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Statement of Enviromental Effects

Client: Aileen Sage Architects
Site Address: Back O' Bourke Information and Exhibition Centre
49 Mooculta Street
Bourke, NSW 2840

7 April 2025

Our Reference: 41193-PR01_B

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DISCLAIMER

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Report Title:	Statement of Environmental Effects
Project Name:	Expansion to Back O' Bourke Information and Exhibition Centre – Building 5
Project Location:	Lot 153 DP 1068536, 49 Mooculta Street, Bourke, NSW 2840
Client:	Aileen Sage Architects
Project Number:	41193
Report Reference:	41193-PR01_B
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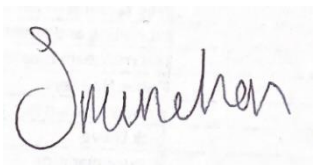
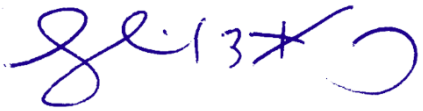
Prepared by:	Reviewed by:
	
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1.0 INTRODUCTION

1.1 Background

Barnson has been engaged by Aileen Sage Architects to prepare information in support of a Development Application (DA) for a new exhibition space at the existing Back o' Bourke Information and Exhibition Centre on Lot 152 & 153 DP 1068536, commonly known as 49 Mooculta Street, Bourke, NSW.

The subject site is located on the north-western side of Mooculta Street. The subject site has a property area of approximately 15 hectares and currently hosts a number of improvements associated with the Back o' Bourke Information and Exhibition Centre

The proposal will consist of the construction of a new exhibition building; extension of an internal access road and additional parking; installation of shade structures; provision of an outdoor area experience including projection wall; enlarged billabong; landscaping and civil works all to complement the existing use.

The site is zoned SP3: Tourist pursuant to the provisions under the *Bourke Local Environmental Plan 2012* (the LEP). The proposed development is considered an expansion to an existing *Information and education facilities*, which is permitted with consent in the SP3 zone.

This application consists of:

- One (1) PDF of this written statement, including plans.
- Structural Reporting
- Flood Risk Assessment
- Ecological Sustainable Development (ESD) Initiatives

1.2 Proponent

The proponent for the DA is Bourke Shire Council (rep. Aileen Sage Architects)

