x C x P

The following values have been used:

R : 1,120 (Based on IFD data)
K : 0.05 (Assumed)
LS : 3.33 (10m, 50%)
C : 1.0 (Construction stage - i.e. no soil surface protection or ground cover applied)
P : 1.3 (for general construction areas)

Based on the above data, the potential soil loss is up to 242 t/ha/yr (Soil Loss Class 3: Low to Moderate).

Under Blue Book standards, sediment basins are required if the soil loss in any catchment is > 200 t/yr. The site comprises of a single disturbed catchment of 1.7 ha, with the potential soil loss being 411.4 t/yr. Therefore, a sediment basin is required as the potential catchment soil loss is >200 t/yr.

The Sediment Basin (SB1) is located in the Landcaping Materials Yard, where sand and gravel are to be stored. Therefore SB1 has been designed for Sediment Type C.

Rainfall

1. IFD: 2year, 6hour storm intensity = 6.45mm/hr
2. Runoff coefficient (C10) = 0.9.
3. Volumetric runoff coefficient (CV) = 0.5 (assuming hydrologic group D runoff coefficient - low infiltration, high runoff).

EROSION AND SEDIMENT CONTROL INSTRUCTIONS -STAGING

Before the commencement of earthworks, the site is to be secured and the following erosion and sediment control measures installed:

1. Barrier flagging (or alternative measures) are to be installed around the edge of the clearing limits and in any additional locations as required to restrict access and to minimise unnecessary disturbance. Refer to the 'Access Control' notes.
2. Ensure site access points are stable. If not already sealed, install stabilised construction exits wherever work vehicles leave site in accordance with Standard Drawing SD 6-14 and the 'Access Control' notes.
3. Install proposed culvert under access driveway as early works and complete as soon as possible.
4. Install clean water diversions CD1 & CD2 in accordance with Table 1 (SWMP03) or to final design and where indicated on Drawing SWMP05.
5. Install sediment fencing in locations where there are gaps in the existing block wall or where there is a risk of sediment egress from site along the western boundary. Refer to Standard Drawing SD 6-8.
6. Install sediment basin SB1 where shown and to the required sizing shown on SWMP05. Refer to Standard Drawings SD 6-3 & 6-4.
7. Constructed/upgrade perimeter bund where shown on SWMP05 and to the Typical Detail (Section 4) on SWMP03.
8. Stabilise and rehabilitate any disturbance downslope of perimeter bunds. Achieve 70% cover (minimum) within 10 days. Refer to 'Stabilisation' notes.

INSTRUCTIONS FOR STRIPPING AND EARTHWORKS

1. Ensure all clean and dirty water diversions, sediment basins, sediment fencing and perimeter bunds are in place as per instructions 3 to 7, above.
2. Commence clearing and stripping. Refer to 'Soil Management and Stockpiling' notes.
3. Undertake dust suppression as required in accordance with the 'Dust Suppression' notes.
4. Monitoring, maintenance and inspections are to be carried out regularly as required, in accordance with the 'Site Inspection, Monitoring and Maintenance' notes.
5. Undertake progressive stabilisation of lands as final earthworks are completed in each area (rather than waiting until the completion of works). Refer to the 'Stabilisation' notes.

As areas that are to be vegetated or stabilised as final works are completed (i.e. at least 70% final cover over the catchment), temporary sediment and drainage controls can be decommissioned and removed.

ACCESS CONTROL

1. Install barrier fences or suitable administrative controls to define the project works and clearing limits.
2. Barrier fencing can simply be made from tape wound around star pickets or stakes. Alternatively, sediment fence, site fence or chain wire fences can be used for this purpose if so desired. Existing site flagging can also be used where they are present in the relevant locations.
3. Barrier fencing to be used to ensure that all vehicles leaving the site pass over a stable access point to minimise bogginess in these areas and minimise sediment tracking onto public roads.

SOIL MANAGEMENT AND STOCKPILING

All stockpiles must be constructed and maintained in accordance with the following:

1. Stockpiles are not to be positioned within 20m of the Lachlan River.
2. Mulched vegetation, topsoil and subsoil (if applicable) are to be stockpiled separately wherever possible.
3. Inactive stockpiles of soil are to be stabilised to achieve a C-factor of 0.1 (i.e - equivalent to 60% grass cover) within 10 days of formation using a temporary biodegradable soil polymer (e.g. Vital Stonewall), geotextile, jute matting or equivalent.

STABILISATION

1. Undertake progressive stabilisation of disturbed ground surfaces as they are completed rather than at the end of the works program.
2. Areas to be revegetated are to be topsoiled first. Refer to Standard Drawing SD 4-2.
3. Appropriate seedbed preparation should be carried out when revegetating lands. Refer to Standard Drawing SD 7-1.
4. Wherever possible, re-use cleared/mulched vegetation for either temporary or permanent stabilisation of disturbed areas. If mulch is not available or appropriate then the use of jute mesh, soil stabilisers (e.g. Vital Stonewall) hydomulching or an appropriate alternative should be considered for provision of ground cover until vegetation has established.
5. Prior to forecast rainfall (>50% chance of 5mm or more in 24 hours), high winds or site shutdown (> 3 days), batters will be 'locked down' as much as is practicable using temporary ground covers such as soil binders (e.g. Vital Stonewall), biodegradable matting, geotextile matting, hydromulch or similar.

DUST SUPPRESSION

1. Dust suppression is to be carried out whenever necessary to minimise sediments becoming air borne due to wind erosion.
2. An appropriate water source for dust suppression must be identified prior to earthworks.
3. Temporary stabilisers (e.g. Vital Stonewall), geotextile, jute matting or equivalent can be used in non-trafficked areas to assist with dust control.
4. Wherever possible machinery and vehicles are to use sealed surfaces within the work area to access the site.

SEDIMENT BASIN

1. Dirty water accumulating in excavations/cut sections can be pumped or carted to the sediment basin providing adequate capacity is available and the basins won't overflow as a result. Note that the 5-day maintenance requirement for the basin to be emptied still applies (see below).
2. Within 5 calendar days of the conclusion of any rainfall causing runoff, the sediment basin must be empty, ready for the next rainfall event. If rainfall (causing runoff) occurs again within 5 days of the previous rain event, the 5-day requirement re-sets.
3. Dirty water accumulating in the sediment basin can be used onsite for dust suppression or construction purposes without treatment. Note that the 5-day maintenance requirement for the basins to be emptied still applies.
4. The design rainfall event for the sediment basin is 44.9 mm (5-day, 95th %'ile). Therefore, it is assumed the basin will overflow in an event of more than 44.9 mm over any 5-day period.
5. The sediment basin must include a lined weir overflow/spillway. Outlet must be onto stable lands or into a waterway.
6. Additional volume can be provided in the sediment basin for storing water if so desired (i.e. it can be made bigger than is required by this SWMP).
7. Baffles must be installed within sediment basin to achieve a minimum 3:1 (length:width) ratio.
8. A marker peg (or similar) must be included in the basin showing the top level of the Sediment Storage volume.
9. The sediment basin must be de-silted whenever sediment accumulates to more than 60% of the Sediment Storage Volume. Sediment removed from the basin can be taken to a stockpile area, buried onsite or used as general fill. Ensure sediment removed from the basin is not placed where it could wash, blow or fall offsite.

DIRTY WATER TREATMENT AND DISCHARGE REQUIREMENTS

1. Any active discharge of water from the project (i.e. where water is moved offsite via direct action such as pumping rather than flowing off the project as a result of heavy rainfall) is to achieve:
   1.1. 50mg/L or less TSS (Total Suspended Sediment) or equivalent NTU; and
   1.2. pH 6.5 to 8.5; and
   1.3. no visible oil and grease.
2. Flocculation of the 'Type D' sediment basin (SB1) can be achieved by using gypsum at a rate of approximately 30 kg/100 m^3 of stormwater. Alternative flocculating agents can only be used by approval. Refer to manufacturers guidelines for dosage details.
3. Ensure the flocculant/coagulant is thoroughly mixed/diluted with water (e.g. within the IBC) prior to spreading evenly over the entire pond surface for proper treatment of water. Dirty water from the sumps can be used for mixing the flocculant/coagulant.
4. These de-watering requirements apply to dirty water accumulating in any sort of excavation, sump, or other ponded water body on the project.
5. If the water is going to be used within the construction site for dust-suppression or construction purposes and will drain back into the sediment capture system it does not require treatment.

RAINFALL PREPARATION PROCEDURE

1. The weather forecast is to be monitored regularly (at least daily and hourly when rainfall is imminent) by the site environmental manager (or their representative).
2. Prior to forecast rainfall (> 50% chance of 10mm or more over 24 hours), the following will occur:
   2.1. The site environment manager (or their representative) is to inspect (and record the condition of, and any action required) the condition of all erosion and sediment controls;
   2.2. Diversion channels are to be installed in the locations shown on the plans to take upslope clean water flows around/through the works.
   2.3. All exposed soils within/near waterways that are not contained within appropriate sediment controls are to be stabilised with temporary ground covers (i.e. Vital P47/stonwall, geotextile or black plastic or equivalent).

SITE INSPECTION, MONITORING AND MAINTENANCE

1. Regular site inspections are to be conducted by the site environment manager (or their representative) and records of all such inspections are to be made available upon inspection. Inspections are to be undertaken:
   1.1. At least weekly during normal construction hours; and
   1.2. Prior to forecast rainfall (>50% chance of 10mm or more in 24 hours); and
   1.3. Daily during rain events (if safe to do so); and
   1.4. Within 24 hours of the cessation of a rain event that causes runoff (if safe to do so).
2. Additional erosion and sediment controls will be installed as necessary to ensure environmental protection.
3. Sediment or rocks tracked from the site will be removed from public roads as soon as possible (e.g. with street sweepers).
4. After rainfall, sediment accumulated in trapping devices (e.g. sediment fence) will be removed to a secure location where it can't wash or blow offsite (preferably to an active stockpile).
5. Weather conditions will be monitored onsite and daily rainfall will be recorded.
6. Safe storage areas for wastes, fuels, excess concrete and other potential contaminants are to be delineated by the site manager.
7. Other ESC measures are to be maintained when the capacity of the ESC measure falls below 75%. This is to be completed by the end of the day or immediately prior to a rain fall event.

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
02	17/02/23	L.O.	L.O.	B.J.	FINAL ISSUE - AMENDED TO REFLECT CLIENT COMMENT
01	16/02/23	L.O.	L.O.	B.J.	UPDATED TO REMOVE CONCRETE BATCHING PLANT
00	17/06/20	L.O.	L.O.	B.J.	FINAL ISSUE
A	19/05/20	L.O.	L.O.	B.J.	DRAFT ISSUE

DRAWING STATUS

DESIGN BY	L.O.
DRAWN BY	L.O.
FINAL APPROVAL	B.J.
SCALE: (on A3 Original)	N.T.S.

FINAL

North

CLIENT: rwcorkery&co

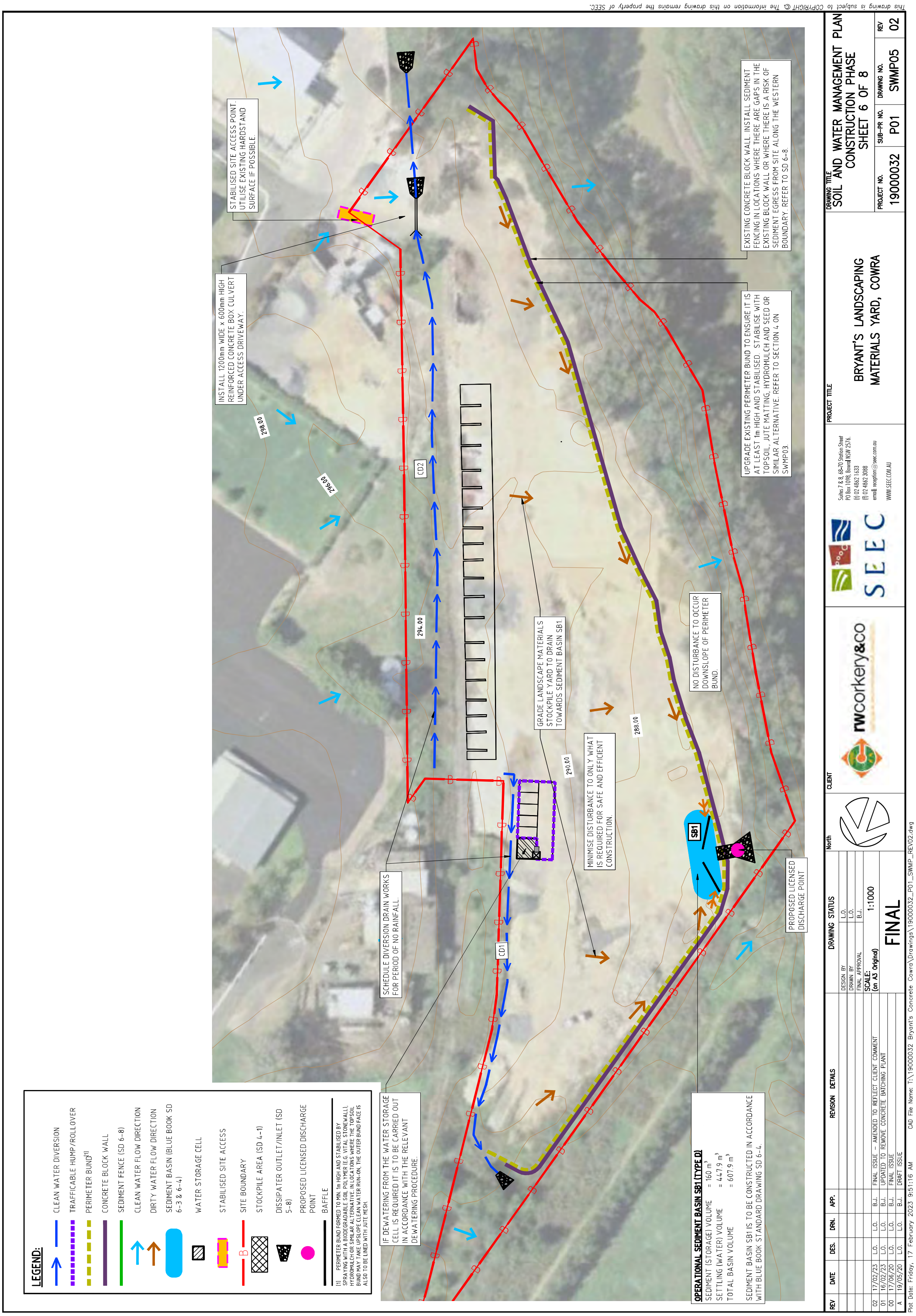
SEEC
Suites 7 & 8, 68-70 Station Street
PO Box 1098, Bowral NSW 2576.
(t) 02 4862 1633
(f) 02 4862 3088
email: reception@seec.com.au
WWW.SEEC.COM.AU

PROJECT TITLE: BRYANT'S LANDSCAPING MATERIALS YARD, COWRA

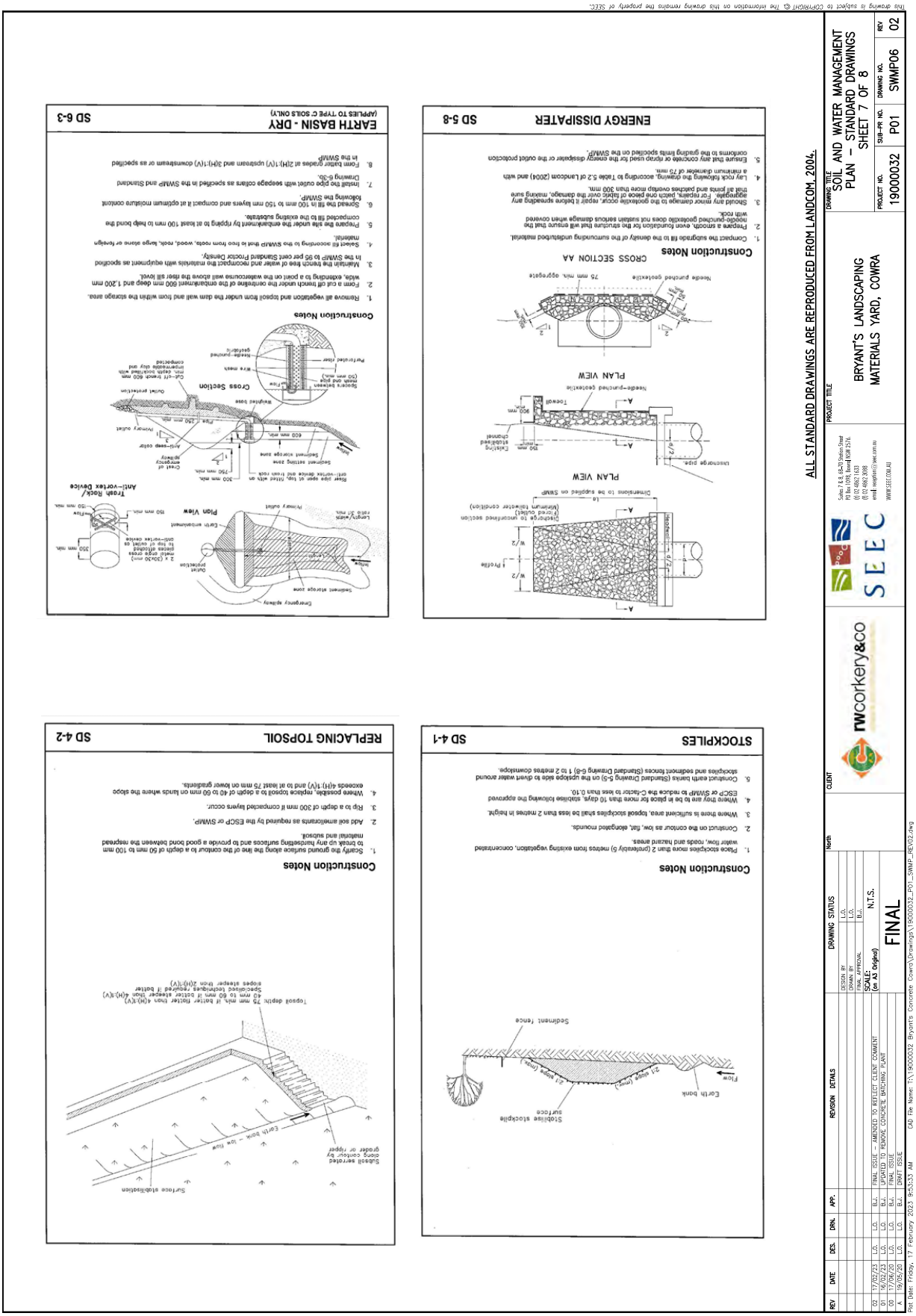
DRAWING TITLE: SOIL AND WATER MANAGEMENT PLAN GENERAL REQUIREMENTS & NOTES SHEET 5 OF 8

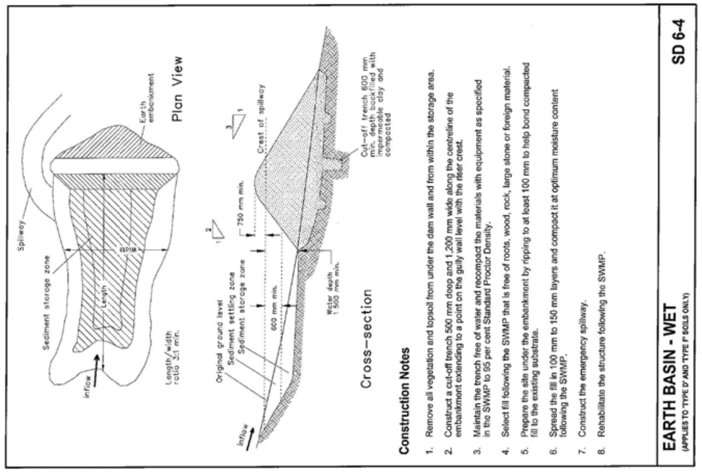
PROJECT NO.	SUB-PR NO.	DRAWING NO.	REV
19000032	P01	SWMP04	02

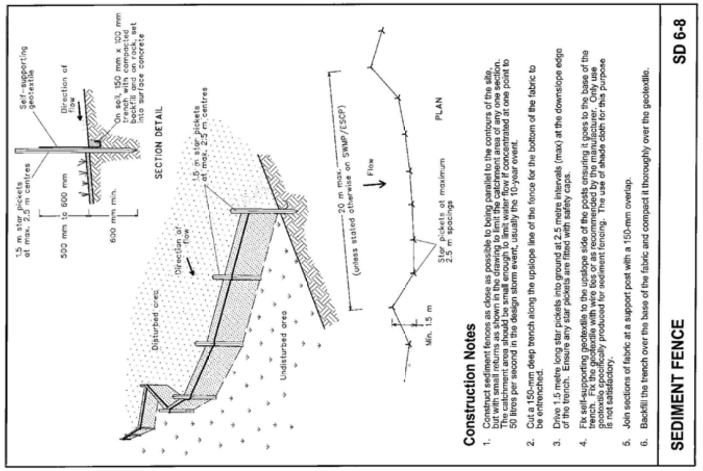
Plot Date: Friday, 17 February 2023 9:48:50 AM CAD File Name: T:\19000032 Bryant's Concrete Cowra\Drawings\19000032_P01_SWMP_REV02.dwg