1.3 Consultant

Barnson Pty Ltd

Jim Sarantzouklis

Riverview Business Park

Unit 1, 36 Darling Street

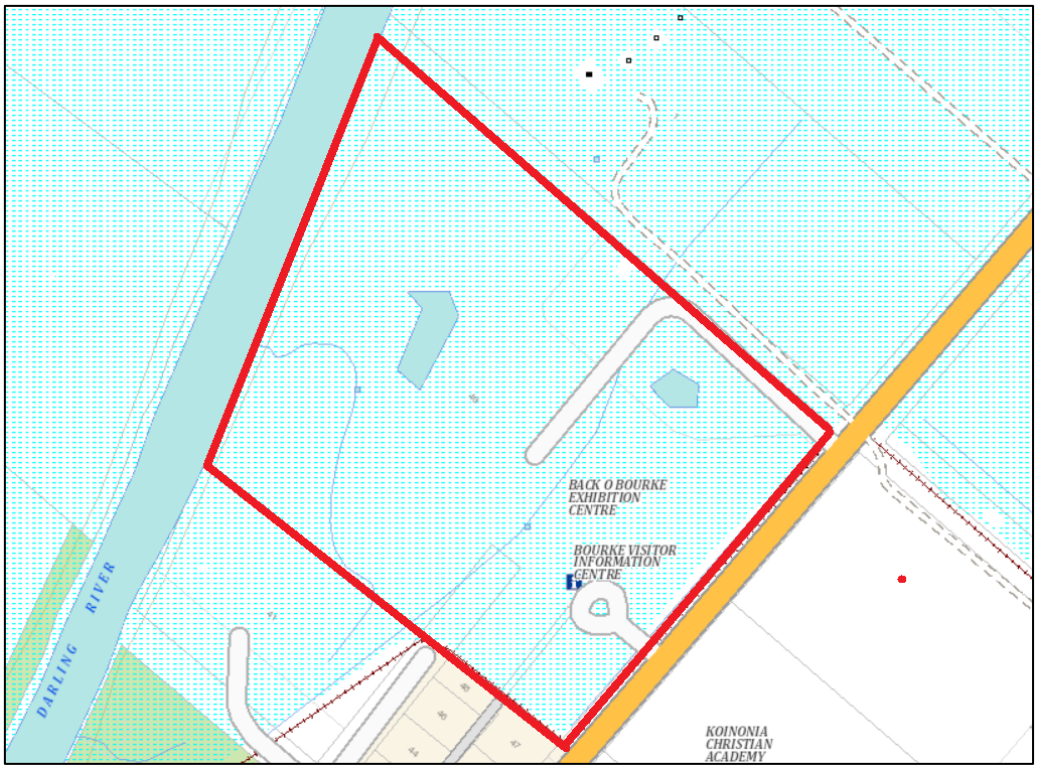
Dubbo NSW 2830

2.0 EXISTING ENVIROMENT

2.1 Location and Title

The subject site of this application is Lot 152 and Lot 153 DP 1068536, also known as 49 Mooculta Street, Bourke, NSW 2840.

The Subject site is located approximately 1.5kms north-east of the Bourke Central Business District. The locality is predominantly used for tourist and residential purposes and adjoins the Darling River. Please refer to Figure 1 below.



Source: (NSW Government Spatial Services, 2021)

Figure 1 – Site Location

The proposed subject site has an approximate area of 15ha. The site currently hosts the Bourke Information and Exhibition Centre. The site bounds the Darling River, Mooculta Street, and Wortumetrie Street.

Refer to Figure 2 and Plates 1-3 for photos of the site and the locality.

Source: (NSW Government Spatial Services, 2021)

Figure 2 – Partial Site Aerial

Plate 1 – Photo of access to site, looking west.

Plate 2 – Photo of existing site and levee bank.

2.2 Land Use

The subject site is located in an area characterized by mixed land uses including residential, commercial, and tourist uses in the township Bourke. There are residential dwellings to the south-west, east, and north. The Darling River bounds the north-western boundary.

2.3 Topography

The subject site is relatively flat throughout. The site has a natural fall towards the northwest with the surrounding locality generally falling towards the Darling River.

2.4 Flora and Fauna

The site of the proposed development is devoid of any significant vegetation, although landscaping associated with an existing Information centre is well maintained.

Given the locality of the subject site and the nature of the development, flora and fauna are unlikely to be impacted.

2.5 Noise Environment

Measurements of background noise levels have not been undertaken on the site. The main contributor to noise in the vicinity of the site is considered to be created by traffic in the locality, and on neighbouring land uses. The noise is not considered offensive or significant and is in context with the area.

2.6 Natural Hazards

The subject site is not identified as being bushfire prone under the Bourke Local Environmental Plan 2012 or ePlanning Spatial Viewer.

The site is identified as being flood prone according to the *Bourke Floodplain Risk Management Study and Plan* provided by Lyall and Associates.

2.7 Services

The site is serviced by stormwater management, electricity, and telecommunication infrastructure. The site utilises a bore for water supply and relies on town sewerage for effluent disposal.

2.8 Access and Traffic

The subject site is located on the north-western side of Mooculta Street, which is bitumen sealed improved with table drains.

The Information Centre consists of a considerable road crossover from Mooculta Street and large car park area which is able to support all manner of vehicles.

2.9 Heritage

The subject site is not listed as containing a heritage item under Schedule 5 of the *Bourke Local Environmental Plan 2012* (the LEP).

After conducting an online search on the Aboriginal Heritage Information Management System (AHIMS) on the 30th of August 2024, it was concluded that there are no Aboriginal items nor places within a 200m radius of the subject site. Refer to Appendix B for the AHIMS Report.