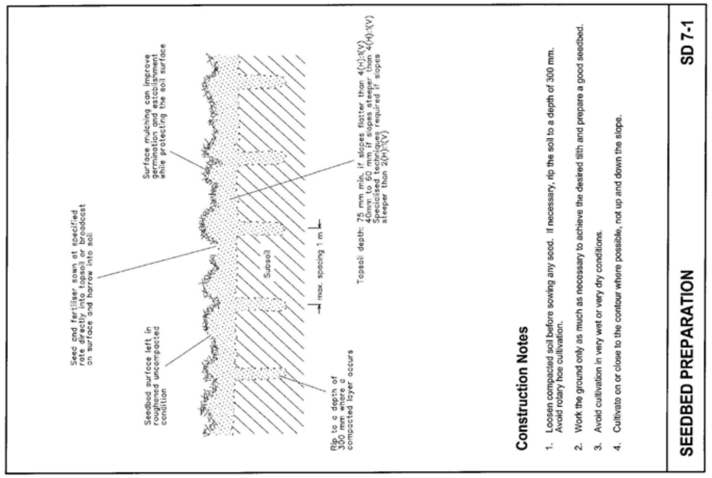


LEGEND:
CLEAN WATER DIVERSION
TRAFFICABLE HUMP/ROLLOVER
PERIMETER BUND[1]
CONCRETE BLOCK WALL
SEDIMENT FENCE (SD 6-8)
CLEAN WATER FLOW DIRECTION
DIRTY WATER FLOW DIRECTION
SEDIMENT BASIN (BLUE BOOK SD 6-3 & 6-4)
WATER STORAGE CELL
STABILISED SITE ACCESS
SITE BOUNDARY
STOCKPILE AREA (SD 4-1)
DISSIPATER OUTLET/INLET (SD 5-8)
PROPOSED LICENSED DISCHARGE POINT
BAFFLE
IF DEWATERING FROM THE WATER STORAGE CELL IS REQUIRED IT IS TO BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT DEWATERING PROCEDURE.
SCHEDULE DIVERSION DRAIN WORKS FOR PERIOD OF NO RAINFALL.
INSTALL 1200mm WIDE x 600mm HIGH REINFORCED CONCRETE BOX CULVERT UNDER ACCESS DRIVEWAY.
STABILISED SITE ACCESS POINT. UTILISE EXISTING HARDSTAND SURFACE IF POSSIBLE.
GRADE LANDSCAPE MATERIALS STOCKPILE YARD TO DRAIN TOWARDS SEDIMENT BASIN SB1
MINIMISE DISTURBANCE TO ONLY WHAT IS REQUIRED FOR SAFE AND EFFICIENT CONSTRUCTION.
NO DISTURBANCE TO OCCUR DOWNSLOPE OF PERIMETER BUND
PROPOSED LICENSED DISCHARGE POINT
UPGRADE EXISTING PERIMETER BUND TO ENSURE IT IS AT LEAST 1m HIGH AND STABILISED. STABILISE WITH TOPSOIL, JUTE MATTING, HYDROMULCH AND SEED OR SIMILAR ALTERNATIVE. REFER TO SECTION 4 ON SWMP03
EXISTING CONCRETE BLOCK WALL. INSTALL SEDIMENT FENCING IN LOCATIONS WHERE THERE ARE GAPS IN THE EXISTING BLOCK WALL OR WHERE THERE IS A RISK OF SEDIMENT EGRESS FROM SITE ALONG THE WESTERN BOUNDARY. REFER TO SD 6-8
OPERATIONAL SEDIMENT BASIN SB1 (TYPE D)
SEDIMENT (STORAGE) VOLUME = 160 m³
SETTLING (WATER) VOLUME = 447.9 m³
TOTAL BASIN VOLUME = 607.9 m³
SEDIMENT BASIN SB1 IS TO BE CONSTRUCTED IN ACCORDANCE WITH BLUE BOOK STANDARD DRAWING SD 6-4.
SB1
CD1
CD2
298.00
296.00
294.00
290.00
288.00
rwcorkery&co
SEEC
PROJECT TITLE
BRYANT'S LANDSCAPING MATERIALS YARD, COWRA
DRAWING TITLE
SOIL AND WATER MANAGEMENT PLAN CONSTRUCTION PHASE SHEET 6 OF 8
PROJECT NO. 19000032
SUB-PR NO. P01
DRAWING NO. SWMP05
REV 02
DRAWING STATUS
SCALE: (on A3 Original) 1:1000
FINAL
02 17/02/23 L.O. L.O. B.J. FINAL ISSUE - AMENDED TO REFLECT CLIENT COMMENT
01 16/02/23 L.O. L.O. B.J. UPDATED TO REMOVE CONCRETE BATCHING PLANT
00 17/06/20 L.O. L.O. B.J. FINAL ISSUE
A 19/05/20 L.O. L.O. B.J. DRAFT ISSUE
This drawing is subject to COPYRIGHT ©. The information on this drawing remains the property of SEEC.









ALL STANDARD DRAWINGS ARE REPRODUCED FROM LANDCOM, 2004.

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
02	17/02/23	L.O.	L.O.	B.J.	FINAL ISSUE – AMENDED TO REFLECT CLIENT COMMENT
01	16/02/23	L.O.	L.O.	B.J.	UPDATED TO REMOVE CONCRETE BATCHING PLANT
00	17/06/20	L.O.	L.O.	B.J.	FINAL ISSUE
A	19/05/20	L.O.	L.O.	B.J.	DRAFT ISSUE

DRAWING STATUS
DESIGN BY L.O.
DRAWN BY L.O.
FINAL APPROVAL B.J.
SCALE: (on A3 Original) N.T.S.
FINAL

North

CLIENT
rwcorkery&co

SEEC
Suites 7 & 8, 68-70 Station Street
PO Box 1098, Bowral NSW 2576.
(t) 02 4862 1633
(f) 02 4862 3088
email: reception@seec.com.au
WWW.SEEC.COM.AU

PROJECT TITLE
BRYANT'S LANDSCAPING MATERIALS YARD, COWRA

DRAWING TITLE
SOIL AND WATER MANAGEMENT PLAN – STANDARD DRAWINGS SHEET 8 OF 8

PROJECT NO.	SUB-PR NO.	DRAWING NO.	REV
19000032	P01	SWMP07	02

Plot Date: Friday, 17 February 2023 9:55:48 AM CAD File Name: T:\19000032 Bryant's Concrete Cowra\Drawings\19000032_P01_SWMP_REV02.dwg

Appendix 3

Natural Resources Access Regulator Consultation

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

A3

R.W. CORKERY & CO.
PTY. LIMITED ABN 31 002 033 712
GEOLOGICAL & ENVIRONMENTAL CONSULTANTS

19 May 2021

Shavaun Tasker
Natural Resources Access Regulator
4 Parramatta Square, 12 Darcy Street
PARRAMATTA NSW 2150

Originally sent by email to:
Shavaun.tasker@nrar.nsw.gov.au

Dear Shavaun

Re: Request for Additional Information for Proposed Development – Continued Use of an Industry at 2-4 Kite Street, Cowra NSW 2794 (DA Ref: 57/2020)

A request for additional information was received from the Natural Resources Access Regulator (NRAR) on 28 April 2021 in response to the referral of the draft Environmental Impact Statement (EIS) prepared for the Bryant's Concrete Plant located at 2-4 Kite Street, Cowra, NSW. NRAR have requested the following.

- A plan or diagram showing the proposed riparian corridor in accordance with the NRAR guideline: *Guidelines for controlled activities on waterfront land – Riparian Corridors* (the Guideline).
- A minimum riparian corridor width of 20m is required to be provided, given the constraints of the Project Site.

A plan illustrating a proposed 20m wide Vegetated Riparian Zone (VRZ) was prepared in response to this request (**Attachment A**) and reviewed by the Applicant. The plan shows:

- a VRZ with a maximum width of 20m from the top bank of the Lachlan River;
- the Landscaping Materials Yard access road and Sediment Basin 2 (SB2) encroaching into the 20m wide VRZ;
- the 20m wide VRZ extending across the southern portion of Lot 2 DP557714 (Applicant owned), Lot 1 DP1201417 (Council owned), Lot 10 DP1107219 (Council owned), and portions of the Lee Street and River Street road reserves (Council owned); and
- the exclusion of Lot 3905 DP1200283 (railway corridor, owned by Transport for NSW) from the 20m VRZ.

Unfortunately, despite NRAR's acknowledgement of constraints at the Project Site, the Applicant believes that the establishment of a 20m VRZ at the Project Site as indicated on **Attachment A** would render existing operations within the Landscaping Material Yard unworkable.

Brooklyn Office:
Level 1, 12 Dangar Road, PO Box 239, BROOKLYN NSW 2083
Telephone: (02) 9985 8511 Email: brooklyn@rwcorkery.com
Orange Office:
62 Hill Street, ORANGE NSW 2800
Telephone: (02) 6362 5411 Email: orange@rwcorkery.com
Brisbane Office:
Level 54, 111 Eagle Street, BRISBANE QLD 4000
Telephone: (07) 3205 5400 Email: brisbane@rwcorkery.com

The total workable area of the existing active Landscaping Materials Yard is approximately 18,740m^2, including approximately 4,780m^2 within the portion of the railway corridor (Lot 3905 DP1200283) currently leased by the Applicant. The exclusion of the area required to form the 20m VRZ as shown in **Attachment A** would reduce the workable area of the Landscaping Materials Yard by approximately 23% (i.e. approximately 4,400m^2).

Additionally, as the railway corridor area is currently only leased until 30 November 2024, it is possible that relinquishment of the lease by the Applicant (or refusal to renew the lease by Transport for NSW) would further reduce the size of the Landscape Materials Yard by an additional 26% (i.e. approximately 4,780m^2). In the event that both the 20m VRZ is established and the railway corridor lease is not renewed, the total workable area of the Landscaping Materials Yard would be reduced by approximately 49%. This reduction in area would mean that the continuation of existing activities within the Landscaping Materials Yard (i.e. landscaping material sales, agitator truck washout) would not be viable.

The Applicant proposes that the establishment of a 10m wide VRZ (figure to be provided) rather than a 20m VRZ at the Project Site would permit the continued operation of existing landscaping materials supply activities within the Landscaping Materials Yard. The proposed 10m wide VRZ would not be encroached upon by SB2 or the Landscaping Materials Yard access road.

It is suggested that a 10m VRZ would contribute towards improved bank stability and improved water quality and therefore positive environmental outcomes compare to current conditions. Additionally, the water management infrastructure (i.e. bunds, sediment basins, water storage cells and the implementation of a Soil and Water Management Plan) which is propose to be constructed at the Project Site as part of the development application would result in significant improvements to the quality of any water discharged from the Project Site.

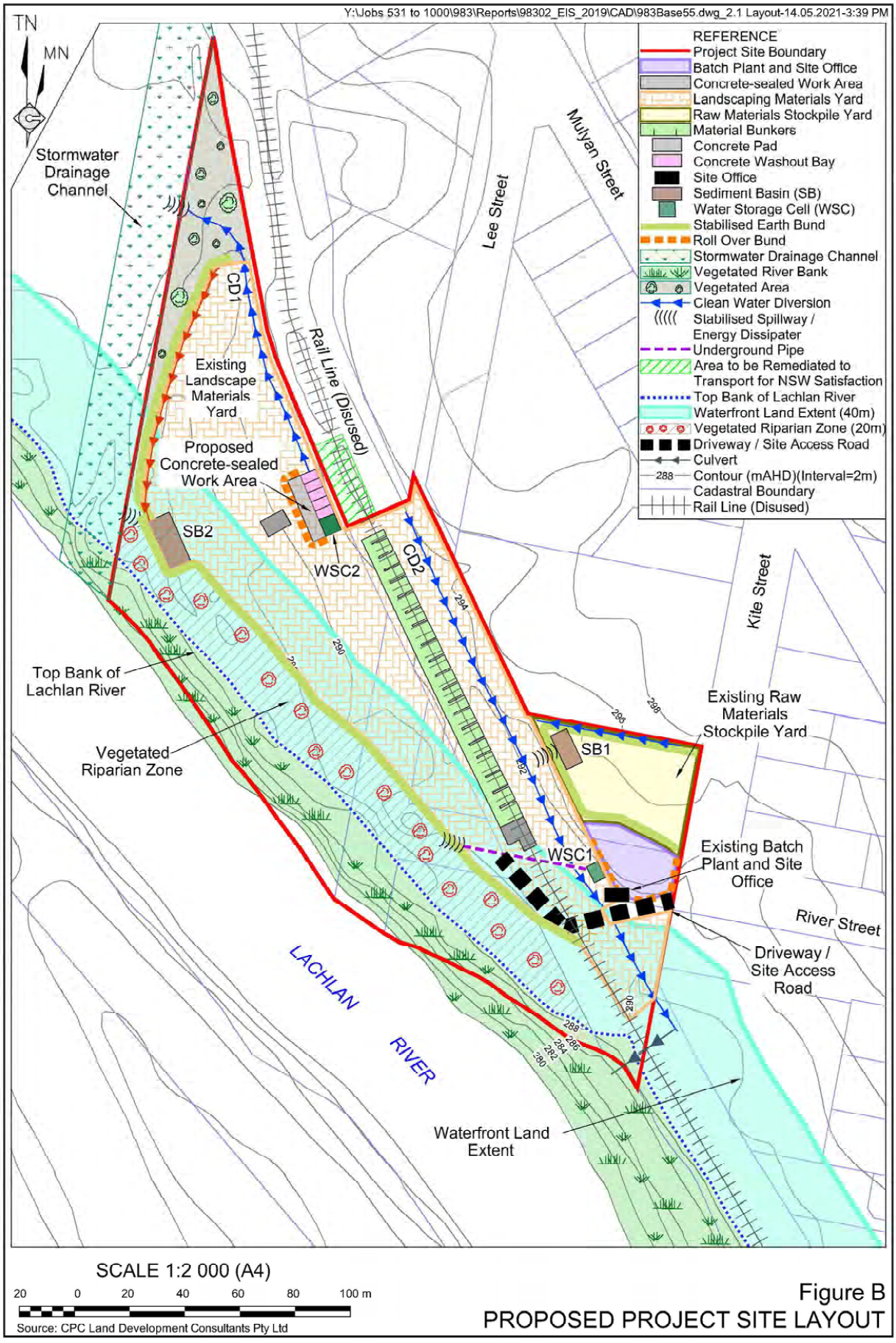
The Applicant suggests that a visit to the Project Site may be beneficial in understanding site-specific constraints. Additionally, a site visit and discussions with the Applicant may facilitate the identification of any potential options for the establishment of a VRZ which would provide positive environmental outcomes whilst permitting the continuation of existing operations.

Please don't hesitate to contact me if you would like to discuss the above response or if you require any additional information regarding this development application. A figure illustrating the proposed 10m VRZ is currently being prepared and will be provided to NRAR and uploaded to the Planning Portal as soon as it is available.

Yours sincerely

Jack Flanagan
Environmental Consultant

I:\Jobs 531 to 1000\983\Reports\98302_EIS_2019\Letters\NRAR Response\Response 3\Components\983_20210519_NRAR_Response to NRAR RFI.docx


Y:\Jobs 531 to 1000\983\Reports\98302_EIS_2019\CAD\983Base55.dwg_2.1 Layout-14.05.2021-3:39 PM
TN
MN
REFERENCE
Project Site Boundary
Batch Plant and Site Office
Concrete-sealed Work Area
Landscaping Materials Yard
Raw Materials Stockpile Yard
Material Bunkers
Concrete Pad
Concrete Washout Bay
Site Office
Sediment Basin (SB)
Water Storage Cell (WSC)
Stabilised Earth Bund
Roll Over Bund
Stormwater Drainage Channel
Vegetated River Bank
Vegetated Area
Clean Water Diversion
Stabilised Spillway / Energy Dissipater
Underground Pipe
Area to be Remediated to Transport for NSW Satisfaction
Top Bank of Lachlan River
Waterfront Land Extent (40m)
Vegetated Riparian Zone (20m)
Driveway / Site Access Road
Culvert
288 Contour (mAHD)(Interval=2m)
Cadastral Boundary
Rail Line (Disused)
Stormwater Drainage Channel
CD1
Existing Landscape Materials Yard
Rail Line (Disused)
Lee Street
Mulyan Street
Proposed Concrete-sealed Work Area
SB2
WSC2
CD2
Kite Street
Top Bank of Lachlan River
Vegetated Riparian Zone
Existing Raw Materials Stockpile Yard
SB1
WSC1
Existing Batch Plant and Site Office
River Street
Driveway / Site Access Road
LACHLAN RIVER
Waterfront Land Extent
SCALE 1:2 000 (A4)
20 0 20 40 60 80 100 m
Source: CPC Land Development Consultants Pty Ltd
Figure B
PROPOSED PROJECT SITE LAYOUT

Appendix 4

Community Consultation Sheet No. 1

(Total No. of pages including blank pages = 2)

A4

Proposed Bryant's Concrete Site Upgrades

Community Consultation Sheet No. 1

April 2019

Background

Buzzree Pty Limited (the Applicant) has owned and operated the Byrant's Concrete Batching Plant, located at 2 Kite Street, Cowra (the Project Site), since July 2007. Bryant's Concrete provides premixed and precast concrete products as well as various landscaping materials to customers within Cowra and surrounding areas.

Following discussions with Council and others, the Applicant is preparing an application for development consent for the continued operation of the batching plant.

Site Activities

Activities at the batching plant are proposed to continue largely unchanged, including:

- continued operation of the batching plant to produce pre-mixed concrete;
- continued production of precast concrete products; and
- continued sales of landscaping and other raw materials to the public and small businesses.

The primary changes to the Project Site associated with the Proposal would include the following.

- The relocation of material storage bins and product stockpiles to ensure that they are located on land owned or leased by the Applicant.
- The construction of water management structures including sediment basins, drainage diversions, and in-ground truck wash out bays to capture surface water runoff.

As part of the Proposal, the Applicant does not anticipate any changes to:

- site operating hours;
- traffic generated by the Project Site;
- air emissions (dust, etc.); or
- noise generating activities.

Questions for You

As part of the development application process, the Applicant is preparing an Environmental Impact Statement. Once submitted, this application will be advertised in the Cowra Guardian, providing residents with the opportunity to review the Proposal in full and formally submit any comments to Council.

Before that stage, we would appreciate feedback from you regarding existing batching plant operations.

- What has your experience been with noise from the Project Site?
- Have you ever submitted a formal complaint regarding Bryant's Concrete?
- Do you have any other comments about the Project Site or operations?

R.W. Corkery & Co. Pty Limited is currently assisting the Applicant with the development application process. Please don't hesitate to contact us with your feedback or if you would like to know more about the Proposal.

Jack Flanagan
Phone: (02) 6362 5411
Email: jack@rwcorkery.com

Appendix 5

Noise and Vibration Impact Assessment

prepared by Spectrum Acoustics Pty Limited

(Total No. of pages including blank pages = 8)

A5

27 February 201977

Ref: 191765/8312

R.W. Corkery
62 Hill Street
ORANGE NSW 2800

RE: OPERATIONAL NOISE MONITORING AT BRYANTS CONCRETE PLANT – COWRA

This letter report presents the results and findings of attended noise monitoring conducted in and around the Bryants Concrete Plant (BCP), off River Street, Cowra NSW.

BCP has been operating on the current site for 11 years.

The noise monitoring was undertaken to determine the noise levels from typical operations at BCP and to compare these to an adopted noise criterion for the site. The noise measurements were made during the afternoon of 21st and morning of 22nd February, 2019.

Noise emission levels were measured over representative times during typical operation of the BCP. The noise levels were measured with a Brüel & Kjær Type 2250 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Atmospheric conditions were acceptable for noise monitoring throughout the two surveys.

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the BCP and other significant noise sources to the overall to be quantified. Noise levels were recorded for each of the L10, Leq (15 min), Lmax, L1, L90 and Lmin percentiles.

The noise monitoring locations are shown in **Figure 1**. For logistical reasons some of the noise measurements had to made over relatively short periods to ensure capture of various noise events at a number of representative locations.

Spectrum Acoustics Pty Limited 30 Veronica Street, Cardiff NSW 2285 Phone: (02) 4954 2276
ABN: 40 106 435 554 Fax: (02) 4954 2257

Figure 1 – Noise Monitoring Locations

NOISE MEASUREMENT RESULTS

The results of the on site noise measurements are presented in **Table 1**. As the noise criterion for the site is based on a 15 minute Leq noise level, the results are shown as the measured Leq noise level (over various durations) and also the calculated Leq (15 min) noise level.

Note that the calculated Leq (15min) noise levels are based on observation and some assumptions on the duration of various activities. Where more than one noise measurement was made of an activity at a monitoring location the arithmetic average of the measurements is shown in the table.

Noise not related to the operation of BCP have been excluded from the measurements during the data analysis procedure and are not included in the table.

Some photos the activities on site are attached to this report.

Table 1 BCP Noise Monitoring Results – 21/22 February 2019			
Location	dB(A) Leq duration	dB(A) Leq (15 min)	Site Noise Sources
1	58	53	Truck loading in batch plant (assumed 5 mins duration)
2	50	45	Truck loading in batch plant (assumed 5 mins duration)
3	49	44	Truck loading in batch plant (assumed 5 mins duration)
4	46	41	Truck loading in batch plant (assumed 5 mins duration)
1	52	47	Truck at slump stand (assumed 5 mins duration)
3	45	40	Truck at slump stand (assumed 5 mins duration)
1	57	50	FEL loading batch plant (assumed 3 mins duration)
2	64	57	FEL loading batch plant (assumed 3 mins duration)
5	45	38	FEL loading batch plant (assumed 3 mins duration)
1	67	61	Delivery truck unloading (assumed 4 mins duration)
2	67	61	Delivery truck unloading (assumed 4 mins duration)
3	63	57	Delivery truck unloading (assumed 4 mins duration)
1	47	47	Sprinkler system[1] (assumed 15 mins duration)

1. Sprinkler wetting down stockpile before 7am.

NOISE CRITERIA

It is understood that there are no D.A. noise conditions for the operation of the BCP. In the absence of a specific noise criterion guidance has been taken from procedures detailed in the Noise Policy for Industry (NPI).

Section 6.1 of the NPI ("Applying the policy to existing premises") states (in part) that;

Many existing industrial sources were designed for higher noise emission levels than the project noise trigger levels outlined in this policy. In other cases, industries may have been in existence before neighbouring noise-sensitive developments and even before noise-control legislation was introduced. The range of mitigation measures available for these sites can be limited or costly.