3.0 PROPOSED DEVELOPMENT

The proposed development involves an expansion to the existing Back O' Bourke Information and Exhibition Centre at Lots 152 and 153 DP 1068536, commonly known as 49 Mooculta Street, Bourke.

"The centre allows you to experience a journey through life in the backcountry; rediscovering the stories of Australia through modern eyes, taking you from the rich cultural history of the past through to the future of the Australian Outback.

This world-class centre employs a series of interactive installations and stunning visual screen displays to immerse visitors with stories of the Australian Outback, bringing them to life and actively engaging visitors with the area's rich history" visitnsw.com

The proposal is for a new exhibition building (No. 5) and outdoor area within the curtilage of the existing facility which are to be based on the experiences and culture of the local First Nations people of Bourke and surrounding areas.

At this stage it is not intended to increase the number of employees or hours of operation.

Further details include:

- Construction of a proposed building 5, which consists of;
    - Welcome room, three (3) Exhibition rooms, Store and Control rooms and Deck;
    - Loadbearing masonry walls, earth render finish;
    - Masonry retaining wall with dish drain cavity, lightweight wall to interior, earth render finish;
    - Pigmented CONC planted roof and Earth rendered periscopes;
- Five (5) additional car spaces for staff parking and disabled parking;
- Outdoor experience area which is to be landscaped;
- Rendered retaining and projection wall, rock and native vegetation landscaping;
- Relocate caravan waste dumping point to more discreet area away from access to proposed building;
- Relocated overflow channel;
- Relocate existing high voltage underground powerline to new alignment, approximately north of building 2
- Civil Works including:
    - New asphalt pavement to connect to existing;
    - Proposed rock lined dry creek bed and culverts;
    - Discharge to existing stormwater pump station;
    - Landscaping areas graded to dry creek bed;
    - Cavity wall drainage within building;
    - Proposed vegetated swale (600 wide) with subsoil drainage below;
- As part of the development, a structural review has been made on;
    - The impact of the development design on the levee in terms of additional surcharge from roof landscaping.
    - Concepts designs for the retaining wall structure supporting the landscaped roof and additional fill on the levee bank.

Please refer to Appendix C for the Architectural Plans, Appendix D for the Civil Plans, Appendix E for the Structural Report.

4.0 LAND ZONING

The subject site is zoned SP3 Tourist pursuant to the provisions under the *Bourke Local Environmental Plan 2012* (the LEP). The proposed development seeks approval to expand the existing Back O' Bourke Information and Exhibition Centre which is most appropriately classified as an Information and education facilities, which is defined in the LEP as:

> *"…a building or place used for providing information or education to visitors, and the exhibition or display of items, and includes an art gallery, museum, library, visitor information centre and the like."*

An Information and education facility is permissible with consent in an SP3 zone.

The permissibility of the proposed development is assessed in terms of the heads of consideration in Section 4.15 of the *Environmental Planning & Assessment Act 1979*, which incorporates consideration of the LEP, and the objectives and permissible uses outlined in the SP3 Zone, as outlined in Section 5 of this report.

5.0 PLANNING CONSIDERATION

5.1 Biodiversity Conservation Act

5.1.1 Is the development likely to significantly affect threatened 1 species?

Clause 7.2 of the *Biodiversity Conservation Act 2016* (BC Act) identifies the following circumstances where a development is likely to significantly affect threatened species:

(a) it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3, or
(b) the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or
(c) it is carried out in a declared area of outstanding biodiversity value.

Each of these is addressed below.

5.1.1.1 Section 7.3 Test

To determine whether a development is likely to significantly affect threatened species or ecological communities, or their habitats, the following is to be taken into account in accordance with Section 7.3 of the BC Act:

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:
(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,
(c) in relation to the habitat of a threatened species or ecological community:
(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

Comment: The subject site is predominantly cleared to support the existing Information and Exhibition Centre, and only minor vegetation is required to be removed to support the proposal. This is to be offset by extensive planting of native vegetation.