The following governing principles should be applied when determining the project noise trigger levels and/or assessment requirements for existing industry:

- *The project noise trigger levels should not be applied as mandatory noise limits. The project noise trigger level is the level used to assess noise impact and drive the process of assessing all feasible and reasonable control measures,*

- *Where an existing industry has been in operation for more than 10 years and existing site operations exceed the project amenity noise level, the project amenity noise level may be adopted as the project noise trigger level to assess existing, and existing plus proposed site operations, as relevant.*

The Project Amenity Noise Level (PANL) for an industrial development is defined as the recommended amenity noise level for the relevant period (from Table 2.2 of the NPI) minus 5 dB(A).

For a suburban area for daytime this equates to a PANL of 50 dB(A) Leq (day). The NPI defines day time as 7am to 6pm Monday to Saturday and 8am to 6pm on Sundays and Public Holidays.

Note that for night time operations the PANL would be 35 dB(A) Leq (night).

The Leq descriptor is used for both the intrusiveness noise level and the amenity noise level. This descriptor represents the level of average noise energy over the relevant period of measurement and takes account of peak noise levels as well as the degree of noise fluctuation.

The Leq is determined over a 15-minute period for the project intrusiveness noise level over an assessment period (day, evening and night) for the project amenity noise level. This leads to the situation where, because of the different averaging periods, the same numerical value does not necessarily represent the same amount of noise heard by a person for different time periods. To standardise the time periods for the intrusiveness and amenity noise levels, the NPI assumes that the Leq (15 min) is taken to be equal to the Leq (period) + 3 dB.

This indicates that the noise criterion adopted for the operation of the site is 53 dB(A) Leq (15 min) during the day. For night time it would be 38 dB(A) Leq (15 min).

It is important to note that Section 6.1 of the NPI also states;

Applications for extensions to existing premises often provide an opportunity to redress issues that relate to the whole site. Where noise emissions from the site exceed the project noise trigger levels, the regulatory authorities and the noise-source manager will determine achievable noise limits for the site, taking into account matters that must be considered in accordance with the relevant legislation or process, including negotiation with proponents and discussion with stakeholders as required.

By way of explanation, if the operation of BCP was considered to be assessed against the standard noise criteria for a new industry as per the NPI the project trigger levels would be 40 dB(A) Leq (15 min) during the day and 35 dB(A) Leq (15 min) during the night.

DISCUSSION OF RESULTS

The results shown in Table 1 show that, under the operational at the time of monitoring, and based on the assumed duration of the various noise events, the noise emissions from the FEL loading the batch plant exceeded the PANL at monitoring Location 2, which is directly across the road from the activity.

The noise from the delivery truck unloading raw materials also exceeded the PANL at Locations 1, 2 and 3. No measurement of this noise was possible at any other locations (it only went for four minutes in total).

Noise measurements made at Locations 4 and 5 showed compliance with the PANL under the conditions. The industrial site to the west of Location 5 is currently disused. A large guard dog barking prevented any valid noise measurements being made there during the morning of 22nd February.

The sprinkler system that is used to wet down the stockpile of raw materials before being fed to the plant was in use from at least 6.45am. In acoustic terms this is night time. The measured noise from this was approximately 10 dB(A) over the night time criterion when measured at Location 1.

Given the layout and topography of the site, and the mobile nature of many of the plant items, the application of noise control to reduce noise emissions from the site would be problematic. The most likely option could be to increase the height of the fence along the boundary with Kite Street and probably reconfigure the access so that the delivery trucks unload inside the yard and behind the fence relative to the receivers. There may also need to be a solid gate that can be closed when there is activity in the yard.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Ross Hodge
Acoustical Consultant

Appendix 6

Groundwater Contamination Assessment

prepared by Ground Doctor Pty Ltd

(Total No. of pages including blank pages = 102)

A6

Ground Doctor Pty Ltd

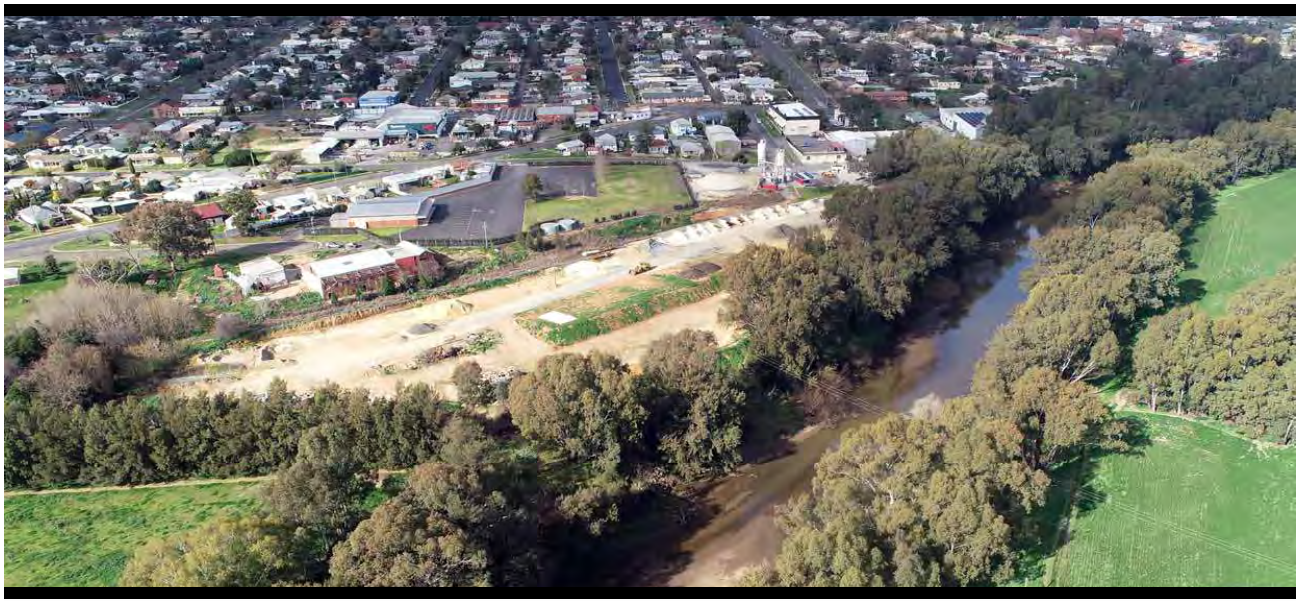
Environmental Site Assessment
Clean-up Direction Under Section 91 of the Protection of the Environment Operations Act 1997

~

Bryant's Concrete Batching Plant
2 Kite Street
Cowra, NSW

~

On Behalf Of:
Buzzree Pty Limited



29 September 2020
2020-GD013-RP1-FINAL

DOCUMENT CONTROLS

Project Details	
Business Unit:	Environmental
Project Number:	2020-GD013-RP1
Project /Document Title:	Environmental Site Assessment Clean-up Direction Under Section 91 of the Protection of the Environment Operations Act 1997 Bryant's Concrete Batching Plant 2 Kite Street, Cowra, NSW

Report Details	
Prepared For:	Buzzree Pty Limited (trading as Bryants Concrete) 2 Kite Street Cowra, NSW 2794 Attention: Mr Garry Bryant Ph: 0409 770 324 bryantsconcrete1@bigpond.com
Prepared By:	Ground Doctor Pty Ltd ABN: 32 160 178 656 PO Box 6278 22 Tamworth Street Dubbo NSW 2830 Ph: 0407 875 302 admin@grounddoc.com.au
Approved By:	 Mr James Morrow Environmental Engineer Certified Environmental Practitioner No.: 1194 Site Contamination Specialist No.: SC41087 
Review Date:	29 September 2020
File Name:	2020-GD013-RP1-FINAL
Report Status:	FINAL
Reports Issued:	Electronic PDF – Draft Report – 29 September 2020 Electronic PDF – Final Report – 29 September 2020

TABLE OF CONTENTS

LIST OF ANNEXURES

1 Introduction

Ground Doctor Pty Ltd (Ground Doctor) was engaged by Buzzree Pty Limited (trading as and referred to hereafter as Bryant's Concrete) to comply with "Clean-up Direction Under Section 91 of the Protection of the Environment Operations (POEO) Act 1997" (the Direction), issued by Cowra Council on 30 June 2020.

The Direction identified areas of concern at Bryant's Concrete batching plant, 2 Kite Street, Cowra, NSW (the Site), where a "pollution incident" was suspected to have occurred. The suspected pollution identified in the Direction related to the following activities.

- Disposal of concrete agitator wash out water in several locations, included two open excavations within rear yard of the site.
- Disposal of wash water from concrete admixture containers into an open excavation adjacent to the western boundary.
- Disposal of wash water to the ground surface at other nominated locations within the Bryant's Concrete site.

The Direction required Bryant's Concrete to engage an appropriately qualified person to:

"determine the nature and extent of the pollution" …."the level of environmental harm and the risk of harm associated with that pollution, and the clean-up actions required to remediate those parts of land."

The assessment was to be completed within 4 weeks of the issue date of the Direction (30 June 2020).

This Environmental Site Assessment was conducted by Ground Doctor on behalf of Bryant's Concrete to comply with the Direction.

Ground Doctor (2020a) outlined the suggested approach to assess the areas of concern identified in the Direction. This letter outlined an alternative timeline for environmental assessment, which was agreed by Cowra Council. Environmental assessment occurred in two stages. A "Preliminary Assessment" (Ground Doctor 2020b) was conducted to better understand the suspected pollution incident and how it may impact on human health or the environment. Field sampling forming part of the "Preliminary Assessment" works outlined in the letter was undertaken on 20 July 2020 and reported in a letter to Cowra Council dated 4 August 2020 (Ground Doctor, 2020b).

The preliminary assessment found that the suspected pollution incidents had potential to impact underlying groundwater resources and water quality in the nearby Lachlan River. A groundwater assessment was undertaken in September 2020 to quantify these risks.

The results of all environmental assessment undertaken in response to the Direction are outlined in this report.

1.1 Assessment Objectives

The objectives of the assessment were to satisfy the requirement of the Direction. That was, to determine the nature and extent of pollution, assess risks to human health and the environment and use the results to assess whether clean-up action was required and what clean-up action may be required.

1.2 Scope of Work

Ground Doctor completed the following work as part of the assessment.

- Reviewed material safety datasheets (MSDS) for suspected pollutants identified in the Direction to understand the human health and environmental risks posed by the primary products and compounds that may form from degradation of those products in the environment.
- Identified compounds of concern relevant to the assessment and identified which environmental media (e.g. soil, water etc.) may be affected by the suspected pollution incident.
- Collected soil samples from the walls and base of each unlined washout pit ("Pit1" and "Pit2").
- Collected near surface soil samples from identified concrete admixture container washout and concrete water discharge areas (referred to as "Drain3", "Surface1" and "Surface2").
- Excavated a test pit (referred to as "TP1") close to the western boundary, where an open pit was used to dispose of wash water from concrete admixture chemical containers. The area was assessed for the presence of buried debris and evidence of waste disposal. Two soil samples were collected from the test pit.
- Collected water samples from two washout pits (referred to as "Pit1" and "Pit2") and one concrete lined drain near the batching plant (referred to as "Drain1") to assess the suspected pollutants for compounds of concern.
- Collected surface water samples from the Lachlan River, at a location upstream of the site (referred to as "River Up") and a location in the Lachlan River downstream of the site (referred to as "River Down").
- Installed and sampled four groundwater monitoring wells (MW1-MW4) at the Site to assess groundwater quality close to, and upgradient of, the suspected pollution incidents.
- Measured field water quality parameters (pH, EC, DO, ORP) using a water quality meter at all water sampling locations.
- Subcontracted Envirolab Services to analyse water samples for free cyanide, total cyanide, thiocyanate, ammonia, nitrate, nitrite, total kjeldahl nitrogen (TKN) and metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc). Speciated chromium analysis was undertaken on some water samples.
- Subcontracted Envirolab Services was subcontracted to analyse soil samples for free cyanide, total cyanide and metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc).
- Identified relevant thresholds for the contaminants of concern to assess risks to human health and/or the environment. A conceptual site model was used to select appropriate assessment criteria based on the existing Site use, use of adjacent land and the environmental setting of the Site.
- Compared analytical data for soil and water to the assessment criteria to assess whether the suspected pollution incident had resulted in unacceptable risks to human health and/or the environment.
- Prepared this report outlining the methodology and results of the assessment.

1.3 Limitations of this Report

The findings of this report are based on the Scope of Work outlined in *Section 1.2* and detailed in later sections of this report. Ground Doctor performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental consulting profession. No warranties, express or implied are made.

The results of this assessment are based upon the information documented and presented in this report. All conclusions and recommendations regarding the Site are the professional opinions of Ground Doctor personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, Ground Doctor assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Ground Doctor, or developments resulting from situations outside the scope of this project.

Ground Doctor assessed soil, groundwater and surface water at locations targeting specific areas of environmental concern relating to the Direction. The absence of the compounds of concern in soil and/or water samples collected at the selected investigation locations cannot be interpreted as a guarantee that such materials, or other potentially toxic or hazardous compounds, do not exist at the site in soil, water or other media.

This report, including the data, findings and conclusions contained within it remains the intellectual property Ground Doctor Pty Ltd. A licence to use the report for the specific purpose identified is granted to Buzzree Pty Limited subject to full payment of the agreed project fees. Ground Doctor Pty Ltd accepts no liability for use or interpretation by any person or body other than Buzzree Pty Limited and Cowra Council. This report should not be reproduced without prior approval by Buzzree Pty Limited. The report should not be amended in any way without prior approval by Ground Doctor Pty Ltd. The report should not be relied upon by other parties, who should make their own enquires.

2 Site Description

2.1 The Site

The Site was located at 2 Kite Street, Cowra, NSW. The Direction applied to land within the lots listed in *Table 1*.

The Site was comprised of six lots, and also encompassed parts of the River Street and Lee Street road reserves. *Figure 1* of *Annex A* shows the approximate location of the Site boundary.

Site details are summarised in *Table 1*.

Table 1: Summary of Site Details

	Description
Street Address:	2 Kite Street, Cowra, NSW 2794
Lot and DP Number:	Lot 1011 DP1124153 Lot 2 DP 1175378 Lot 2 DP 557714 Lot 3904 DP 1200282 Lot 3905 DP 1200283 Lot 10 DP 1107219
Local Government Area:	Cowra Council

2.2 Site Layout and Features

The Site layout is shown in *Figure 1* of *Annex A*. At the time of the Assessment the Site was accessed from a concrete driveway off Kite Street. A concrete batching plant and office was situated adjacent to the Site entrance. A raw materials stockpiling area was located immediately north of the batching plant. The area surrounding the batching plant, office and Site entrance was sealed with concrete.

A complex of industrial units was located in the south east corner of the Site.

The remainder of the Site was open space used for storage of raw materials for concrete mixing as well as a range of quarry products. The open space was mostly unsealed, but was concrete sealed in parts with dedicated bins for separate product storage.

An open excavation was situated in the northern corner of the Site. The open excavation was used to contain concrete agitator was out water. A second open excavation was located approximately 50m to the west of the Site office. This excavation was used to capture secondary truck washout water.

An open drain was present on the north west side of the office and discharge to a grass lined depression on the western side of the office.

2.3 Adjoining Land-use

At the time of the assessment land use of adjoining properties was as follows.

- The Lachlan River was located to the south west of the Site.
- Open farmland (which appeared to be used for cropping) was located to the north west of the Site.
- Commercial / industrial units and a commercial car wash were located to the east of the Site along River Street.

- An industrial building which was believed to be used to farm maggots, and a sealed parking area were located to the north and north east of the Site.

2.4 Topography and Hydrology

The Site was located on the eastern bank of the Lachlan River.

A disused railway corridor traversed the Site from south east to north west and had an average elevation of approximately 285m AHD (www.six.maps.nsw.gov.au, 28, September 2020). The railway line was likely to represent the upper extent of the flood zone of the Lachlan River. Land on the eastern side of the rail corridor had a general slope from east to west with an average gradient of approximately 13-17%.

In the northern portion of the Site the railway corridor had been cut up to 5m below natural ground level.

Land on the western side of the rail corridor appeared to be a flood terrace of the Lachlan River. Earthworks had been undertaken in the western portion of the site to create two distinct terraces. Surface elevation in this area of the site varied by approximately 3m. There appeared to have been some filling close to the Site boundary with the Lachlan River and along a local drainage feature which ran approximately north to south parallel to the north west Site boundary.

2.5 Geology, Soil and Hydrogeology

The Site is situated partly on a former floodplain of the Lachlan River and more elevated area further east of the River. The "Cowra 1:100000 Geological Series Sheet 8630 (1997)" indicates that the site is situated on quaternary alluvium.

Alluvium was encountered in the upper 5m of most investigation locations. In the eastern portion of the site weathered granite was encountered. The geological map indicates that the "Cowra Granodiorite" outcrops to the east of the Site. This unit is described as "*mafic garnet cordierite granodiorite, abundant enclaves*". Granite boulders were identified in the Lachlan River adjacent to the southern corner of the Site.

Based on the mapped geology and observations made during borehole drilling the southern and eastern portions of the site appear to be situated above the granite unit. In these locations (MW1 and MW4) groundwater was encountered in weathered granite.

In the western and north western portions of the site depth to granite increases such that alluvium is more dominant and the Lachlan River alluvial aquifer is encountered. MW2 and MW3 encountered groundwater in alluvium.

Groundwater elevation data indicates a groundwater elevation gradient toward the Lachlan River from more elevated areas to the east of the Site. The Lachlan River flows in a north westerly direction adjacent to the site. Groundwater within the Lachlan River alluvium would also be expected to flow in a general north westerly direction, beneath the floodplain of the River.

Ground Doctor conducted a search of the NSW Water groundwater works database (https://realtimedata.waternsw.com.au, 4 August 2020) for registered groundwater works located close to the site. *Figure 6* of *Annex A* shows the location of the closest registered groundwater works to the site. Groundwater works summary forms for identified groundwater works are presented as *Annex E*.

The nearest bores are situated approximately 300-400m west of the site, on the western side of the Lachlan River. Work summary forms indicate these bores are used for stock, domestic and irrigation purposes. One of the bores is a test hole. The groundwater work most likely to be down hydraulic

gradient of the site is GW059491, which is located approximately 540m north west of the site. GW059491 is registered as an irrigation bore.

2.6 Sensitive Environments

The Site adjoined the Lachlan River and the Lachlan River would be the receiving environment for any significant pollution from the Site. The Lachlan River is a major inland waterway. Water within the River and in the adjoining alluvial plains is good quality with respect to dissolved salt concentration, and is used for town water supply, commercial water supply, irrigation and recreation.

The Lachlan River is a moderately disturbed fresh water aquatic ecosystem.

3 Suspected Pollution Incident

The Direction identified areas of concern at Bryant's Concrete batching plant (the Site) where a "pollution incident" was suspected to have occurred. The suspected pollution identified in the Direction related to the following activities.

- Disposal of concrete agitator wash out water in several locations, included three open excavations within rear yard of the site.
- Disposal of wash water from concrete admixture containers into an open excavation adjacent to the western boundary.
- Disposal of wash water to the ground surface at other nominated locations within the Bryant's Concrete site.

3.1 Concrete Wash Water

Concrete wash water is typically alkaline and may contain metals including chromium and traces of concrete admixtures.

3.2 Concrete Admixtures

The Direction indicates that suspected pollution incident relates in part to the washing of concrete admixture containers with two specific product names, MasterPolyheed 8875 and MasterSet AC534.

A material safety datasheet (MSDS) for MasterPolyheed 8875 indicates that the additive is a polycarboxylate ether which contains the following "hazardous ingredients":

- 1,1,1-nitrilotripropan-2-ol which comprises 1-<3% of the product on a weight basis.
- 2,2,2-nitrilotriethanol.

A material safety datasheet (MSDS) for MasterSet AC 534 indicates that the additive is a contains the following "hazardous ingredients":

- Calcium nitrate which comprises 25% - <75% on a weight basis.
- Sodium thiocyanate which comprises 5%-<15% on a weight basis.
- 2,2,2-nitrilotriethanol.

3.3 Admixtures in Concrete Wash Water

MasterPolyheed 8875 is added to concrete to increase workability (plasticity) of the concrete mix, allowing water content to be reduced, and therefore achieving a stronger product that remains workable. The volume of admixture added would typically not exceed 1L per 1000L of concrete mix. That is, would comprise less than 0.1% by volume. A large amount of the admixture becomes chemically fixed and bound in the sold concrete matrix and would be immobile.

MasterSet AC 534 adds ions to the concrete mix which increase chemical reactions which make concrete set in less time. This add mixture is typically only used in winter months as it is typically not required in warmer temperatures where concrete curing time is faster due to warm ambient temperatures. The volume of chemical added would typically not exceed 1L per 1000L of concrete mix. That is, would comprise less than 0.1% by volume, of which the majority of the admixture would react and become fixed and bound in the sold concrete matrix, and would have changed state and be immobile.

The mass of admixtures that potentially remain in agitator wash water at the completion of a delivery are likely to be low. The specific compounds listed in the MSDS only make up a portion of the admixture content.

3.4 Pollution Indicators and Thresholds

Based on our understanding of the concrete additives and potential contaminants associated with concrete wash water, we believed the primary contaminants of concern were:

- Thiocyanate and Cyanide (from the degradation of sodium thiocyanate in Masterset AC534).
- Nutrients (nitrates, nitrites, nitrogen, and ammonia) from the breakdown of nitrogen containing organic polymers in MasterPolyheed 8875 and Masterset AC534.
- Heavy metals that may be present in concrete wash water.
- Alkaline water from washing of concrete agitators.

The POEO Act 1997 defines a pollution incident as:

"pollution incident means an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise."