Therefore, the proposed development is not likely to significantly affect threatened species or ecological communities, or their habitats.

5.1.1.2 Section 7.4 Test

Section 7.4 of the BC Act States:

> *(1) Proposed development exceeds the biodiversity offsets scheme threshold for the purposes of this Part if it is development of an extent or kind that the regulations declare to be development that exceeds the threshold.*
> *(2) In determining whether proposed development exceeds the biodiversity offsets threshold for the purposes of this Part, any part of the proposed development that involves the clearing of native vegetation on category 1-exempt land (within the meaning of Part 5A of the Local Land Services Act 2013) is to be disregarded.*

Comment: The proposed development shall not require any significant clearing of native vegetation.

5.1.1.3 Declared Area of Outstanding Biodiversity Value

The site is not mapped on the Biodiversity Value Map as being land with a high biodiversity value as defined by the BC Act.

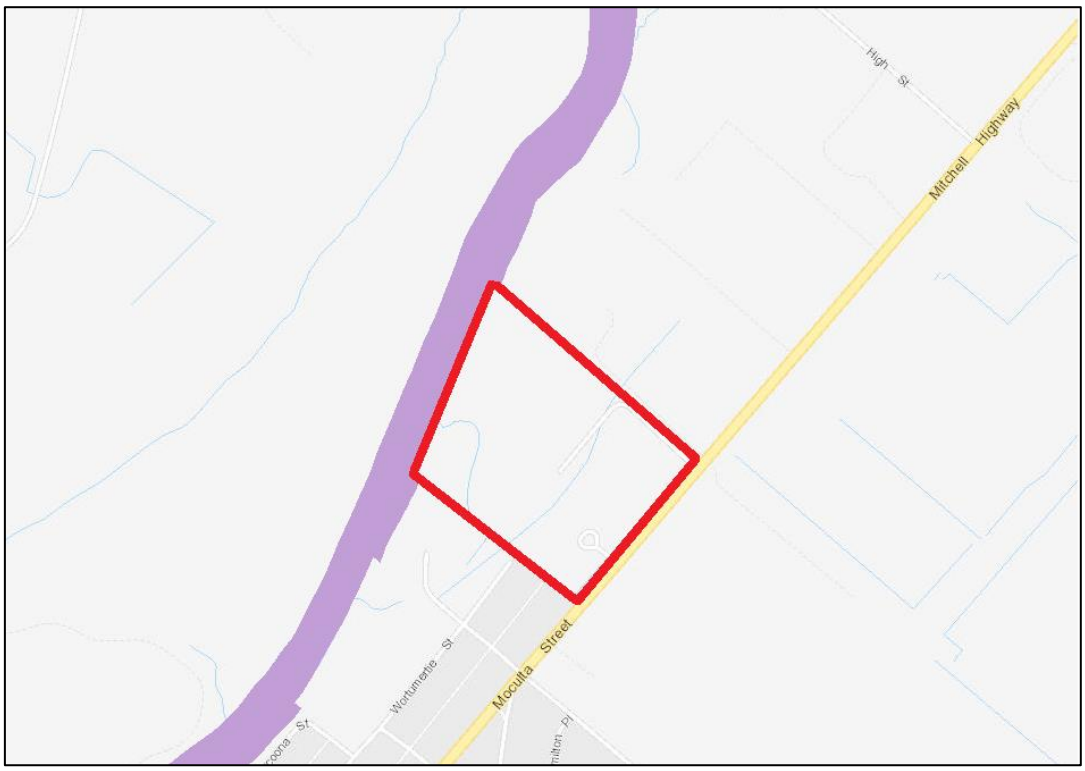


Figure 3 – Biodiversity Value Map

5.1.2 Biodiversity Development Assessment Report

As outlined in Section 5.1.1, the proposed development is not likely to significantly affect threatened species as defined by Section 7.2 of the BC Act. Therefore, a Biodiversity Development Assessment Report is not required to accompany the application for development consent.