The POEA Act 1997 does not provide a well bound definition of "pollution" or how it can be measured, or limits to potential clean-up action.

The Direction required Bryant's Concrete to:

"determine the nature and extent of the pollution" …."the level of environmental harm and the risk of harm associated with that pollution, and the clean-up actions required to remediate those parts of land."

In the absence of clear guidance in the POEO Act 1997 and in the Direction, as to how the risk of harm should be assessed, Ground Doctor proposed to conduct works in accordance with guidance in the *National Environment Protect Council (NEPC) (1999) National Environment Protection (Assessment of Contamination) Measure (NEPM) (revised April 2013).* The NEPM provides the policy framework for a nationally consistent approach to assessment of site contamination, and the recommended process to ensure this. It also sets national standards for determining the risk of contamination to human and environmental health.

This approach was submitted to Cowra Council on 16 July 2020 (Ground Doctor, 2020a). Cowra Council provided written confirmation that it agreed with Ground Doctor's approach to assessing the suspected pollution.

3.5 Areas of Concern

The identified areas of concern in the Direction included:

- Two excavations used to contain agitator washout water. Bryant's concrete indicated that the existing washout excavations have been used for several years. Concrete agitators are washed into the pits. Water is lost to infiltration or evaporates from the pits.
- An area where a trench was excavated to dispose of wash water from chemical containers.

- Several locations where chemical container wash water has been discharged to the surface.

Areas most likely to be impacted by improper wash water disposal were those which were point sources, where wash water had been disposed over a long period of time and areas that are saturated for long periods of time. These are locations where contaminants of concern (if present) had highest potential to have accumulated over time. They are also locations where water had the highest probability of recharging the underlying aquifer.

At these locations, contaminants would have highest probability of being detected at the source. That is, within washout water contained within washout pits and in soil on the walls (in the smear zone) or base of the washout pits.

Areas where relatively small volumes of wash water had been applied less often were less likely to have resulted in groundwater impacts due to the relatively small mass of potentially contaminated water. At these locations soil contaminants had the highest likelihood of detection at the ground surface.

4 Soil Assessment

Soil Assessment locations are shown in *Figures 2-5* of *Annex A*.

Near surface soil samples were collected from identified concrete admixture container washout and concrete water discharge areas (referred to as “Drain 2”, “Drain3”, “Surface1” and “Surface2”).

Near surface soils were collected by hand. A shovel or mattock was used to loosen the surface soil. Clumps of soil that had not come into direct contact with the shovel or mattock when then collected by hand and placed into the sample containers.

A test pit (”TP1”) was excavated close to the western site boundary in an area where an open pit was used to dispose of wash water from concrete admixture chemical containers. The area was assessed for the presence of buried debris and evidence of waste disposal. Two soil samples were collected from the test pit. The test pit was excavated with a 5T excavator fitted with a 300mm wide trenching bucket. The soil profile was examined, and sampling intervals selected based on the sampling and analytical plan and on appearance of the soil.

The 5T excavator was also used to collect soil samples from the base and walls of “Pit1” and “Pit2”. A small test pit was excavated in the base of each pit to collect the “base” sample. “Wall” samples were collected at the waterline of each pit. Ground Doctor was careful to ensure soil that was collected into sample containers had not come into direct contact with the excavator bucket.

The sampler wore a new pair of disposable nitrile gloves whilst collecting each soil sample. Soil samples were collected into a 250mL laboratory supplied glass jars marked with the appropriate identification, and then placed on ice inside an esky. Additional sample was collected into a plastic snap lock bag for field screening with a photo-ionisation detector (PID).

Soil samples were placed on ice inside an esky immediately after collection.

5 Surface Water Assessment

Water samples were collected from two truck washout pits (“Pit1” and “Pit2”), a drain located west of the office (“Drain1”) and two locations along the Lachlan River, one upstream (“River Up”), and one downstream (“River Down”) of the Site.

Surface water sampling locations are shown in *Figures 2,3 and 5* of *Annex A*.

Surface water samples were collected by hand. An unpreserved sample bottle was filled directly by partially submerging it into the water. The unpreserved container was then used to fill sample containers which contained preservative, or to fill the sample filter. Samples for dissolved metals analysis were filtered in the field using disposable (single use) 45µm filters.

The sampler wore a pair of clean disposal nitrile gloves when sampling and placed the inlet of the sample bottle away from the mouth of the bottle, to minimise potential for the sampled water to have contacted the gloves.

Water sample bottles were placed on ice inside an esky immediately after collection.

6 Groundwater Assessment

6.1 Groundwater Monitoring Well Locations

Four groundwater monitoring wells were installed at the Site. Groundwater monitoring well locations are shown in *Figure 7* of *Annex A*.

Monitoring well locations were selected to characterise areas down hydraulic gradient of the identified potential sources of groundwater impact. MW1 was installed approximately 10m to the west of Truck Washout Pit 2. MW3 was located approximately 10m west of Truck Washout Pit 1. MW2 was installed in the western corner of the Site and provided coverage of the inferred down hydraulic gradient Site boundary. MW4 was positioned in the south eastern corner of the Site to assess groundwater quality up hydraulic gradient of the identified potential areas of concern. That is, to assess background concentrations of the compounds of concern in groundwater.

6.2 Groundwater Monitoring Well Installation

Groundwater monitoring wells were installed by Mr Georgel Ivan (Ivan Drilling), NSW Class 6 Driller's Licence No. 2199.

Boreholes were drilled using rotary methods with solid augers. At each location, the borehole was drilled until there were obvious signs of groundwater inflow. Boreholes were typically drilled 3 metres past the first signs of groundwater, which was typically approximately 12-14m below ground level.

Groundwater monitoring wells were installed in accordance with the National Uniform Drillers Licencing Committee (2012) "*Minimum Construction Requirements for Water Bores in Australia*".

Groundwater wells were constructed of screw fit 50mm ID Class 18 uPVC screen and casing. The screen was mechanically slotted. Screen and blank casing was delivered to the site in plastic wrapping to minimise potential for contaminants to come into contact with the screen during transport.

The wells were constructed using 6m of screen, which was positioned at the bottom of the borehole and adjacent to water bearing strata.

The borehole annulus was filled with 3-7mm washed river gravel to a depth at least 0.5m above the top of the screened interval. The remainder of the borehole annulus was filled with bentonite. A flush steel road box was concreted around the top of each well head to protect the casing and minimise disruption.

The monitoring wells were developed on the day of installation. Each monitoring well was surged with a bailer, bailed dry, allowed to recover, and then bailed dry a second time.

6.3 Groundwater Gauging

Prior to sampling Ground Doctor gauged each well with an interface meter to measure the depth to water below the top of the PVC casing. All wells were gauged in quick succession to ensure consistency.

Ground Doctor used a laser level to obtain the relative elevation of the top of the PVC casing of each monitoring well. The laser level and well gauging data was combined to calculate the relative groundwater elevation at each well. This allowed Ground Doctor assess groundwater elevation at the four monitoring wells and infer the direction of groundwater flow.

6.4 Groundwater Sampling Methodology

The monitoring wells were sampled approximately 13 days after installation. A low-flow air driven bladder pump was used to micro-purge and sample the wells.

Dedicated well tubing was used in each well to minimise potential cross contamination between sampling locations. The inlet of the sample tubing was placed adjacent to the lower part of the well screen, which corresponded to the part of the borehole where to best groundwater yield was obtained.

A flow cell was established at the outlet of the pump and field water quality parameters and the standing water level in the monitoring well were monitored at approximate 5 minute / 1L intervals to establish when the pumped water was representative of conditions in the aquifer adjacent to the well screen. Each well was sampled after field parameters had changed from the initial readings and then stabilised, which indicated that inflow to the well was representative of groundwater from the surrounding formation.

Groundwater samples were collected into appropriate sample bottles marked with relevant ID and sample details. The samples analysed for dissolved metals were filtered in the field using well dedicated disposable 45µm filters.

7 Sample Analysis

Soil and water samples were sent to Envirolab Services Sydney laboratory by overnight courier service. The samples were dispatched on the afternoon of the day of sampling and arrived at the laboratory the following morning.

Soil samples were analysed for:

- metals (arsenic, cadmium ,chromium, copper, lead, mercury, nickel and zinc)
- free cyanide and total cyanide.

Water samples were analysed for:

- Thiocyanate and Cyanide;
- Nutrients (nitrates, nitrites, nitrogen, and ammonia);
- Metals (arsenic, cadmium ,chromium III, chromium VI, copper, lead, mercury, nickel and zinc).

8 Assessment Criteria

Soil Investigation Levels (SILs) and Groundwater Investigation Levels (GILs) published in the National Environment Protect Council (NEPC) (1999) National Environment Protection (Assessment of Contamination) Measure (NEPM) (revised April 2013) were used to assess concentrations of chemicals of concern in soil and water.

Ground Doctor adopted health investigation level A (HILA) as a preliminary screening threshold for assessment of soil analytical data. HILA is the most conservative HIL and is appropriate for low density residential land use.

The adopted soil assessment criteria are summarised in *Table 2*.

Table 2: Adopted NEPM (2013) Soil Investigation Levels (SILs)

Analytes	HILA (mg/kg)
Cyanide (Free)	250
Arsenic	100
Cadmium	20
Chromium (VI)	100
Copper	6000
Lead	300
Mercury	40
Nickel	400
Zinc	7400

Ground Doctor adopted Groundwater Investigation Levels (GILs) outlined in the NEPM (2013) for assessment of impacts in water. The NEPM (2013) refers to the following relevant thresholds.

- National Health and Medical Research Council (NHMRC) (2011) *Australian Drinking Water Guidelines*; and
- Default guideline values (DGVs) specified in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (August 2018) for moderately disturbed fresh water ecosystems (95% protection).

The adopted GILs are presented in *Table 3*.

Measured electrical conductivity (EC) and pH readings for water samples were also compared to water quality within the Lachlan River adjacent to the site.

Table 3: Adopted NEPM (2013) Groundwater Investigation Levels (GILs) µg/L

Analytes	Drinking Water (2011)	Fresh Water Aquatic Ecosystem – DGVs (2018)
Cyanide (Free)	80	7
Nitrate (as NO3))	50000	-
Nitrate (as N)	-	2400
Nitrite (as N)		
Nitrite (as NO2)	3000	-
Ammonia (as NH3)	-	900
Arsenic	10	13
Cadmium	2	0.2
Chromium (VI)	50	1
Copper	2	1.4
Lead	10	3.4
Mercury	1	0.06
Nickel	20	11
Zinc	-	8

9 Soil Results

9.1 Field Observations

Ground Doctor identified previously disturbed soil at Test Pit 1 (TP1), indicating that the test pit had been excavated in the appropriate location. The previous excavation was found to be less than 1.5m deep. Ground Doctor did not identify any waste within the test pit. A weak organic odour (alcohol like) was identified in soil within the upper 0.5m of the subsurface.

All soil samples were screened in the field for volatile organic compounds (VOCs) using a PID. PID readings were less 2ppm in all soil samples.

9.2 Soil Analytical Results

Soil analytical results are summarised and presented against the adopted assessment criteria in *Table B1* of *Annex B*. Laboratory certificates of analysis are presented as *Annex D*.

Reported concentrations of free cyanide and metals in all soil samples were less than the adopted assessment criteria.

10 Water Results

10.1 Soil and Hydrogeology

Borehole and monitoring well construction logs are presented as *Annex F*.

MW1 and MW4 encountered weathered granite less than 6m below ground level indicating that these monitoring wells were not within the Lachlan River alluvium. Saturated cuttings were identified in the weathered granite indicating that groundwater was present below a depth of approximately 10m. There were no obvious water cuts in these boreholes and well development indicated the formation was low yielding. It is inferred that water was seepage from weathered granite and/or seepage from fractures in the weathered granite.

Alluvium was encountered throughout MW3 (to a depth of 15.0m below ground level) and in the upper 14.2m at MW2. Groundwater was encountered in alluvium at these locations. The best yielding parts of the alluvium appeared to from sandy layers at depths between approximately 12m and 14.5m below ground level. Well development observation indicating that MW2 and MW3 were relatively low yielding.

10.2 Groundwater Levels

Well gauging results and relative groundwater elevation data is presented in *Table 4*.

Table 4: Well Gauging Results and Relative Groundwater Elevations

Well ID	Depth to Water	Relative Elevation of Top of Casing[1]	Relative Water Elevation (m)[1]	Water Elevation Relative to MW2 (m)[2]
MW1	10.61m	18.86m	8.25m	2.20m
MW2	10.26m	16.31m	6.05m	0.00m
MW3	9.775m	18.12m	8.34m	2.29m
MW4	10.44m	20.00m	9.56m	3.51m

1 Depth to water below arbitrary reference elevation (i.e. height of level).
2 Depth relative to standing water level within MW2 (the lowest measured water level).

Figure 8 of *Annex A* shows the relative groundwater elevation within each monitoring well and the inferred hydraulic gradient.

The relative groundwater elevation was lowest at MW2. The measured relative groundwater elevation varied by up to 3.51m across the monitoring wells and was most elevated at MW4.

Water elevation data suggests that there is a hydraulic gradient in a general east to west direction toward the Lachlan River. The hydraulic gradient is likely to be in a more north westerly direction closer to the Lachlan River, where alluvium may have higher hydraulic conductivity and flow in a direction consistent with the flow path of the River channel. Water elevation data suggests that the Lachlan River is a groundwater sink in the vicinity of the Site.

10.3 Water Quality Parameters

Measured water quality parameters at each water sampling location are summarised in *Table 5*.

Table 5: Water Quality Field Parameters

Sample ID	Temperature (°C)	Dissolved Oxygen (mg/L)	Electrical Conductivity (uS/cm)	pH	Field Oxygen Reduction Potential (mV)
Pit1	10.8	9.2	4650	12.5	-35
Pit2	9.7	8.5	610	11.4	+49
River Up	9.7	13.8	544	8.4	+106
River Down	10.1	13.2	554	8.4	+99
MW1	19.5	0.95	1510	6.63	+128
MW2	18.8	3.25	1388	6.82	+126
MW3	19.8	0.82	1374	6.67	+117
MW4	20.2	0.20	1533	6.82	+104

The recorded electrical conductivity (EC) and pH within Pit1 were both elevated compared to the measurements taken within the Lachlan River and underlying groundwater (at MW3). Elevated pH is associated with cement wash water. Elevated EC may be a combination of salts within concrete admixtures and accumulated salts in the pit associated with long tern evaporation of wash water from the pit.

Field parameters were relatively consistent in all groundwater monitoring wells. EC was slightly elevated in monitoring wells screened within weathered granite (MW1 and MW4) compared to those screened within alluvium (MW2 and MW3). Dissolved oxygen was highest at MW2 and may indicate that water quality at MW2 is influenced by recharge from the Lachlan River.

10.4 Surface Water Analytical Results

Surface water analytical results are summarised and presented against the adopted assessment criteria in *Table C1* of *Annex C*. Laboratory certificates of analysis are presented as *Annex D*.

Reported analyte concentrations were below the adopted GILs with the following exceptions:

- Reported chromium (VI) and copper concentrations in samples Pit1, Pit2 and Drain1 exceeded the Australian drinking water thresholds and the thresholds for protection of fresh water aquatic ecosystems.
- Reported Nitrate (as N) concentrations in samples Pit1 and Drain1 exceeded the adopted threshold for protection of fresh water aquatic ecosystems.
- Reported free cyanide concentration in sample Pit1 exceeded the un-ionised cyanide threshold for protection of fresh water aquatic ecosystems.

10.5 Groundwater Analytical Results

Groundwater analytical results are summarised and presented against the adopted assessment criteria in *Table C1* of *Annex C*. Laboratory certificates of analysis are presented as *Annex D*.

Reported analyte concentrations were below the adopted GILs with the following exceptions:

- The reported copper concentration in MW4 exceeded the threshold for protection of fresh water ecosystems.
- The reported zinc concentrations in groundwater sampled from all monitoring wells exceeded the threshold for protection of fresh water ecosystems.
- The reported nitrate (as N) concentrations in groundwater sampled from all wells exceeded the threshold for protection of fresh water ecosystems.
- The reported nitrite (as NO_2) concentrations in groundwater sampled from MW2 and MW4 exceeded the Australian Drinking Water threshold.

11 Discussion of Results

11.1 Soil

Soil was assessed at the areas of concern identified in the Direction. Reported concentrations of analytes of concern did not exceed human health risk assessment thresholds. The results indicate that the "pollution incidents" have not resulted in unacceptable impacts to soil. With respect to potential soil contaminants assessed, the site remains suitable for continued commercial / industrial use.

11.2 Washout Water and Batching Plant Drainage

Reported concentrations of nitrate, free cyanide, copper and chromium (VI) in water sampled from the concrete agitator washout pit (Pit1) exceeded thresholds for the protection of fresh water ecosystems. Reported concentrations of copper and chromium (VI) also exceeded the Australian drinking water thresholds.

Reported concentrations of copper and chromium (VI) in water sampled from the concrete agitator washout pit (Pit2) exceeded thresholds for the protection of fresh water ecosystems. Reported concentrations of copper and chromium (VI) also exceeded the Australian drinking water thresholds.

Reported concentrations of copper and chromium (VI) in water sampled from the drain to the south of the batching plant (Drain1) exceeded thresholds for the protection of fresh water ecosystems. Reported concentrations of copper and chromium (VI) also exceeded the Australian drinking water thresholds.

The pH of water in washout pits (Pit1 and Pit2) was also high relative to that recorded in the Lachlan River close to the site.

The identified chromium, cyanide and nitrate in water samples can be attributed to concrete agitator wash water. As outlined in *Section 3*, the nitrate and cyanide are likely breakdown products of concrete admixtures. Chromium (VI) is associated with Portland cement in the concrete. Chromium (VI) can form in the cement making process due to oxidation of the more common chromium (III) at high temperature and alkaline conditions in cement kilns.

The source of copper in water is less obvious and may be associated with a natural source, or an input not directly related to the identified potential "pollution incident".

The adopted GILs are not relevant to the assessment of on-site human health risks associated with continued commercial/industrial use of the site. The GILs are relevant to protection of aquatic ecosystems and protection of water supply that may be used for human consumption.

The assessed water was not discharging directly to the Lachlan River. The assessed water was contained in unsealed storages. There was potential for the stored water to infiltrate the ground and migrate to the underlying alluvial aquifer, which may interact with water in the Lachlan River. The Lachlan River alluvium groundwater unit is used for domestic use, town supply, stock watering and irrigation downstream of the site.

11.3 Groundwater

11.3.1 Chromium

Hexavalent chromium was detected in truck washout water and in drainage from the batch plant at concentrations which exceeded the adopted Australian Drinking Water thresholds, and thresholds for the protection of fresh water aquatic ecosystems.

Hexavalent chromium was not detected in groundwater sampled from any well. The reported chromium VI concentrations in groundwater from each well were less than the Australian Drinking Water threshold.

The practical quantification limit (PQL) for chromium (VI) in groundwater was 5µg/L, which was higher than the threshold for protection of fresh water aquatic ecosystems. Corresponding total chromium (Chromium III and Chromium VI) in groundwater was less than 1µg/L with the exception of MW3, in which 2µg/L was detected. Chromium VI was the dominant chromium specie in samples of the washout water samples, so it is possible that the 2µg/L of chromium in groundwater sampled from MW3 was Chromium VI. In this case the concentrations of Chromium VI at MW3 would marginally exceed the threshold for protection of fresh water aquatic ecosystems.

The absence of elevated total chromium or chromium VI concentrations in groundwater samples from monitoring wells situated close to the truck washout pits (MW1 and MW3) indicates that chromium has limited mobility in the subsurface and unlikely to impact on surface water quality in the Lachlan River.

11.3.2 Copper

Copper was detected at relatively low concentrations in groundwater sampled from MW2, MW3 and MW4. MW4 (the upgradient monitoring well) was the only groundwater monitoring location where the concentrations of copper exceeded the threshold for protection of fresh water aquatic ecosystems. The presence of copper in MW4 indicates that identified copper is indicative of background or naturally occurring copper, rather than a contaminant added to the subsurface by the suspected pollution incident.

11.3.3 Zinc

Reported zinc concentrations in groundwater samples collected from all monitoring wells exceeded the adopted threshold for protection of fresh water aquatic ecosystems. Concentrations µof zinc in groundwater were an order of magnitude higher than those detected in samples of truck washout water and batch plant drainage. Zinc in groundwater is most likely related to natural processes or a background source and is not related to the suspected pollution incident.

11.3.4 Nutrients

Reported nitrate concentrations in groundwater samples from all monitoring wells exceeded the adopted thresholds for the protection of fresh water ecosystems. Reported nitrate (as N) ranged from 5600µg/L to 9900µg/L in groundwater.

The identified nitrate in groundwater appear largely to be associated with background sources. The reported nitrate (as N) concentrations in all wells are of the same order of magnitude. This includes groundwater sampled from the upgradient monitoring well (MW4). The reported nitrate concentrations in MW1 and MW2 are higher than those reported in surface water samples collected from the southern parts of the Site (samples Pit2 and Drain1), indicating that the identified surface sources are not the primary source of nitrate in groundwater. Similarly, the reported nitrate concentration at MW3 exceeds the reported nitrate concentrations in the sample collected from truck washout pit 1 (Pit1).

The reported nitrite concentrations at MW2 and MW4 exceed the Australian Drinking Water threshold. The presence of nitrite in the upgradient well (MW4) indicates that nitrite is associated with a background source.

Background sources of nutrients in groundwater may include, urban stormwater and sewage, use of fertilisers in nearby agriculture or other nearby commercial operations which include farming of maggots (presumably using organic feedstock) and a commercial carwash.

11.3.5 Cyanide and Thiocyanate

Reported concentrations of cyanide and thiocyanate were less than the PQL and the adopted GILs in all groundwater samples.