5.2 Environmental Planning & Assessment Act 1979

5.2.1 Evaluation

Section 4.15 of the EP&A Act (as amended) requires the Council to consider various matters in regard to the determination of the Development Application.

In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:

a) The provisions of:
   i. any environmental planning instrument, and
   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 Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and
   iii. any development control plan, and
   iv. 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
   v. the regulations (to the extent that they prescribe matters for the purposes of this paragraph), and
   vi. any coastal zone management plan (within the meaning of the Coastal Protection Act 1979), that apply to the land to which the development application relates,

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;

c) The suitability of the site for the development,
d) Any submissions made in accordance with this act or the regulations,
e) The public interest.

The proposed development has been designed with consideration to the following matters, as outlined below.

5.3 Environmental Planning Instruments

5.3.1 State Environmental Planning Policies (SEPP)

While a number of SEPPs apply to the subject land and development thereon, there is unlikely to be any significant implications in terms of the requirements of the SEPPs on the proposed development. The following SEPPs are considered:

5.2.1.2 SEPP (Resilience and Hazards) 2021

Clause 4.6(1) of State Environmental Planning Policy (Resilience and Hazards) 2021 requires Council to consider the following before granting consent to a DA:

(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.*

Comment: There is no evidence indicating any significant contaminating related activities have taken place onsite. The subject site has not appeared to have been subject to any of the materials listed in Appendix A of the Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land (NSW Department of Urban Affairs and Planning and Environment Protection Authority, 1998). In this manner, the subject site appears suitable for the proposed development.

5.3 Bourke Local Environmental Plan 2012

5.3.1 Land Use Table

The subject site is Zoned SP3 Tourist pursuant to the *Bourke Local Environmental Plan 2012* (the LEP). The objectives of the SP3 Zone are:

- *To provide for a variety of tourist-orientated development and related uses.*

Comment: The proposed development supports the zone objective in that it is to occur to an existing Information and education facility that has been providing tourist-orientated activities for an extended period of time.

5.3.2 Clause 5.21 Flood Planning

Clause 5.21 of the LEP requires council to consider the following matters prior to determining a DA that is located in flood impacted lands:

(a) the impact of the development on projected changes to flood behaviour as a result of climate change,

Comment: It is unlikely that climate change shall cause any significant changes to flood behaviour in this locality. The site is already developed and protected by a flood levee. The proposal is unlikely to pose any significant cumulative impact on flood behaviour.

(b) the intended design and scale of buildings resulting from the development,

Comment: The proposed development floor level is designed at RL 105.15m AHD which is above Council's flood planning level set at 104.95m AHD.

The proposed related works to the existing flood levee have been considered and based on recommendations provided to ensure structural integrity is maintained.

(c) whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood,

Comment: The proposal is non-habitable and in a location where appropriate evacuation notice to workers can be provided and can occur via suitable existing paved road networks from the site.

(d) the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.

Comment: Flooding is unlikely to be that significant in surrounding areas as to require contemplation of any potential requirement to modify, relocate or remove future buildings on the development site.

The development is able to be structurally designed to withstand the forces of floodwater up to the flood planning level.

Being an existing infill site there is unlikely to be any significant cumulative flood impact posed on existing and/or future neighbouring land.

Refer also to the Flood Risk Assessment in Appendix F.

5.3.3 Earthworks

Clause 6.1 'Earthworks' applies to the subject application as minor earthworks are required to support the development. The site is relatively flat, however supported by a levee bank. There shall be no major disruption or detrimental effect on existing drainage patterns, soil stability, and the like. Stormwater shall be directed into existing stormwater drainage mechanisms on the site. Appropriate erosion and sediment controls will be undertaken on the site during development works to prevent or reduce any soil erosion that would occur on the site.

Works will be occurring to the existing levee bank which is supported by a report undertaken by a Barnson Structural Engineer (please see Appendix E) and geotechnical Report

5.3.4 Essential Services

Clause 6.5 'Essential Services' applies to the subject application.