11.4 River Water Quality

Analytical data for water samples collected from the Lachlan River indicate no identifiable deterioration of water quality in the river downstream of the site.

12 Conclusions and Recommendations

Ground Doctor conducted an environmental site assessment to determine the nature and extent of pollution associated with a suspected pollution incident at the Site.

Soil, surface water and groundwater was assessed for identified potential contaminants of concern associated with concrete wash water and concrete admixtures.

Soil was assessed at the areas of concern identified in the Direction. Reported concentrations of analytes of concern did not exceed human health risk assessment thresholds. The results indicate that the “pollution incidents” have not resulted in unacceptable impacts to soil. With respect to potential soil contaminants assessed, the site remains suitable for continued commercial / industrial use.

Potential contaminants of concern were identified in samples of surface water collected from truck washout pits and batching plant drainage. Concentrations of some contaminants of concern exceeded thresholds for the protection of drinking water and fresh water aquatic ecosystems. Groundwater was assessed down hydraulic gradient of the identified surface sources to assess whether surface water storages had impacted underlying groundwater.

Assessment of groundwater beneath the Site and surface water in the Lachlan River indicated that the suspected pollution incidents had not resulted in unacceptable impacts to groundwater quality.

Assessment of surface water in the Lachlan River upstream and downstream of the Site, indicated that the suspected pollution incidents had not resulted in unacceptable impacts to water quality within the River.

The environmental site assessment did not identify any pollution that would warrant clean-up action.

Bryant's Concrete have submitted a development application to Cowra Council for improvements to the Site including construction of purpose designed truck wash out and wash water containment and reuse infrastructure. The proposed development would alleviate identified concerns regarding containment of truck washout water in unlined pits at the Site.

Bryants Concrete have indicated that concrete trucks have been washed to the same open pits for several year of Site operation. The absence of significant impacts to underlying groundwater indicates that the activity is unlikely to result in unacceptable impacts to the environment in the near future.

The following actions could be implemented to reduce potential for truck washout water to discharge to the environment whilst the development application is being considered.

- Truck washout water could be pumped back to the batching plant for reuse in concrete.
- Evaporation from the washout pits could be enhanced by pumping water through a fine mist sprinkler system.
- The truck wash water could be used to supress dust on raw material stockpiles for concrete batching.
- Truck wash water could be pumped from existing washout pits into a sprinkler system and used to suppress dust on open areas of the Site.
- Truck wash water could be used to irrigate existing vegetation, or newly planted vegetation, which would use available nitrogen containing compounds.

13 References

- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (August 2018).
- Geological Survey of NSW (1997), *Cowra 1:100000 Geological Series Sheet 8630,* First Edition.
- Ground Doctor (2020a), Letter from Ground Doctor to Cowra Council Titled "Clean-up Direction Under Section 91 of the Protection of the Environment Operations Act 1997, Bryant's Concrete Batching Plant, 2 Kite Street, Cowra, NSW", 16 July 2020, Reference 2020-GD013-L1.
- Ground Doctor (2020a), Letter from Ground Doctor to Cowra Council Titled "Findings of Preliminary Assessment, Clean-up Direction Under Section 91 of the Protection of the Environment Operations Act 1997, Bryant's Concrete Batching Plant, 2 Kite Street, Cowra, NSW", 4 August 2020, Reference 2020-GD013-L2.
- National Environment Protect Council (NEPC) (1999) *National Environment Protection (Assessment of Contamination) Measure* (NEPM) (revised April 2013).
- National Health and Medical Research Council (NHMRC) (2011) *Australian Drinking Water Guidelines.*
- NSW Government (28 September 2020), NSW Spatial Information Exchange Website, http://www.maps.six.nsw.gov.au.

Annex A

Figures

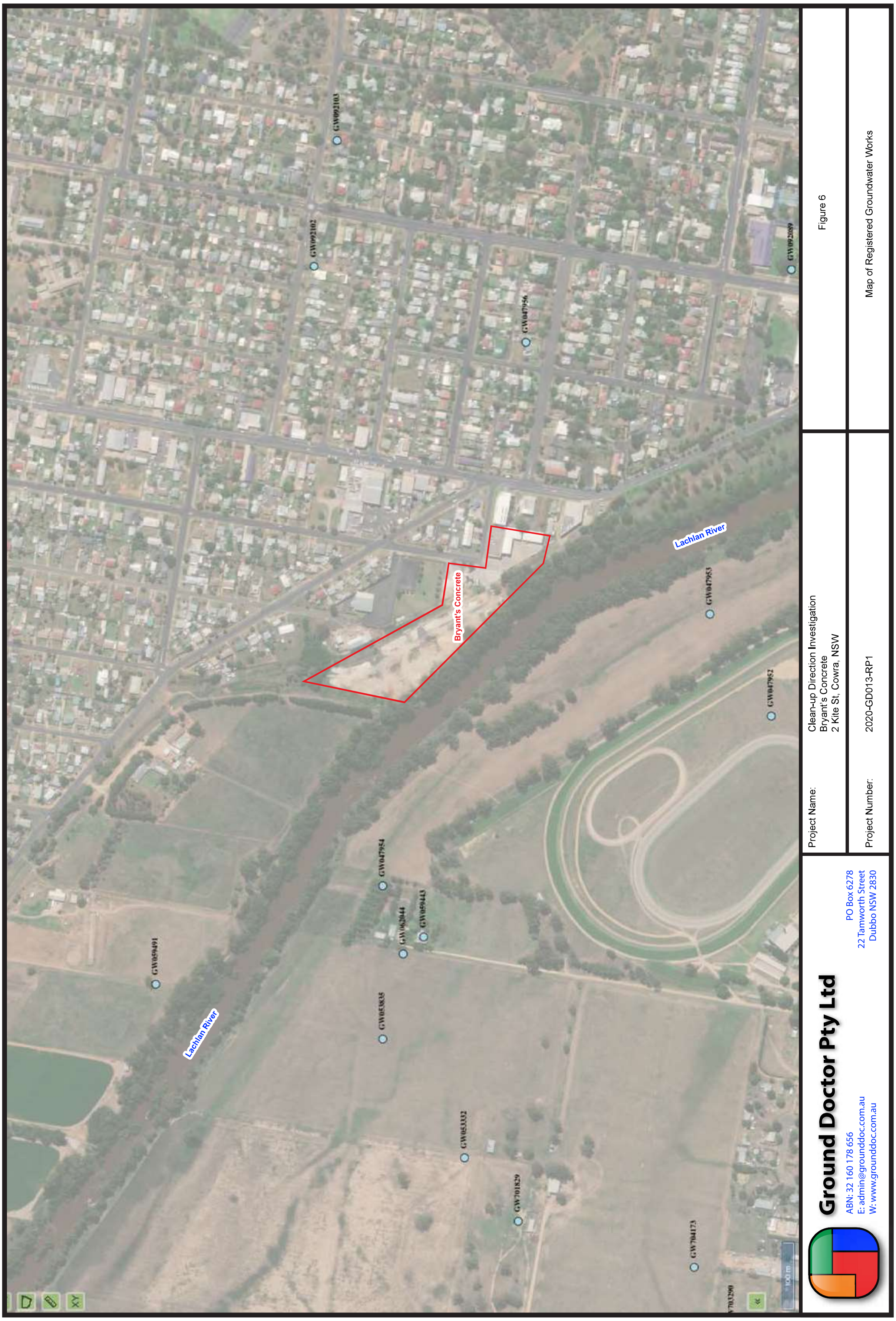

Kite Street
Concrete Batch Plant
River Street
Industrial Units
Bryant's Concrete
Site Boundary
Lachlan River
Lee Street
Truck Washout Pit 2
Storage Yard
Truck Washout Pit 1
Lachlan River
50 m
Ground Doctor Pty Ltd
ABN: 32 160 178 656
E: admin@groundddoc.com.au
W: www.groundddoc.com.au
PO Box 6278
22 Tamworth Street
Dubbo NSW 2830
Project Name:
Clean-up Direction Investigation
Bryant's Concrete
2 Kite St, Cowra, NSW
Project Number:
2020-GD013-RP1
Figure 1
Site Location


Drain1 - Water Sampling Location
Drain2 - Soil Sampling Location
Pit1-Wall
Pit1
Pit1-Base
TP1
Lachlan River
Surface 1
Surface 2
Ground Doctor Pty Ltd
ABN: 32 160 178 656
E: admin@groundddoc.com.au
W: www.groundddoc.com.au
PO Box 6278
22 Tamworth Street
Dubbo NSW 2830
Project Name:
Clean-up Direction Investigation
Bryant's Concrete
2 Kite St, Cowra, NSW
Project Number:
2020-GD013-RP1
Figure 2
Assessment Locations - Northern End of the Site

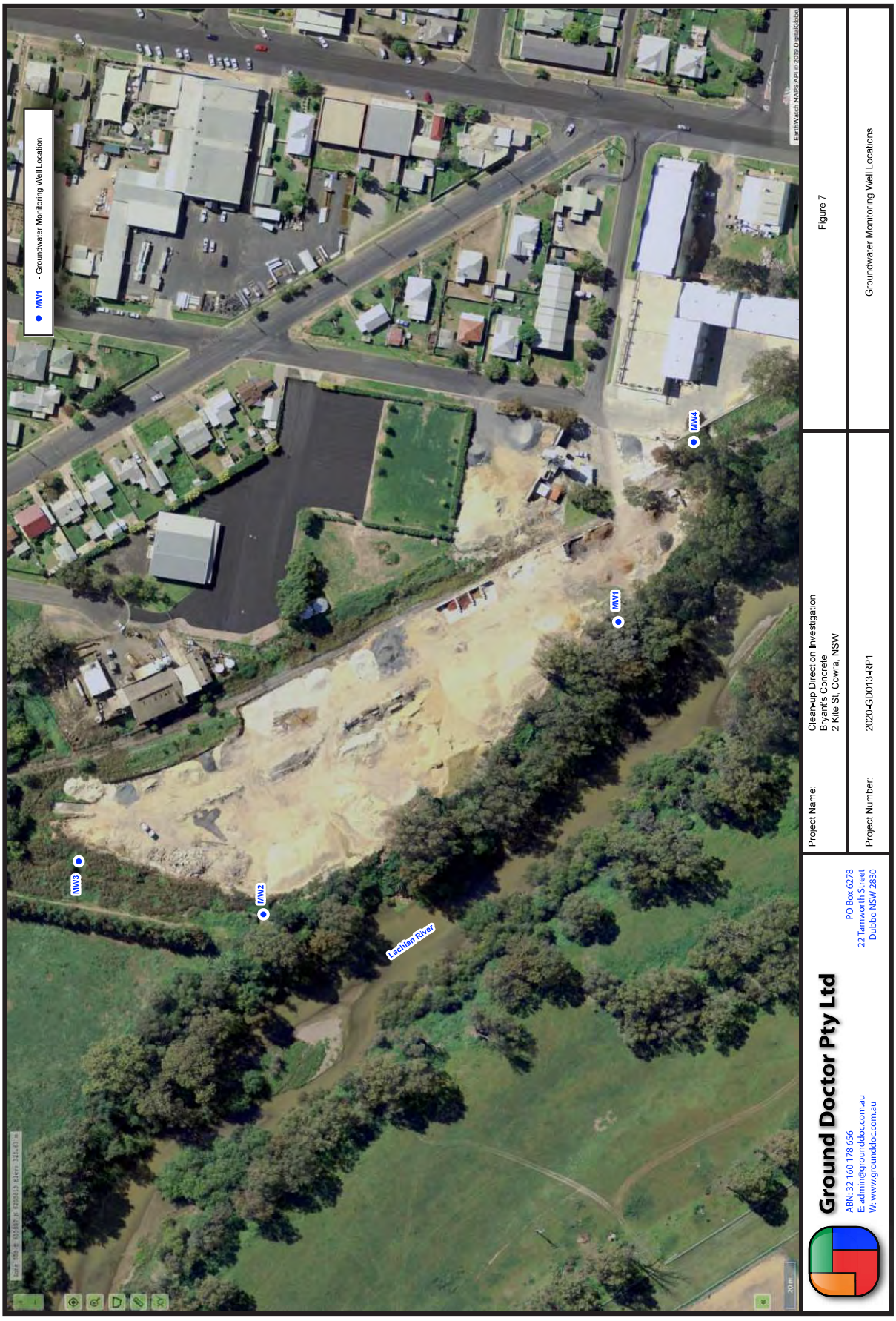

Drain1 - Water Sampling Location
Drain2 - Soil Sampling Location
Lachlan River
Pit2-Wall
Pit2-Base
Pit2
Drain2
Drain1
Ground Doctor Pty Ltd
ABN: 32 160 178 656
E: admin@groundddoc.com.au
W: www.groundddoc.com.au
PO Box 6278
22 Tamworth Street
Dubbo NSW 2830
Project Name:
Clean-up Direction Investigation
Bryant's Concrete
2 Kite St, Cowra, NSW
Project Number:
2020-GD013-RP1
Figure 3
Assessment Locations - Central Area of Site

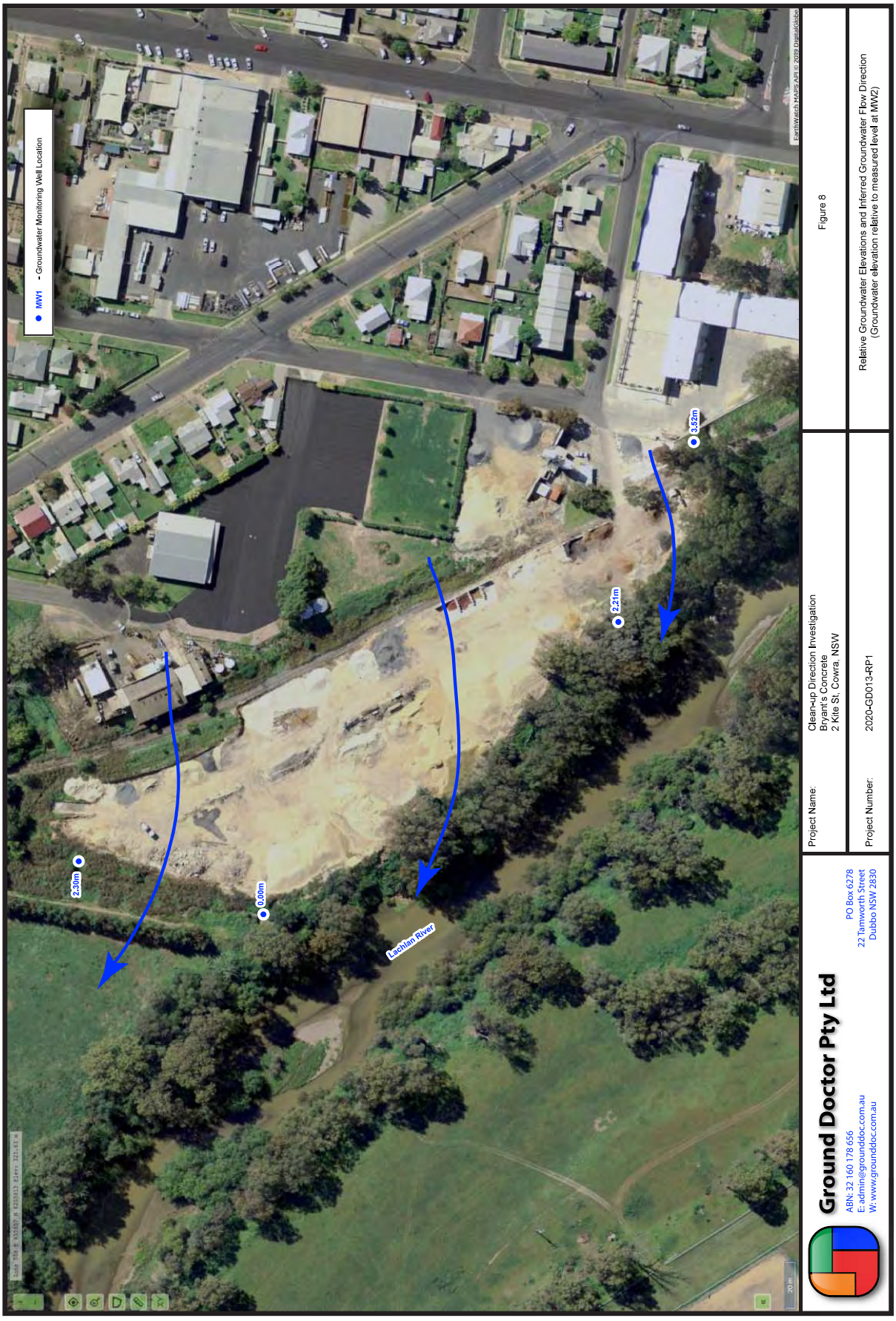

Drain2 - Soil Sampling Location
Drain3
Ground Doctor Pty Ltd
ABN: 32 160 178 656
E: admin@groundddoc.com.au
W: www.groundddoc.com.au
PO Box 6278
22 Tamworth Street
Dubbo NSW 2830
Project Name:
Clean-up Direction Investigation
Bryant's Concrete
2 Kite St, Cowra, NSW
Project Number:
2020-GD013-RP1
Figure 4
Assessment Locations - Southern Area of Site


Lachlan River
River Down
Bryant's Concrete
Lachlan River
River Up
Lachlan River
0
50
100m
Ground Doctor Pty Ltd
ABN: 32 160 178 656
E: admin@groundddoc.com.au
W: www.groundddoc.com.au
PO Box 6278
22 Tamworth Street
Dubbo NSW 2830
Project Name:
Clean-up Direction Investigation
Bryant's Concrete
2 Kite St, Cowra, NSW
Project Number:
2020-GD013-RP1
Figure 5
Lachlan River Water Sampling Locations



Bryant's Concrete
Lachlan River
Lachlan River
Ground Doctor Pty Ltd
ABN: 32 160 178 656
E: admin@grounddoc.com.au
W: www.grounddoc.com.au
PO Box 6278
22 Tamworth Street
Dubbo NSW 2830
Project Name:
Clean-up Direction Investigation
Bryant's Concrete
2 Kite St, Cowra, NSW
Project Number:
2020-GD013-RP1
Figure 6
Map of Registered Groundwater Works


MW1 - Groundwater Monitoring Well Location
MW1
MW2
MW3
MW4
Lachlan River
Ground Doctor Pty Ltd
ABN: 32 160 178 656
PO Box 6278
22 Tamworth Street
Dubbo NSW 2830
E: admin@groundddoc.com.au
W: www.groundddoc.com.au
Project Name:
Clean-up Direction Investigation
Bryant's Concrete
2 Kite St, Cowra, NSW
Project Number:
2020-GD013-RP1
Figure 7
Groundwater Monitoring Well Locations


MW1 - Groundwater Monitoring Well Location
2.30m
0.00m
2.21m
3.52m
Lachlan River
Ground Doctor Pty Ltd
ABN: 32 160 178 656
PO Box 6278
22 Tamworth Street
Dubbo NSW 2830
E: admin@groundddoc.com.au
W: www.groundddoc.com.au
Project Name:
Clean-up Direction Investigation
Bryant's Concrete
2 Kite St, Cowra, NSW
Project Number:
2020-GD013-RP1
Figure 8
Relative Groundwater Elevations and Inferred Groundwater Flow Direction
(Groundwater elevation relative to measured level at MW2)

Annex B

Soil Analytical Results Summary Table

Table B1
Summary of Analytical Results for Soil - Metals and Cyanide (mg/kg)
Preliminary Assessment for Clean-up Direction - Bryant's Concrete, 2 Kite Street, Cowra, NSW

Sample	NEPM (2013)	PQL	TP1	TP1	TP1	Pit1-Base	Pit1-Wall	Pit2-Base	Pit2-Wall	Drain2	Drain3	Surface1	Surface2
Depth	HILA		0.4-0.6m	0.4-0.6m	1.7-1.9m	-	-	-	-	0.0-0.2m	0.0-0.2m	0.0-0.2m	0.0-0.2m
Date Sampled			20/07/20	20/07/20	20/07/20	20/07/20	20/07/20	20/07/20	20/07/20	20/07/20	20/07/20	20/07/20	20/07/20
Arsenic	100	4	<4	<4	<4	<4	<4	<4	5	6	<4	<4	<4
Cadmium	20	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	100	1	20	21	19	19	17	10	44	52	25	11	15
Copper	6000	1	11	14	10	11	7	9	28	24	54	2	6
Lead	300	1	8	10	9	9	5	4	26	15	22	3	7
Mercury	40	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	400	1	13	14	13	16	5	5	15	12	13	1	4
Zinc	7400	1	32	35	29	22	19	16	75	120	240	6	15
Total Cyanide	-	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Free Cyanide	250	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Annex C

Water Analytical Results Summary Table

Table C1
Summary of Analytical Results for Water - Metals, Cyanide and Nutrients (ug/L)
Preliminary Assessment for Clean-up Direction - Bryant's Concrete, 2 Kite Street, Cowra, NSW

Sample	NEPM (2013) GILs		PQL	River Up	River Down	Pit1	Pit2	Drain1	MW1	MW2	MW3	MW4
Date Sampled	Drinking Water (2011)	ANZECC DGV (2018)		20/07/20	20/07/20	20/07/20	20/07/20	20/07/20	14/09/20	14/09/20	14/09/20	14/09/20
Arsenic	10	13	1	<1	<1	<1	<1	<1	<1	3	<1	<1
Cadmium	2	0.2	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Total)	-	-	1	<1	<1	350	58	69	<1	<1	2	<1
Chromium(III)	-	-	5	-	-	9	<5	<5	-	-	-	-
Chromium(VI)	50	1	5	-	-	340	58	75	<5	<5	<5	<5
Copper	2	1.4	1	<1	<1	5	8	4	<1	1	1	2
Lead	10	3.4	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Mercury	1	0.06	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	20	11	1	1	1	<1	2	<1	2	3	3	6
Zinc	-	8	1	3	2	3	3	3	31	22	72	67
Total Cyanide	-	-	4	<4	<4	20	5	6	<4	<4	<4	<4
Free Cyanide	80	7	4	<4	<4	18	4	6	<4	<4	<4	<4
Thiocyanate*	-	-	500	<500	<500	600	<500	<500	<500	<500	<500	<500
Ammonia (as N)	-	-	5	<5	8	78	180	33	6	53	17	12
Ammonia (as NH3)	-	900	6	6	10	95	219	40	7	64	21	15
Nitrate (as N)	-	2400	5	120	130	6700	1600	2500	9100	5700	9900	5900
Nitrate (as NO3)	50000	-	-	531	576	29661	7083	11068	40286	25234	43827	26119
Nitrite (as N)	-	-	5	<5	<5	72	700	36	430	2100	210	1800
Nitrite (as NO2)	3000	-	17	<17	<17	236	2299	118	1412	6897	690	5912
TKN	-	-	100	400	400	1700	700	1200	2200	1800	2200	1600

Annex D

Laboratory Certificates of Analysis

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details	
Client	Ground Doctor Pty Ltd
Attention	James Morrow

Sample Login Details	
Your reference	Byrants Concrete Preliminary Assessment
Envirolab Reference	247378
Date Sample Received	30/06/2020
Date Instructions Received	30/06/2020
Date Results Expected to be Reported	28/07/2020

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	6 Water, 12 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	3.8
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	Acid Extractable metalsin soil	Misc Soil - inorg	HM in water - dissolved	Total Cyanide	Free Cyanide in Water	Thiocyanate*	Ammonia as N in water	Nitrate as N in water	Nitrite as N in water	TKN in water	On Hold
River Up			✓	✓	✓	✓	✓	✓	✓	✓	
River Down			✓	✓	✓	✓	✓	✓	✓	✓	
Pit1			✓	✓	✓	✓	✓	✓	✓	✓	
Pit2			✓	✓	✓	✓	✓	✓	✓	✓	
Drain1			✓	✓	✓	✓	✓	✓	✓	✓	
DUPC			✓	✓	✓	✓	✓	✓	✓	✓	
TP1-0.4-0.6m	✓	✓									
TP1-1.7-1.9m	✓	✓									
Pit1-Base	✓	✓									
Pit1-Wall	✓	✓									
Pit2-Base	✓	✓									
Pit2-Wall	✓	✓									
Drain2-0.0-0.2m	✓	✓									
Drain3-0.0-0.2m	✓	✓									
Surface1-0.0-0.2m	✓	✓									
Surface2-0.0-0.2m	✓	✓									
DUPA	✓	✓									
DUPB											✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 247378

Client Details

Client	Ground Doctor Pty Ltd
Attention	James Morrow
Address	PO Box 6278, Dubbo, NSW, 2830

Sample Details

Your Reference	**Byrants Concrete Preliminary Assessment**
Number of Samples	6 Water, 12 Soil
Date samples received	21/07/2020
Date completed instructions received	21/07/2020

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

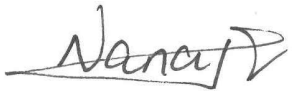
Date results requested by	28/07/2020
Date of Issue	04/08/2020
Reissue Details	This report replaces R00 due to an amendment to sampling date.