Essential services are available to the site. The new development shall be supported by extending existing connections.

5.4 Draft Environmental Planning Instruments

No draft Environmental Planning Instruments are applicable to the subject site or development.

5.5 Development Control Plans

The *Bourke Development Control Plan 2012* (the DCP) applies to the subject land and development thereon. The DCP does not provide specific controls for the proposed development. Relevant sections of the DCP, including general development specifications, and environmental controls have been provided in Table 1 below.

Table 1 - Bourke Development Control Plan	
PERFORMANCE CRITERIA	COMMENT
Chapter 3: Natural Hazards	
3.2.4 General Development Requirements (Flooding) • No building or work (including land filling, fencing, excavation) shall be permitted on flood affected land where in the opinion of Council, such building or work will obstruct the movement of floodwater or cause concentration or diversion of floodwaters. • DA must demonstrate the building or structure can withstand the force of flowing floodwaters, including debris and buoyancy forces as appropriate. • A survey plan prepared by a registered surveyor showing existing ground levels, finished ground levels, finished floor levels, flood levels and location of existing/proposed buildings and safe evacuation path on the site relative to AHD. This survey plan is to have regard to the flood planning level of the 1:100 ARI flood. • All materials used in construction shall be flood compatible • Development must be designed in accordance with the Flood Proofing	Stellen Consulting was engaged to assess and provide a Flood Risk Assessment (Appendix F) the proposed development at 49 Mooculta St, Bourke NSW 2840 in reference to potential impacts arising from flooding. Council's flood data (Bourke Flood Risk Management Plan, Lyall & Associates, 2022) predicts that during the 1% Annual Exceedance Probability (AEP) rain event some parts of the site will be inundated with floodwaters and subject to localised flooding/ponding. Based on the flood impact assessment. The following was concluded: • The site is subject to flooding during the 1% AEP rain event. • The proposed works will not adversely impact surrounding properties in regard to flooding. An open subfloor is proposed. • The Flood Planning Level (FPL) for the development area is 104.95m AHD and includes 500mm freeboard to the 1% AEP flood level. • The proposed Building 5 has floor levels (105.15m AHD) set above the FPL (104.95m AHD). • The proposed development is consistent with the flood hazard of the land. • Provided the recommendation in Appendix A, s4.2 are adopted, the development complies with the flood controls contained in s3.2 of the Bourke Shire Council Development Control Plan (2012). Please refer below to recommendations provided in Appendix A, S4.2 of the report:

Guidelines (refer Discretionary Development Standards).	**4.2 Assessing the development again Council Flood Controls** The section below provides assessment of the flood controls applicable to the development, contained in Section 3.2 of the Bourke Shire Development Control Plan (2012). 3.2.2 Access – Complies Road access to the site is available during the 1% AEP with a maximum flood hazard classification of H1 (Appendix B), which is "generally safe for vehicles, people and buildings" in accordance with ARR2019. 3.2.3 On-site Sewer Management – Achievable All new sewer connections and fixtures will be flood proofed to the 1% AEP in accordance with this control. 3.2.4 General Development Requirements – Achievable Structural engineer to provide certification that the building is capable of withstanding the forces of flood waters and debris during the 1% AEP event prior to construction. A safe evacuate route from the site is available and shown in Appendix C. The proposed building will be constructed using an open subfloor. 3.2.6 Commercial / Retail / Industrial Development - Complies The proposed new building has a proposed finished floor level of 105.15 mAHD which is higher than the FPL (104.95mAHD) calculated in s4.1. 3.2.8 Landfilling – Complies New works within the site are generally proposed at grade, with the majority of works expected to take place outside of the flood affect areas. No impacted as a result of filling is expected as a result of the development.