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Team Leader, Inorganics
Jaimie Loa-Kum-Cheung, Metals Supervisor
Manju Dewendrage, Chemist

Authorised By



Nancy Zhang, Laboratory Manager

Client Reference: Byrants Concrete Preliminary Assessment

Acid Extractable metals in soil						
Our Reference		247378-7	247378-8	247378-9	247378-10	247378-11
Your Reference	UNITS	TP1	TP1	Pit1-Base	Pit1-Wall	Pit2-Base
Depth		0.4-0.6m	1.7-1.9m	-	-	-
Date Sampled		20/07/2020	20/07/2020	20/07/2020	20/07/2020	20/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	20	19	19	17	10
Copper	mg/kg	11	10	11	7	9
Lead	mg/kg	8	9	9	5	4
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	13	13	16	5	5
Zinc	mg/kg	32	29	22	19	16

Acid Extractable metals in soil						
Our Reference		247378-12	247378-13	247378-14	247378-15	247378-16
Your Reference	UNITS	Pit2-Wall	Drain2	Drain3	Surface1	Surface2
Depth		-	0.0-0.2m	0.0-0.2m	0.0-0.2m	0.0-0.2m
Date Sampled		20/07/2020	20/07/2020	20/07/2020	20/07/2020	20/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Arsenic	mg/kg	5	6	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	44	52	25	11	15
Copper	mg/kg	28	24	54	2	6
Lead	mg/kg	26	15	22	3	7
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	15	12	13	1	4
Zinc	mg/kg	75	120	240	6	15

Client Reference: Byrants Concrete Preliminary Assessment

Acid Extractable metals in soil		
Our Reference		247378-17
Your Reference	UNITS	DUPA
Depth		-
Date Sampled		20/07/2020
Type of sample		Soil
Date prepared	-	22/07/2020
Date analysed	-	22/07/2020
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	20
Copper	mg/kg	14
Lead	mg/kg	9
Mercury	mg/kg	<0.1
Nickel	mg/kg	13
Zinc	mg/kg	33

Client Reference: Byrants Concrete Preliminary Assessment

Misc Soil - Inorg						
Our Reference		247378-7	247378-8	247378-9	247378-10	247378-11
Your Reference	UNITS	TP1	TP1	Pit1-Base	Pit1-Wall	Pit2-Base
Depth		0.4-0.6m	1.7-1.9m	-	-	-
Date Sampled		20/07/2020	20/07/2020	20/07/2020	20/07/2020	20/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Total Cyanide	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Free Cyanide in soil	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Misc Soil - Inorg						
Our Reference		247378-12	247378-13	247378-14	247378-15	247378-16
Your Reference	UNITS	Pit2-Wall	Drain2	Drain3	Surface1	Surface2
Depth		-	0.0-0.2m	0.0-0.2m	0.0-0.2m	0.0-0.2m
Date Sampled		20/07/2020	20/07/2020	20/07/2020	20/07/2020	20/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Total Cyanide	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Free Cyanide in soil	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Misc Soil - Inorg		
Our Reference		247378-17
Your Reference	UNITS	DUPA
Depth		-
Date Sampled		20/07/2020
Type of sample		Soil
Date prepared	-	22/07/2020
Date analysed	-	22/07/2020
Total Cyanide	mg/kg	<0.5
Free Cyanide in soil	mg/kg	<0.5

Client Reference: Byrants Concrete Preliminary Assessment

Moisture						
Our Reference		247378-7	247378-8	247378-9	247378-10	247378-11
Your Reference	UNITS	TP1	TP1	Pit1-Base	Pit1-Wall	Pit2-Base
Depth		0.4-0.6m	1.7-1.9m	-	-	-
Date Sampled		20/07/2020	20/07/2020	20/07/2020	20/07/2020	20/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Moisture	%	18	9.9	16	50	25

Moisture						
Our Reference		247378-12	247378-13	247378-14	247378-15	247378-16
Your Reference	UNITS	Pit2-Wall	Drain2	Drain3	Surface1	Surface2
Depth		-	0.0-0.2m	0.0-0.2m	0.0-0.2m	0.0-0.2m
Date Sampled		20/07/2020	20/07/2020	20/07/2020	20/07/2020	20/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Moisture	%	54	58	52	4.9	16

Moisture		
Our Reference		247378-17
Your Reference	UNITS	DUPA
Depth		-
Date Sampled		20/07/2020
Type of sample		Soil
Date prepared	-	22/07/2020
Date analysed	-	23/07/2020
Moisture	%	14

Client Reference: Byrants Concrete Preliminary Assessment

HM in water - dissolved						
Our Reference		247378-1	247378-2	247378-3	247378-4	247378-5
Your Reference	UNITS	River Up	River Down	Pit1	Pit2	Drain1
Depth		-	-	-	-	-
Date Sampled		20/07/2020	20/07/2020	20/07/2020	20/07/2020	20/07/2020
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Arsenic-Dissolved	µg/L	<1	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	350	58	69
Copper-Dissolved	µg/L	<1	<1	5	8	4
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	1	1	<1	2	<1
Zinc-Dissolved	µg/L	3	2	3	3	3

HM in water - dissolved		
Our Reference		247378-6
Your Reference	UNITS	DUPC
Depth		-
Date Sampled		20/07/2020
Type of sample		Water
Date prepared	-	22/07/2020
Date analysed	-	22/07/2020
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	1
Zinc-Dissolved	µg/L	6

Client Reference: Byrants Concrete Preliminary Assessment

Miscellaneous Inorganics						
Our Reference		247378-1	247378-2	247378-3	247378-4	247378-5
Your Reference	UNITS	River Up	River Down	Pit1	Pit2	Drain1
Depth		-	-	-	-	-
Date Sampled		20/07/2020	20/07/2020	20/07/2020	20/07/2020	20/07/2020
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/07/2020	21/07/2020	21/07/2020	21/07/2020	21/07/2020
Date analysed	-	21/07/2020	21/07/2020	21/07/2020	21/07/2020	21/07/2020
Total Cyanide	mg/L	<0.004	<0.004	0.020	0.005	0.006
Free Cyanide in Water	mg/L	<0.004	<0.004	0.018	0.004	0.006
Thiocyanate*	mg/L	<0.5	<0.5	0.6	<0.5	<0.5
Ammonia as N in water	mg/L	<0.005	0.008	0.078	0.18	0.033
Nitrate as N in water	mg/L	0.12	0.13	6.7	1.6	2.5
Nitrite as N in water	mg/L	<0.005	<0.005	0.072	0.70	0.036
TKN in water	mg/L	0.4	0.4	1.7	0.7	1.2

Miscellaneous Inorganics		
Our Reference		247378-6
Your Reference	UNITS	DUPC
Depth		-
Date Sampled		20/07/2020
Type of sample		Water
Date prepared	-	21/07/2020
Date analysed	-	21/07/2020
Total Cyanide	mg/L	<0.004
Free Cyanide in Water	mg/L	<0.004
Thiocyanate*	mg/L	<0.5
Ammonia as N in water	mg/L	<0.005
Nitrate as N in water	mg/L	0.12
Nitrite as N in water	mg/L	<0.005
TKN in water	mg/L	0.4

Client Reference: Byrants Concrete Preliminary Assessment

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-014	Cyanide - free, total, weak acid dissociable by segmented flow analyser (in line dialysis with colourimetric finish). Solids/Filters and sorbents are extracted in a caustic media prior to analysis. Impingers are pH adjsuted as required prior to analysis. Cyanides amenable to Chlorination - samples are analysed untreated and treated with hyperchlorite to assess the potential for chlorination of cyanide forms. Based on APHA latest edition, 4500-CN_G,H.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-089	Thiocyanate - determined colourimetrically and analysed by DA.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Client Reference: Byrants Concrete Preliminary Assessment

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247378-8
Date prepared	-			22/07/2020	7	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Date analysed	-			22/07/2020	7	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Arsenic	mg/kg	4	Metals-020	<4	7	<4	<4	0	96	84
Cadmium	mg/kg	0.4	Metals-020	<0.4	7	<0.4	<0.4	0	99	88
Chromium	mg/kg	1	Metals-020	<1	7	20	21	5	96	88
Copper	mg/kg	1	Metals-020	<1	7	11	14	24	91	92
Lead	mg/kg	1	Metals-020	<1	7	8	10	22	94	85
Mercury	mg/kg	0.1	Metals-021	<0.1	7	<0.1	<0.1	0	89	90
Nickel	mg/kg	1	Metals-020	<1	7	13	14	7	98	89
Zinc	mg/kg	1	Metals-020	<1	7	32	35	9	96	85

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	17	22/07/2020	22/07/2020		[NT]	[NT]
Date analysed	-			[NT]	17	22/07/2020	22/07/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	17	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	17	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	17	20	22	10	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	17	14	14	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	17	9	9	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	17	13	13	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	17	33	35	6	[NT]	[NT]

Client Reference: Byrants Concrete Preliminary Assessment

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247378-8
Date prepared	-			22/07/2020	7	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Date analysed	-			22/07/2020	7	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Total Cyanide	mg/kg	0.5	Inorg-014	<0.5	7	<0.5	<0.5	0	94	94
Free Cyanide in soil	mg/kg	0.5	Inorg-014	<0.5	7	<0.5	<0.5	0	93	96

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	17	22/07/2020	22/07/2020		[NT]	[NT]
Date analysed	-			[NT]	17	22/07/2020	22/07/2020		[NT]	[NT]
Total Cyanide	mg/kg	0.5	Inorg-014	[NT]	17	<0.5	<0.5	0	[NT]	[NT]
Free Cyanide in soil	mg/kg	0.5	Inorg-014	[NT]	17	<0.5	<0.5	0	[NT]	[NT]

Client Reference: Byrants Concrete Preliminary Assessment

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			22/07/2020	1	22/07/2020	22/07/2020		22/07/2020	[NT]
Date analysed	-			22/07/2020	1	22/07/2020	22/07/2020		22/07/2020	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	93	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	94	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	102	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	101	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	97	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	1	1	0	95	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	3	2	40	96	[NT]

Client Reference: Byrants Concrete Preliminary Assessment

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	247378-2
Date prepared	-			21/07/2020	1	21/07/2020	21/07/2020		21/07/2020	21/07/2020
Date analysed	-			21/07/2020	1	21/07/2020	21/07/2020		21/07/2020	21/07/2020
Total Cyanide	mg/L	0.004	Inorg-014	<0.004	1	<0.004	<0.004	0	108	98
Free Cyanide in Water	mg/L	0.004	Inorg-014	<0.004	1	<0.004	<0.004	0	97	98
Thiocyanate*	mg/L	0.5	Inorg-089	<0.5	1	<0.5	<0.5	0	99	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	<0.005	<0.005	0	99	98
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.12	0.12	0	104	98
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	<0.005	0	94	113
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	0.4	0.4	0	103	87

Client Reference: Byrants Concrete Preliminary Assessment

Result Definitions	
NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Client Reference: Byrants Concrete Preliminary Assessment

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Client Reference: Byrants Concrete Preliminary Assessment

Report Comments
Samples were out of the recommended holding time for this analysis nutrients (NO2+NO3 and NH4) in water.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 247378-A

Client Details

Client	Ground Doctor Pty Ltd
Attention	James Morrow
Address	PO Box 6278, Dubbo, NSW, 2830

Sample Details

Your Reference	**Byrants Concrete Preliminary Assessment**
Number of Samples	Additional Testing on 3 Waters
Date samples received	21/07/2020
Date completed instructions received	24/07/2020

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	31/07/2020
Date of Issue	04/08/2020
Reissue Details	This report replaces R00 due to an amendment to sampling date

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Hannah Nguyen, Senior Chemist
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Envirolab Reference: 247378-A
Revision No: R01

Client Reference: Byrants Concrete Preliminary Assessment

Miscellaneous Inorganics				
Our Reference		247378-A-3	247378-A-4	247378-A-5
Your Reference	UNITS	Pit1	Pit2	Drain1
Depth		-	-	-
Date Sampled		20/07/2020	20/07/2020	20/07/2020
Type of sample		Water	Water	Water
Date prepared	-	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	24/07/2020	24/07/2020	24/07/2020
Hexavalent Chromium, Cr^{6+}	mg/L	0.34	0.058	0.075
Trivalent Chromium, Cr^{3+}	mg/L	0.009	<0.005	<0.005

Client Reference: Byrants Concrete Preliminary Assessment

Cations in water Dissolved				
Our Reference		247378-A-3	247378-A-4	247378-A-5
Your Reference	UNITS	Pit1	Pit2	Drain1
Depth		-	-	-
Date Sampled		20/07/2020	20/07/2020	20/07/2020
Type of sample		Water	Water	Water
Date digested	-	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020
Calcium - Dissolved	mg/L	370	53	47
Magnesium - Dissolved	mg/L	<0.5	4.3	21
Hardness	mgCaCO 3 /L	930	150	200

Client Reference: Byrants Concrete Preliminary Assessment

Method ID	Methodology Summary
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Metals-020	Determination of various metals by ICP-AES.

Client Reference: Byrants Concrete Preliminary Assessment

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			24/07/2020	[NT]	[NT]	[NT]	[NT]	24/07/2020	[NT]
Date analysed	-			24/07/2020	[NT]	[NT]	[NT]	[NT]	24/07/2020	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	[NT]	[NT]	[NT]	[NT]	103	[NT]
Trivalent Chromium, Cr^{3+}	mg/L	0.005	Inorg-024	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

Client Reference: Byrants Concrete Preliminary Assessment

QUALITY CONTROL: Cations in water Dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date digested	-			27/07/2020	[NT]	[NT]	[NT]	[NT]	27/07/2020	[NT]
Date analysed	-			27/07/2020	[NT]	[NT]	[NT]	[NT]	27/07/2020	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	97	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	100	[NT]

Client Reference: Byrants Concrete Preliminary Assessment

Result Definitions	
NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Client Reference: Byrants Concrete Preliminary Assessment

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Client Reference: Byrants Concrete Preliminary Assessment

Report Comments
sample #5 Cr6+ value is slightly higher than total Chromium value but results are within the uncertainity of the two methods.

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP

Client: Ground Doctor Pty Ltd	**Client Project Name / Number / Site etc (ie report title):** Bryants Concrete Preliminary Assessment
Contact person: James Morrow	**PO No.:** 2020-GD013-1
Project Mgr: James Morrow	**Envirolab Quote No.:**
Sampler: James Morrow	**Date results required:** Standard
Address: PO Box 6278, DUBBO, NSW 2830	Or choose: standard / same day / 1 day / 2 day / 3 day
Phone: -- **Mob:** 0407 875 302	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*
Fax: --	**Lab comments:**
Email: james.morrow@grounddoc.com.au	

Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Phone: 02 9910 6200 Fax :02 9910 6201
E-mail: ahie@envirolabservices.com.au
Contact: Aileen Hie

Envirolab Services WA t/a MPL
16-18 Hayden Crt, Myaree WA 6154
Phone: 08 9317 2505 Fax :08 9317 4163
E-mail: lab@mpl.com.au
Contact: Joshua Lim

Sample Information					Tests Required																Comments
Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	M8 Metals, Free Cyanide, Total Cyanide	M8 Metals (dissolved), Free Cyanide, Total Cyanide, Thiocyanate, Nutrients (NH3, NO2, NO3, TKN)	Hold														Provide as much information about the sample as you can
1	River Up	-	17-Jul-20	Water		x															
2	River Down	-	17-Jul-20	Water		x															
3	Pit1	-	17-Jul-20	Water		x															
4	Pit2	-	17-Jul-20	Water		x															
5	Drain1	-	17-Jul-20	Water		x															
6	DUPC	-	17-Jul-20	Water		x															
7	TP1	0.4-0.6m	17-Jul-20	Soil	x																
8	TP1	1.7-1.9m	17-Jul-20	Soil	x																
9	Pit1-Base	-	17-Jul-20	Soil	x																
10	Pit1-Wall	-	17-Jul-20	Soil	x																
11	Pit2-Base	-	17-Jul-20	Soil	x																
12	Pit2-Wall	-	17-Jul-20	Soil	x																
13	Drain2	0.0-0.2m	17-Jul-20	Soil	x																
14	Drain3	0.0-0.2m	17-Jul-20	Soil	x																
15	Surface1	0.0-0.2m	17-Jul-20	Soil	x																
16	Surface2	0.0-0.2m	17-Jul-20	Soil	x																
17	DUPA	-		Soil	x																
18	DUPB	-		Soil			x														

ENVIROLAB GROUP
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 247378
Date Received: 21/07/2020
Time Received: 08:44
Received By: MT
Temp: Cool/Ambient 3.8
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (company):	Ground Doctor Pty Ltd	**Received by (company):**	EIS Sydney
Print Name:	James Morrow	**Print Name:**	Ming Yan To
Date & Time:	20/7/20 1500	**Date & Time:**	21/07/2020 08:44
Signature:	JRM	**Signature:**	MT

Lab use only:
Samples Received: Cool or Ambient (circle one)
Temperature Received at: 3.8 (if applicable)
Transported by: Hand delivered / courier

White - Lab copy / Blue - Client copy / Pink - Retain in Book

Form: 302 - Chain of Custody-Client, Issued 16/03/10, Version 4, Page 1 of 1.

Aileen Hie

From: James Morrow <james.morrow@grounddoc.com.au>
Sent: Friday, 24 July 2020 5:59 PM
To: Ken Nguyen
Cc: Nick Sarlamis; Aileen Hie
Subject: RE: Results for Registration 247378 Byrants Concrete Preliminary Assessment

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Hi Ken,

Could you please provide speciated chromium split for samples 3,4 and 5. Those are samples labelled "Pit1", "Pit2", and "Drain1". Can you also please analyse hardness (as CaCO3) for these samples. Let me know if you don't have sample for this.

I note guidance for cyanide in water talks about "unionised cyanide". Any suggestions on how we get this from the free and total cyanide numbers reported? Does the "free" cyanide represent ionised cyanide?

If you could give me a call on Monday to discuss that would be appreciated.

Kind Regards,
James Morrow
Environmental Engineer (Hydrogeologist)
Certified Environmental Practitioner No.: 1194
Site Contamination Specialist No.: SC41087

Envirolab Ref: 247378A
Due: 31/7/20
Std TAT.