Table 1 - Bourke Development Control Plan	
PERFORMANCE CRITERIA	COMMENT
Chapter 6: General Development Specifications	
6.2 Other Development Types	

6.2.1 Parking
• *Parking must be provided as per the Schedule in Appendix 1.*
• *Where calculation of parking spaces required results in a fraction of a space, the total required number of spaces will be the next highest whole number.*
• *Parking and traffic requirements will be based on consideration of:*
  ○ *likely peak usage times;*
  ○ *the availability of public transport;*
  ○ *likely demand for off street parking generated by the development;*
  ○ *existing traffic volumes on the surrounding street network; and*
  ○ *efficiency of existing parking provision in the location.*
• *Comply with Australian Standard AS2890.1 Parking Facilities.*
• *Where existing premises are being redeveloped or their use changed, the*
	An additional five (5) spaces are proposed as part of the development which are trafficable from the existing carpark.
	The proposed parking along with the existing principal parking area consisting of approximately 200 spaces provide ample opportunities to meet the Centres parking requirements.
	As noted on the plans provided in Appendix C, the spaces provided will comply with AS 2890.1.
	The existing traffic arrangements are considered to be satisfactory.

Table 1 - Bourke Development Control Plan	
PERFORMANCE CRITERIA	COMMENT
following method of calculation shall apply: ○ *Determine the parking requirements of the previous or existing premises in accordance with Appendix A;* ○ *Determine the parking requirement of the proposed development in accordance with Appendix I to these Guidelines;* ○ *Subtract the number of spaces determined in (a) above from the number of spaces calculated in (b) above;* ○ *The difference calculated in (c) above represents the total number of parking spaces to be provided either in addition to the existing on-site car parking or as a cash-in-lieu contribution to Council where applicable.*	
6.2.2 Landscaping • *Location and grouping of plant types shall be multi-functional providing privacy, security, shading and recreation functions.*	Landscaping has been suitably located around the proposed parking to ensure it is screened from the existing and proposed buildings. Furthermore, it shall provide shading, and privacy in the new outdoor experience location. Low maintenance species should be utilised that will thrive in the Bourke locality.

Table 1 - Bourke Development Control Plan	
PERFORMANCE CRITERIA	COMMENT
• *Landscaping or shade structures shall be provided in outdoor car parking areas where >10 spaces are required, to provide shading and soften the visual impact of large hard surfaces.* • *Landscaping shall comprise low maintenance, drought and frost tolerant species.*	
6.2.3 Outdoor Lighting • *All developments shall demonstrate compliance with Australian Standard AS4282 Control of Obtrusive Effects of Outdoor Lighting.* • *Sweeping lasers or searchlights or similar high intensity light for outdoor advertising or entertainment, when projected above the horizontal is prohibited.*	All lighting proposed shall comply with Australian Standard AS4282 Control of Obtrusive Effects of Outdoor Lighting.
6.2.4 Outdoor Advertising/ Signage	N/A – No signage proposed.
6.3 Environmental Controls	
6.3.1 Environmental Effects • *The application documentation shall identify any potential environmental impacts of the development and*	The proposed Development Application is supported by all relevant documentation including the Statement of Environmental Effects, Architectural and Site Plans, Civils Plans which have addressed Environmental Impact's associated with the proposed development.

Table 1 - Bourke Development Control Plan	
PERFORMANCE CRITERIA	COMMENT
demonstrate how they will be mitigated. These impacts may relate to: ○ *Traffic;* ○ *Flood liability;* ○ *Slope* ○ *Construction Impacts;* ○ *Solid and liquid waste;* ○ *Air quality (Odour and pollution);* ○ *Noise emissions;* ○ *Water quality;* ○ *Sustainability*	Refer also to Appendices for further detail.
6.3.2 Soil and Erosion Control • *Runoff shall be managed to prevent any land degradation including offsite sedimentation.* • *Cut and fill will be minimised and the site stabilised during and after construction.* • *Arrangements in place to prompt revegetation of earthworks to minimise erosion.*	Noted. Cut and fill has been identified in the proposed plans in Appendix C. Minimal cut and fill is required, and should not alter existing and future run-off.
6.3.3 Vegetation *Development design shall accommodate the retention of any significant trees and vegetation.*	It is proposed for any trees located onsite to be relocated to a suitable location.