Ground Doctor Pty Ltd

Ground Doctor Pty Ltd
22 Tamworth Street
PO Box 6278
DUBBO NSW 2830

Ph: 0407 875 302
www.grounddoc.com.au

From: Ken Nguyen <KNguyen@envirolab.com.au>
Sent: Friday, 24 July 2020 4:09 PM

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details	
Client	Ground Doctor Pty Ltd
Attention	James Morrow

Sample Login Details	
Your reference	Byrants Concrete Groundwater Assessment
Envirolab Reference	251219
Date Sample Received	15/09/2020
Date Instructions Received	15/09/2020
Date Results Expected to be Reported	22/09/2020

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	5 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	6.2
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	HM in water - dissolved	Total Cyanide	Free Cyanide in Water	Thiocyanate*	Ammonia as N in water	Nitrate as N in water	Nitrite as N in water	TKN in water	Hexavalent Chromium, Cr6+
MW1	✓	✓	✓	✓	✓	✓	✓	✓	✓
MW2	✓	✓	✓	✓	✓	✓	✓	✓	✓
MW3	✓	✓	✓	✓	✓	✓	✓	✓	✓
MW4	✓	✓	✓	✓	✓	✓	✓	✓	✓
MW5	✓	✓	✓	✓	✓	✓	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 251219

Client Details

Client	Ground Doctor Pty Ltd
Attention	James Morrow
Address	PO Box 6278, Dubbo, NSW, 2830

Sample Details

Your Reference	**Byrants Concrete Groundwater Assessment**
Number of Samples	5 Water
Date samples received	15/09/2020
Date completed instructions received	15/09/2020

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	22/09/2020
Date of Issue	22/09/2020

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with** *

Results Approved By
Diego Bigolin, Team Leader, Inorganics
Jaimie Loa-Kum-Cheung, Metals Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

Envirolab Reference: 251219
Revision No: R00

Client Reference: Byrants Concrete Groundwater Assessment

HM in water - dissolved						
Our Reference		251219-1	251219-2	251219-3	251219-4	251219-5
Your Reference	UNITS	MW1	MW2	MW3	MW4	MW5
Date Sampled		14/09/2020	14/09/2020	14/09/2020	14/09/2020	14/09/2020
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	16/09/2020	16/09/2020	16/09/2020	16/09/2020	16/09/2020
Date analysed	-	16/09/2020	16/09/2020	16/09/2020	16/09/2020	16/09/2020
Arsenic-Dissolved	µg/L	<1	3	<1	<1	3
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	2	<1	<1
Copper-Dissolved	µg/L	<1	1	1	2	1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	2	3	3	6	3
Zinc-Dissolved	µg/L	31	22	72	67	22

Client Reference: Byrants Concrete Groundwater Assessment

Miscellaneous Inorganics						
Our Reference		251219-1	251219-2	251219-3	251219-4	251219-5
Your Reference	UNITS	MW1	MW2	MW3	MW4	MW5
Date Sampled		14/09/2020	14/09/2020	14/09/2020	14/09/2020	14/09/2020
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	15/09/2020	15/09/2020	15/09/2020	15/09/2020	15/09/2020
Date analysed	-	15/09/2020	15/09/2020	15/09/2020	15/09/2020	15/09/2020
Total Cyanide	mg/L	<0.004	<0.004	<0.004	<0.004	<0.004
Free Cyanide in Water	mg/L	<0.004	<0.004	<0.004	<0.004	<0.004
Thiocyanate*	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ammonia as N in water	mg/L	0.006	0.053	0.017	0.012	0.044
Nitrate as N in water	mg/L	9.1	5.7	9.9	5.9	5.6
Nitrite as N in water	mg/L	0.43	2.1	0.21	1.8	2.1
TKN in water	mg/L	2.2	1.8	2.2	1.6	1.9
Hexavalent Chromium, Cr^{6+}	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Client Reference: Byrants Concrete Groundwater Assessment

Method ID	Methodology Summary
Inorg-014	Cyanide - free, total, weak acid dissociable by segmented flow analyser (in line dialysis with colourimetric finish). Solids/Filters and sorbents are extracted in a caustic media prior to analysis. Impingers are pH adjusted as required prior to analysis. Cyanides amenable to Chlorination - samples are analysed untreated and treated with hyperchlorite to assess the potential for chlorination of cyanide forms. Based on APHA latest edition, 4500-CN_G,H.
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-089	Thiocyanate - determined colourimetrically and analysed by DA.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.

Client Reference: Byrants Concrete Groundwater Assessment

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date prepared	-			16/09/2020	[NT]	[NT]	[NT]	[NT]	16/09/2020	[NT]
Date analysed	-			16/09/2020	[NT]	[NT]	[NT]	[NT]	16/09/2020	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	105	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]

Client Reference: Byrants Concrete Groundwater Assessment

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	251219-2
Date prepared	-			15/09/2020	1	15/09/2020	15/09/2020		15/09/2020	15/09/2020
Date analysed	-			15/09/2020	1	15/09/2020	15/09/2020		15/09/2020	15/09/2020
Total Cyanide	mg/L	0.004	Inorg-014	<0.004	1	<0.004	<0.004	0	101	70
Free Cyanide in Water	mg/L	0.004	Inorg-014	<0.004	1	<0.004	<0.004	0	99	92
Thiocyanate*	mg/L	0.5	Inorg-089	<0.5	1	<0.5	<0.5	0	106	85
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.006	0.006	0	97	93
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	9.1	9.1	0	102	76
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.43	0.43	0	99	#
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	2.2	2.1	5	102	[NT]
Hexavalent Chromium, Cr^{6+}	mg/L	0.005	Inorg-024	<0.005	1	<0.005	<0.005	0	107	105

Client Reference: Byrants Concrete Groundwater Assessment

Result Definitions	
NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Client Reference: Byrants Concrete Groundwater Assessment

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Client Reference: Byrants Concrete Groundwater Assessment

Report Comments
MISC_INORG: Nitrite as N # Percent recovery not reported due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP

Client: Ground Doctor Pty Ltd	**Client Project Name / Number / Site etc (ie report title):** Bryants Concrete Groundwater Assessment	**Envirolab Services** 12 Ashley St, Chatswood, NSW 2067
Contact person: James Morrow	**PO No.:** 2020-GD013-2	**Phone:** 02 9910 6200 **Fax :**02 9910 6201
Project Mgr: James Morrow	**Envirolab Quote No. :**	**E-mail:** ahie@envirolabservices.com.au
Sampler: James Morrow	**Date results required:** Standard	**Contact:** Aileen Hie
Address: PO Box 6278, DUBBO, NSW 2830	Or choose: standard / same day / 1 day / 2 day / 3 day	**Envirolab Services WA t/a MPL** 16-18 Hayden Crt, Myaree WA 6154
Phone: -- **Mob:** 0407 875 302	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	**Phone:** 08 9317 2505 **Fax :**08 9317 4163
Fax: --	**Lab comments:**	**E-mail:** lab@mpl.com.au
Email: james.morrow@grounddoc.com.au		**Contact:** Joshua Lim

Sample information					Tests Required														Comments
Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	M8 Metals, Free Cyanide, Total Cyanide	M8 Metals (dissolved), Free Cyanide, Total Cyanide, Thiocyanate, Nutrients (NH3, NO2, NO3, TKN)	Hexavalent Chromium												Provide as much information about the sample as you can
1	MW1	-	14-Sep-20	Water		x	x												
2	MW2	-	14-Sep-20	Water		x	x												
3	MW3	-	14-Sep-20	Water		x	x												
4	MW4	-	14-Sep-20	Water		x	x												
5	MW5	-	14-Sep-20	Water		x	x												

ENVIROLAB GROUP — *Envirolab Services, 12 Ashley St, Chatswood NSW 2067, Ph: (02) 9910 6200*

Job No: 251219

Date Received: 15/12/19

Time Received: #49

Received By: CM

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken/None

Relinquished by (company):	Ground Doctor Pty Ltd	**Received by (company):**	ES SYD
Print Name:	James Morrow	**Print Name:**	C. Mullen
Date & Time:	14/09/20 1530	**Date & Time:**	15/9/20 749
Signature:	JRM	**Signature:**	CM

Lab use only:
Samples Received Cool or Ambient (circle one)
Temperature Received at: 6.2 (if applicable)
Transported by: Hand delivered / courier

COC: 1130.

White - Lab copy / Blue - Client copy / Pink - Retain in Book

Form: 302 - Chain of Custody-Client, Issued 16/03/10, Version 4, Page 1 of 1.

Annex E

Groundwater Works Summary Forms

WaterNSW
Work Summary

GW047952

Licence:
Licence Status:
Authorised Purpose(s):
Intended Purpose(s): PUBLIC/MUNICIPL

Work Type: Bore
Work Status: Test Hole
Construct.Method: Cable Tool
Owner Type: Local Govt

Commenced Date:
Completion Date: 01/03/1983
Final Depth: 20.40 m
Drilled Depth: 20.40 m

Contractor Name: (None)
Driller: Richard Murney
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	FORBES	MULYAN	RES 99999
Licensed:			

Region: 70 - Lachlan
River Basin: 412 - LACHLAN RIVER
Area/District:
CMA Map: 8630-S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6255135.000
Easting: 655413.000
Latitude: 33°49'57.4"S
Longitude: 148°40'46.3"E

GS Map: -
MGA Zone: 55
Coordinate Source: GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Withdrawn	0.00	0.00				

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
17.40	20.10	2.70	Unconsolidated	12.30		1.20			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.20	1.20	Soil	Soil	
1.20	11.00	9.80	Clay	Clay	

11.00	17.40	6.40	Clay Silty	Clay	
17.40	20.10	2.70	Gravel Silty Sand Water Supply	Gravel	
20.10	20.40	0.30	Granite Decomposed	Granite	

Remarks

01/11/1983: COWRA SHOWGROUND
01/11/1983: COWRA TWS TEST HOLE

***** End of GW047952 *****

WaterNSW
Work Summary

GW047953

Licence:
Licence Status:
Authorised Purpose(s):
Intended Purpose(s): PUBLIC/MUNICIPL

Work Type: Bore
Work Status: Test Hole
Construct.Method: Cable Tool
Owner Type: Local Govt

Commenced Date:
Completion Date: 01/03/1983
Final Depth: 19.80 m
Drilled Depth: 19.80 m

Contractor Name: (None)
Driller: Richard Murney
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	FORBES	MULYAN	RES 99999
Licensed:			

Region: 70 - Lachlan
River Basin: 412 - LACHLAN RIVER
Area/District:
CMA Map: 8630-S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6255225.000
Easting: 655569.000
Latitude: 33°49'54.4"S
Longitude: 148°40'52.3"E

GS Map: -
MGA Zone: 55
Coordinate Source: GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Withdrawn	0.00	0.00				
1	1	Opening	Withdrawn	15.20	18.30	127		1	Stainless Steel, A: 1.60mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
14.90	19.20	4.30	Unconsolidated	7.60		1.26			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	4.60	4.60	Soil	Soil	

4.60	15.00	10.40	Clay Grey Water Supply	Clay	
15.00	19.20	4.20	Sand Grey Silty Gravel Water Supply	Sand	
19.20	19.80	0.60	Granite Decomposed	Granite	

Remarks

01/11/1983: COWRA SHOWGROUND
01/11/1983: COWRA TWS TEST HOLE

***** End of GW047953 *****

WaterNSW
Work Summary

GW047954

Licence:
Licence Status:
Authorised Purpose(s):
Intended Purpose(s): PUBLIC/MUNICIPL

Work Type: Bore
Work Status: Test Hole
Construct.Method: Cable Tool
Owner Type: Local Govt

Commenced Date:
Completion Date: 01/03/1983
Final Depth: 14.90 m
Drilled Depth: 14.90 m

Contractor Name: (None)
Driller: Richard Murney
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	FORBES	MULYAN	RES 99999
Licensed:			

Region: 70 - Lachlan
River Basin: 412 - LACHLAN RIVER
Area/District:
CMA Map: 8630-S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6255725.000
Easting: 655165.000
Latitude: 33°49'38.4"S
Longitude: 148°40'36.3"E

GS Map: -
MGA Zone: 55
Coordinate Source: GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Withdrawn	0.00	0.00				

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
14.00	14.60	0.60	Unconsolidated	7.00					

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	5.50	5.50	Soil	Soil	
5.50	14.00	8.50	Clay Grey Sandy	Clay	

14.00	14.60	0.60	Sand Grey Silty Gravel Water Bearing	Sand	
14.60	14.90	0.30	Granite Decomposed	Granite	

Remarks

01/11/1983: COWRA SHOWGROUND
01/11/1983: COWRA TWS TEST HOLE

***** End of GW047954 *****

WaterNSW
Work Summary

GW047956

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): PUBLIC/MUNICIPL

Work Type: Bore
Work Status: Test Hole
Construct.Method: Cable Tool
Owner Type: Local Govt

Commenced Date: **Final Depth:** 20.10 m
Completion Date: 01/03/1983 **Drilled Depth:** 20.10 m

Contractor Name: (None)
Driller: Richard Murney
Assistant Driller:

Property: **Standing Water Level (m):**
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	BATHURST	COWRA	RES 99999
Licensed:			

Region: 70 - Lachlan **CMA Map:** 8630-S
River Basin: 412 - LACHLAN RIVER **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6255496.000 **Latitude:** 33°49'45.4"S
Elevation Source: (Unknown) **Easting:** 655984.000 **Longitude:** 148°41'08.3"E

GS Map: - **MGA Zone:** 55 **Coordinate Source:** GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Withdrawn	0.00	0.00				

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
18.00	19.50	1.50	Unconsolidated	7.30					

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	4.30	4.30	Soil	Soil	
4.30	11.60	7.30	Clay Sandy	Clay	

11.60	18.00	6.40	Clay Grey Silty	Clay	
18.00	19.50	1.50	Gravel Grey Silty Sand Water Supply	Gravel	
19.50	20.10	0.60	Granite Decomposed	Granite	

Remarks

01/11/1983: RIVER PARK ADJACENT OLYMPIC POOL
01/11/1983: COWRA TWS TEST HOLE

***** End of GW047956 *****

WaterNSW
Work Summary

GW053835

Licence:
Licence Status:
Authorised Purpose(s):
Intended Purpose(s): IRRIGATION

Work Type: Bore
Work Status:
Construct.Method: Cable Tool
Owner Type: Private

Commenced Date:
Completion Date: 01/05/1983
Final Depth: 18.60 m
Drilled Depth: 18.60 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	FORBES	MULYAN	L2 DP592116 (62)
Licensed:			

Region: 70 - Lachlan
River Basin: 412 - LACHLAN RIVER
Area/District:
CMA Map: 8630-S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6255729.000
Easting: 654934.000
Latitude: 33°49'38.4"S
Longitude: 148°40'27.3"E

GS Map: -
MGA Zone: 55
Coordinate Source: GPS - Global

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Threaded Steel	-1.00	16.80	152			
1	1	Opening	Screen	16.80	18.60	127		1	Stainless Steel, A: 1.60mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
16.80	18.60	1.80	Unconsolidated	9.80		16.40			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.80	1.80	Soil	Soil	

1.80	9.50	7.70	Clay Grey Sandy	Clay	
9.50	16.80	7.30	Clay Silty	Clay	
16.80	18.60	1.80	Sand Gravel Water Supply	Sand	
18.60	18.61	0.01	Granite	Granite	

***** End of GW053835 *****

WaterNSW
Work Summary

GW059443

Licence: 70WA612584 **Licence Status:** CURRENT

Authorised Purpose(s): STOCK,DOMESTIC
Intended Purpose(s): IRRIGATION

Work Type: Bore
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date:
Final Depth: 20.00 m
Drilled Depth:

Contractor Name: (None)
Driller:
Assistant Driller:

Property: N/A NSW
GWMA: 011 - UPPER LACHLAN (U/S LAKE CARGELLIGO)
GW Zone: 002 - ZONE 2 NORTH OF THE WESTERN HWY COWRA TO GOOLOOGONG
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	FORBES	MULYAN	371
Licensed:	FORBES	MULYAN	Whole Lot //

Region: 70 - Lachlan
River Basin: 412 - LACHLAN RIVER
Area/District:
CMA Map: 8630-S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6255664.000
Easting: 655087.000
Latitude: 33°49'40.4"S
Longitude: 148°40'33.3"E

GS Map: -
MGA Zone: 55
Coordinate Source: GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Threaded Steel	0.00	20.00	150			Seated on Bottom

***** End of GW059443 *****

WaterNSW
Work Summary

GW059491

Licence:
Licence Status:
Authorised Purpose(s):
Intended Purpose(s): IRRIGATION

Work Type: Bore
Work Status:
Construct.Method: Rotary Air
Owner Type: Private

Commenced Date:
Completion Date: 01/02/1983
Final Depth: 17.40 m
Drilled Depth: 17.40 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description: Fair
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	BATHURST	COWRA	L5 (24)
Licensed:			

Region: 70 - Lachlan
River Basin: 412 - LACHLAN RIVER
Area/District:
CMA Map: 8630-S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6256069.000
Easting: 655022.000
Latitude: 33°49'27.3"S
Longitude: 148°40'30.5"E

GS Map: -
MGA Zone: 55
Coordinate Source: GIS - Geogra

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Welded Steel	-0.50	14.40	210			Suspended in Clamps
1	1	Opening	Screen	14.40	17.40	210		1	Stainless Steel, A: 2.03mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
13.70	17.40	3.70	Unconsolidated	3.00		9.37			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	13.71	13.71	Clay	Clay	

13.71	17.38	3.67	Sand Gravel Water Supply	Sand	

***** End of GW059491 *****

WaterNSW
Work Summary

GW062044

Licence: 70CA613944 **Licence Status:** CURRENT

Authorised Purpose(s): IRRIGATION
Intended Purpose(s): IRRIGATION

Work Type: Bore
Work Status:
Construct.Method: Cable Tool
Owner Type: Private

Commenced Date:
Completion Date: 01/01/1985
Final Depth: 19.20 m
Drilled Depth: 19.20 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property: GLENBROOK COWRA 2794 NSW
GWMA: 011 - UPPER LACHLAN (U/S LAKE CARGELLIGO)
GW Zone: 002 - ZONE 2 NORTH OF THE WESTERN HWY COWRA TO GOOLOOGONG
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	FORBES	MULYAN	371
Licensed:	FORBES	MULYAN	Whole Lot 371//752948

Region: 70 - Lachlan
River Basin: 412 - LACHLAN RIVER
Area/District:
CMA Map: 8630-S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6255696.000
Easting: 655062.000
Latitude: 33°49'39.4"S
Longitude: 148°40'32.3"E

GS Map: -
MGA Zone: 55
Coordinate Source: GPS - Global

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Threaded Steel	-0.30	17.70	152			Seated
1	1	Opening	Screen	17.70	19.20	127		1	Stainless Steel, A: 1.60mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
16.80	19.20	2.40	Unconsolidated	13.40		14.80			

Drillers Log

From	To	Thickness	Drillers Description	Geological Material	Comments

(m)	(m)	(m)			
0.00	1.80	1.80	Soil	Soil	
1.80	14.30	12.50	Clay Sandy	Clay	
14.30	16.80	2.50	Clay Silty	Clay	
16.80	19.20	2.40	Sand Gravel Water Supply	Sand	

***** End of GW062044 *****

Annex F

Borehole and Monitoring Well Construction Logs

Borehole ID: MW1

Project No.: 2020-GD013
Project Name: Bryants Concrete Cleanup Direction ESA
Client: Buzzree Pty Limited
Site Address: 2 Kite Street, Cowra, NSW

Ground Doctor Pty Ltd
22 Tamworth Street
PO Box 6278
DUBBO NSW 2830
ph: 0407 875 302
fx: (02) 8607 8122
admin@grounddoc.com.au

SUBSURFACE PROFILE				SAMPLE		CONSTRUCTION	
Depth (m)	Symbol	Description	Depth/Elev.	Sample ID	PID / Odour	Well Diagram	Materials Used
		Ground Surface	0.0				Stickup steel monument concreted at surface
0		**Sandy Clay:** Brown, moist, medium plasticity, medium to coarse sand.	1.2				
1		**Silty Sand:** Grey-brown, moist, fine grained, some clay.	2.3				
2		**Clayey Gravelly Sand:** Light brown, fine to coarse grained sand and fine to coarse gravel, rounded, moist.	3.5				
3		**Silty Clay:** Red-brown, moist, low plasticity.	4.3				Annulus filled with bentonite (0.2-8.0m)
4		**Clayey Sand:** Light brown, medium to coarse sand and fine gravel, hard (cemented), moist.	6.0				
5		**Weathered Granite:** Light brown, texture of clayey sand and gravel, fine to coarse sandand fine gravel, dry, hard. Moist to wet cuttings at 10m. Saturated 12m+. Hard layers encountered regularly between 12 and 15m below ground level.					50mm ID Class 18 Threaded Blank Casing (-0.6-10.5m)
6							
7							
8							
9							
10							
11							Annulus filled with 3-7mm washed river gravel (8.0-16.5m)
12							
13							
14							50mm ID Class 18 Threaded PVC Screen (10.5-16.5m)
15							
16			16.5				PVC End Cap (16.5m)
17		**End of Hole at 16.5m in Weathered Granite**					
18							

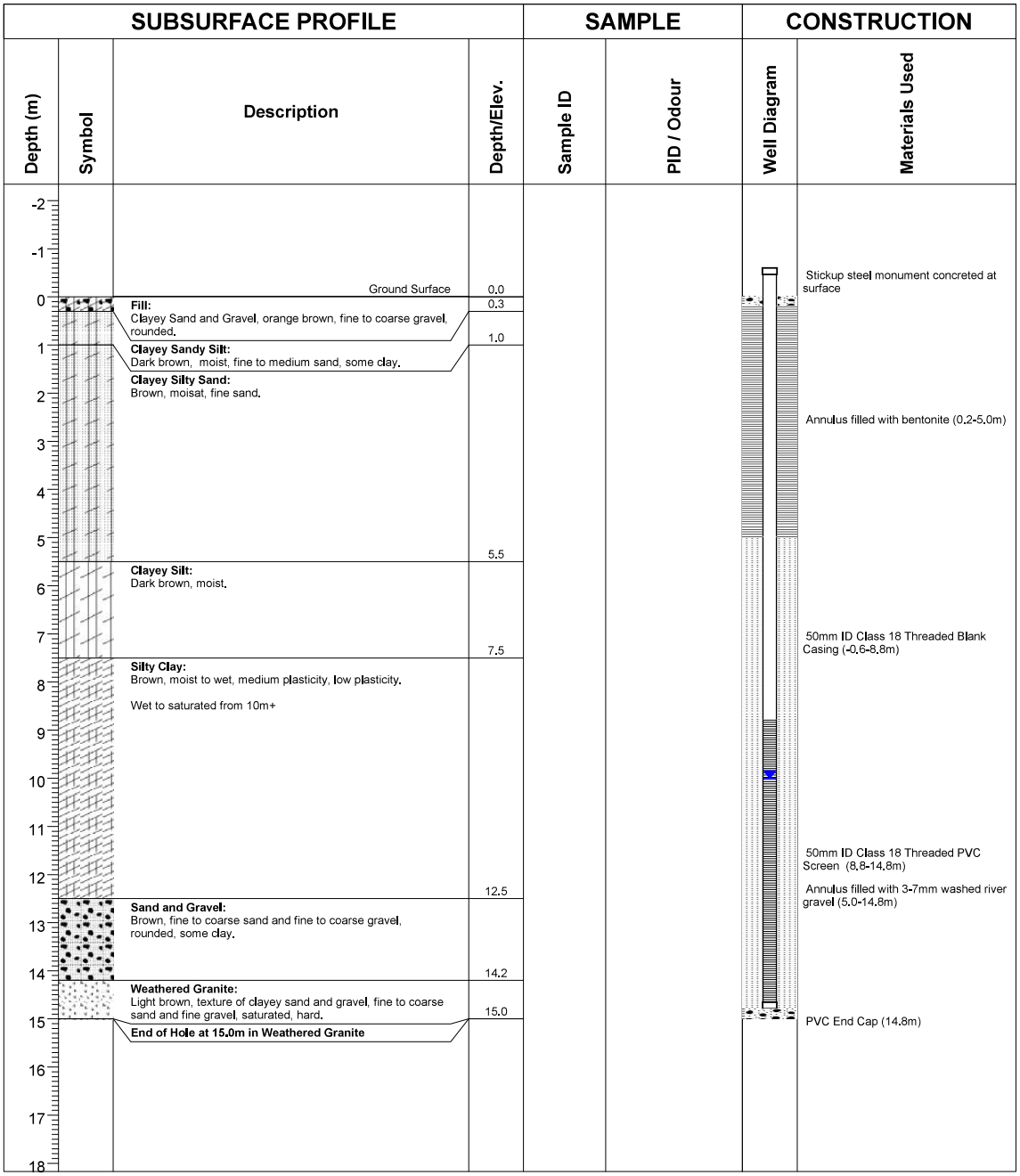
Drilled By: Ivan Drilling
Drill Method: Rotary with Solid Auger
Drill Date: 1 September 2020

Hole Size: 100mm
Datum:
Sheet: 1 of 1

Borehole ID: MW2

Project No.: 2020-GD013
Project Name: Bryants Concrete Cleanup Direction ESA
Client: Buzzree Pty Limited
Site Address: 2 Kite Street, Cowra, NSW

Ground Doctor Pty Ltd
22 Tamworth Street
PO Box 6278
DUBBO NSW 2830
ph: 0407 875 302
fx: (02) 8607 8122
admin@grounddoc.com.au



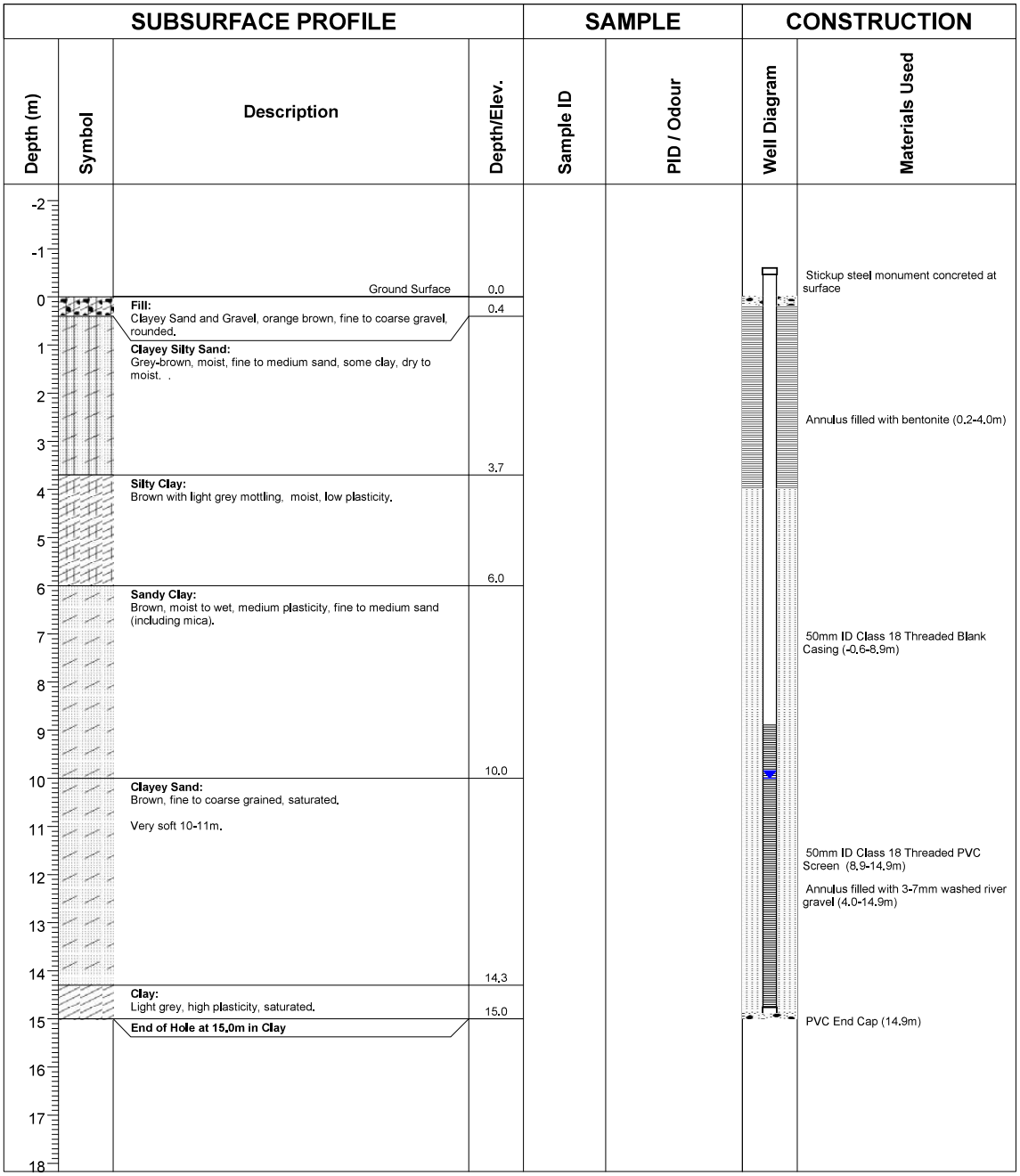
Drilled By: Ivan Drilling
Drill Method: Rotary with Solid Auger
Drill Date: 2 September 2020

Hole Size: 100mm
Datum:
Sheet: 1 of 1

Borehole ID: MW3

Project No.: 2020-GD013
Project Name: Bryants Concrete Cleanup Direction ESA
Client: Buzzree Pty Limited
Site Address: 2 Kite Street, Cowra, NSW

Ground Doctor Pty Ltd
22 Tamworth Street
PO Box 6278
DUBBO NSW 2830
ph: 0407 875 302
fx: (02) 8607 8122
admin@grounddoc.com.au



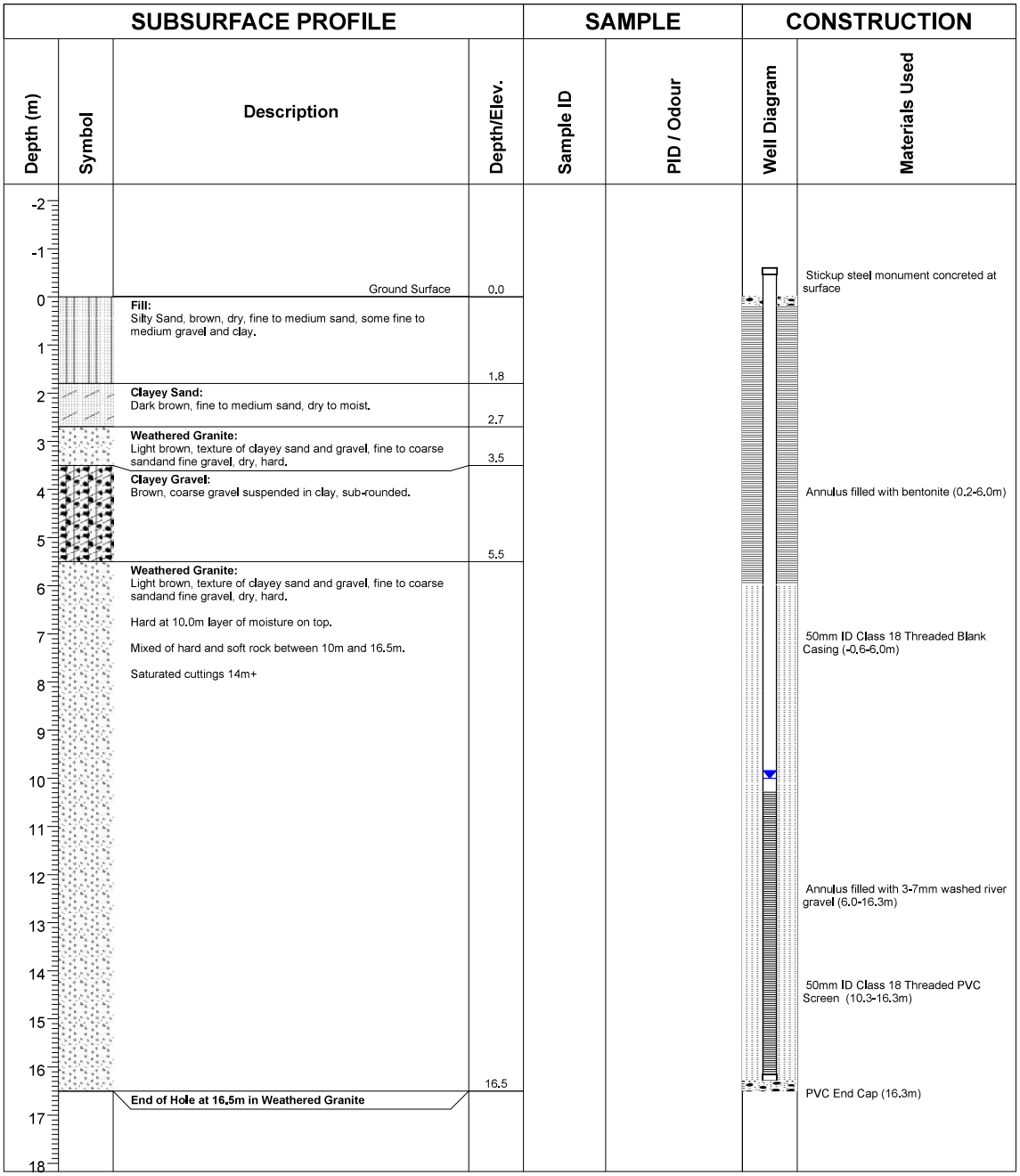
Drilled By: Ivan Drilling
Drill Method: Rotary with Solid Auger
Drill Date: 1 September 2020

Hole Size: 100mm
Datum:
Sheet: 1 of 1

Borehole ID: MW4

Project No.: 2020-GD013
Project Name: Bryants Concrete Cleanup Direction ESA
Client: Buzzree Pty Limited
Site Address: 2 Kite Street, Cowra, NSW

Ground Doctor Pty Ltd
22 Tamworth Street
PO Box 6278
DUBBO NSW 2830
ph: 0407 875 302
fx: (02) 8607 8122
admin@grounddoc.com.au



Drilled By: Ivan Drilling
Drill Method: Rotary with Solid Auger
Drill Date: 2 September 2020

Hole Size: 100mm
Datum:
Sheet: 1 of 1

Annex G

Monitoring Well Purging Records

Site Name:	ESA - Bryant's Concrete Clean-up Directive
Project Number:	2020-GD013-RP1
Sampling Dates:	14-Sep-20

MW1

Purge Volume (L)	Time	DTW (mbtoc)	Temp (oC)	DO (ppm)	EC (uS/cm)	pH	Redox (mV)
0	1341	10.64	20.4	3.31	1540	6.28	144
1	1345	10.7	19.6	0.51	1529	6.48	136
2	1350	10.68	19.5	0.47	1526	6.60	131
3	1355	10.78	19.5	0.58	1522	6.63	129
4	1400	10.77	19.5	0.72	1519	6.64	129
5	1405	10.77	19.5	0.87	1516	6.64	129
6	1410	10.77	19.5	0.98	1513	6.64	129
7	1415	10.77	19.5	0.95	1510	6.63	128
							.

Comments / Observations:
Purged water was clear and colourless.
No unusual odour.

MW2

Purge Volume (L)	Time	DTW (mbtoc)	Temp (oC)	DO (ppm)	EC (uS/cm)	pH	Redox (mV)
0	1220	13.32	21.6	3.33	1554	6.82	122
1	1225	10.51	18.8	0.42	1459	6.65	123
2	1230	10.61	18.9	0.4	1470	6.74	122
3.5	1238	10.69	18.9	0.85	1447	6.77	121
5	1245	10.8	18.5	1.66	1435	6.81	122
6	1250	10.84	18.5	2.17	1421	6.82	122
7	1255	10.88	18.6	2.48	1405	6.83	123
8	1300	11.03	18.6	2.58	1396	6.82	124
9	1305	11.1	18.6	3.24	1390	6.83	125
10	1310	11.15	18.7	3.24	1384	6.83	125
11	1315	11.18	18.8	3.25	1388	6.82	126
							.

Comments / Observations:
Minor light brown silt in sample.
No unusual odour.

MW3

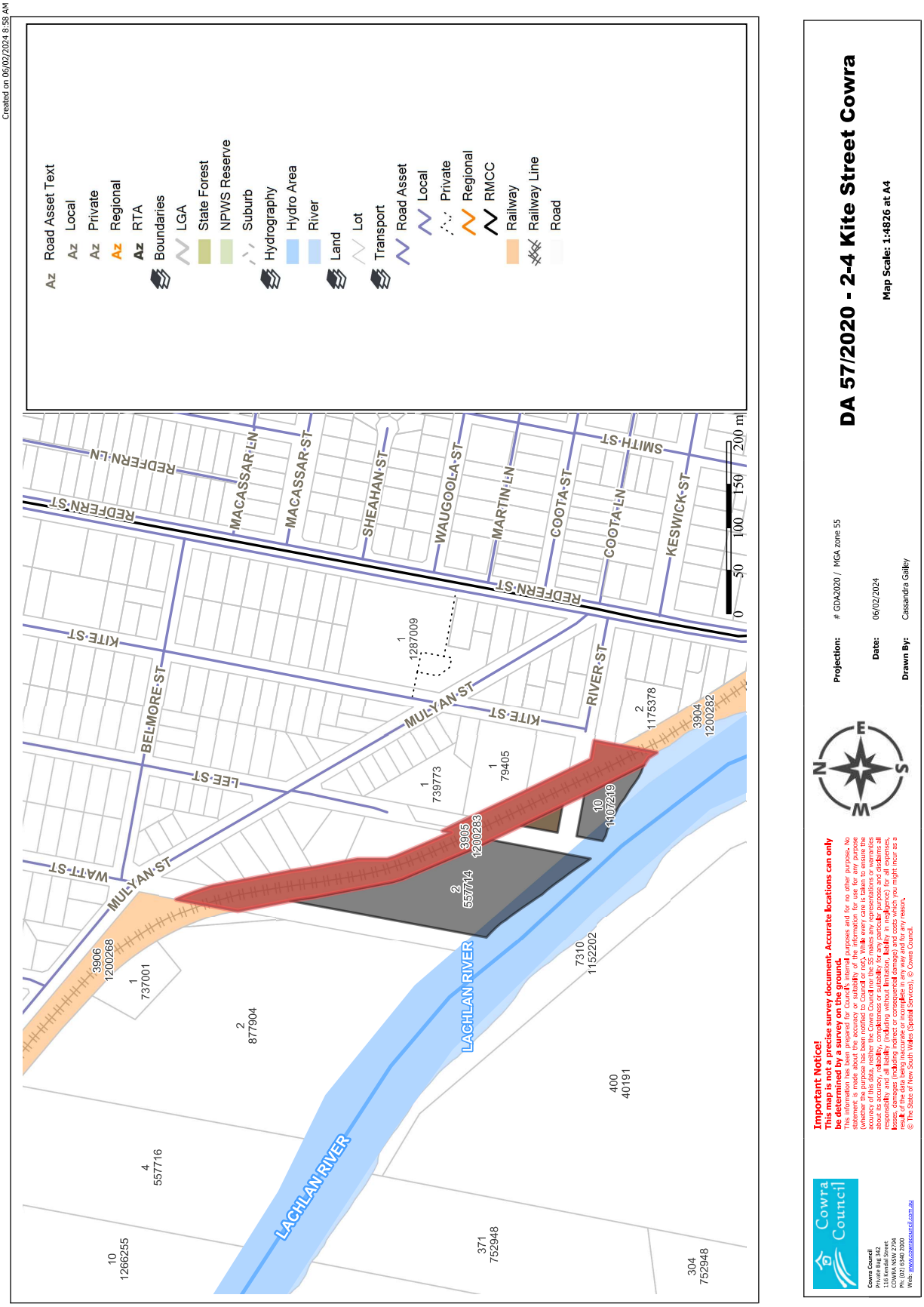
Purge Volume (L)	Time	DTW (mbtoc)	Temp (oC)	DO (ppm)	EC (uS/cm)	pH	Redox (mV)
0	1432	9.8	20.5	6.33	1403	6.58	128
1	1435	10.05	19.4	0.67	1455	6.54	125
2	1440	10.48	19.2	0.5	1425	6.64	122
3	1445	10.9	19.5	0.63	1403	6.67	120
4	1450	11.28	19.3	0.69	1380	6.66	119
5	1455	11.51	19.6	0.82	1380	6.69	118
6	1500	11.75	19.7	0.84	1379	6.66	118
7	1505	12.02	19.7	0.82	1374	6.66	117
8	1510	12.22	19.8	0.82	1374	6.67	117
							.

Comments / Observations:
Purged water was clear and colourless.
No unusual odour.

MW4

Purge Volume (L)	Time	DTW (mbtoc)	Temp (oC)	DO (ppm)	EC (uS/cm)	pH	Redox (mV)
0	1102	10.68	19.5	3.77	1526	6.82	150
1	1105	11.23	20.2	0.95	1557	6.91	111
2	1110	11.38	20.2	0.61	1551	6.89	100
3	1115	11.87	20.2	0.41	1547	6.87	99
4	1120	12.13	20.2	0.33	1547	6.86	100
5	1125	12.36	20.2	0.29	1541	6.84	102
6	1130	12.75	20.2	0.23	1541	6.83	103
7	1135	13.08	20.2	0.19	1535	6.83	104
8	1140	13.32	20.2	0.19	1531	6.82	104
9	1145	13.48	20.2	0.20	1533	6.82	104
							.

Comments / Observations:
Minor light brown silt in sample.
No unusual odour.


Created on 06/02/2024 8:58 AM
Road Asset Text
Local
Private
Regional
RTA
Boundaries
LGA
State Forest
NPWS Reserve
Suburb
Hydrography
Hydro Area
River
Land
Lot
Transport
Road Asset
Local
Private
Regional
RMCC
Railway
Railway Line
Road
REDFERN ST
REDFERN LN
MACASSAR LN
MACASSAR ST
SHEAHAN ST
WAUGOOLA ST
MARTIN LN
COOTA ST
COOTA LN
SMITH ST
KESWICK ST
KITE ST
BELMORE ST
LEE ST
WATT ST
MULYAN ST
RIVER ST
LACHLAN RIVER
0 50 100 150 200 m
DA 57/2020 - 2-4 Kite Street Cowra
Map Scale: 1:4826 at A4
Projection: # GDA2020 / MGA zone 55
Date: 06/02/2024
Drawn By: Cassandra Galley
N E S W
Important Notice!
This map is not a precise survey document. Accurate locations can only be determined by a survey on the ground.
This information has been prepared for Council's internal purposes and for no other purpose. No statement is made about its accuracy or suitability for use for any purpose (whether the purpose has been notified to Council or not). While every care is taken to ensure the accuracy of this data, neither the Cowra Council nor the SS makes any representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.
© The State of New South Wales (Spatial Services). © Cowra Council.
Cowra Council
Private Bag 342
116 Kendal Street
COWRA NSW 2794
Ph: (02) 6340 2000
Web: www.cowracouncil.com.au

Cowra Council
Private Bag 342
116 Kendal Street
COWRA NSW 2794
Ph: (02) 6340 2000
Web: www.cowracouncil.com.au

Important Notice!
This map is not a precise survey document. Accurate locations can only be determined by a survey on the ground.
This information has been prepared for Council's internal purposes and for no other purpose. No statement is made about the accuracy or suitability of the information for use for any purpose (whether the purpose has been notified to Council or not). While every care is taken to ensure the accuracy of this data, neither the Cowra Council nor the SS makes any representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.
© The State of New South Wales (Spatial Services), © Cowra Council.

Drawn By: Cassandra Galley
Projection: # GDA2020 / MGA zone 55
Date: 06/02/2024 9:03 AM

DA 57/2020 - 2-4 Kite Street Cowra

Map Scale: 1:1977 at A4

3 LATE REPORTS

Nil