Table 1 - Bourke Development Control Plan	
PERFORMANCE CRITERIA	COMMENT
6.3.4 Waste Management *General waste storage and collection arrangements shall be specified.*	Construction materials are able to be stored wholly within the site prior to removal for recycling or disposal. Construction materials waste will be removed from the site to an approved waste management facility. Once development is complete, general waste will be collected as per existing arrangements for the Bourke Information and Exhibition Area. It is noted that the Caravan waste dumping point will be relocated to a more appropriate area. It is recommended all necessary standards for this facility are maintained.
6.3.5 Noise *Where relevant, applications are to contain information about likely noise generation and the method of mitigation.*	The proposed construction works shall generate some noise impact. The likelihood of noise becoming offensive can be minimised by adopting good work practices and adhering to normal construction hours.
6.3.6 Geology *The design process must give consideration to the potential impact of erosive soils, saline soils, soils of low wet strength, highly reactive soils and steep slopes and document how these constraints are addressed.*	A suitable Geotechnical Investigation and Structural Report has been undertaken by Barnson providing site earthwork recommendations ensuring to limit damage to the existing levee dam and condition of the other natural earths. Please refer to report in Appendix D and Geotechnical Investigation in Appendix G.

Table 1 - DCP Requirements

5.6 Any Planning Agreement entered into

No Planning Agreements entered into are known to exist in relation to the development or site.

5.7 Any Matters Prescribed by the Regulations

For the purposes of Section 4.15(1)(a)(iv) of the EP&A Act, Clause 61 of the *Environmental Planning and Assessment Regulations 2021* (EP&A Regulations) specifies the additional matters a consent authority must take into consideration when determining a DA.

5.7.1 Introduction

For the purposes of Section 4.15(1)(a)(iv) of the EP&A Act, Clause 61 of the *Environmental Planning and Assessment Regulations 2021* (EP&A Regulations) specifies the additional matters a consent authority must take into consideration when determining a DA. The following matter is relevant to the site and development:

5.7.2 Demolition Works

In relation to demolition works, the provisions of AS2601 need to be considered. In this regard, all proposed demolition will be carried out in accordance with *Australian Standard AS2601: The demolition of structures.*

It is recommended that a demolition work plan be conditioned to prepare and implemented in accordance with AS2601 prior to any works commencing.

5.8 Any Likely Impacts of the Development

5.8.1 Context & Setting

The subject site is located on the outskirts of Bourke and on the bank of the Darling River and has operated as the Bourke Information and Exhibition Area for an extended period of time. The proposed development has been appropriately designed to complement the existing site and Bourke area by further supporting the Information Centre and providing a new building for use. In this regard, it is considered that the development shall not cause any significant impacts on the context or setting in the locality.

5.8.2 Access, Transport & Traffic

The subject site is located on the north-western side of Mooculta Street. The Road network is sealed and improved with table drains. During the construction period of the proposed development there is likely to be some increase in traffic generated on the site by workers vehicles and transportation of materials. There are five (5) new car spaces proposed to support the additional building.

Once the development is operational, traffic type and generation are unlikely to significantly change as it coincides with the existing use.

5.8.3 Utilities

All services including water supply, sewerage, electricity, and telecommunication infrastructure are available to the site. New connections shall be established where required to support the

proposed development consistent with existing uses in the area. An existing high voltage underground powerline is to be relocated north of building 2.

5.8.4 Air & Microclimate

The proposed development shall generate minimal air pollution in the locality. The incidence of air pollution can be reduced by using appropriate equipment, employment of good work practices and utilising a water spray, especially in conditions where dust is likely to be a nuisance.

5.8.5 Noise

The proposed construction works shall generate some noise impact. The likelihood of noise becoming offensive can be minimised by adopting good work practices and adhering to normal construction hours.

Given the proposed existing hours of operation and the locality already featuring the existing Centre, the resulting activities area is unlikely to result in any significant noise impact.

5.8.6 Waste

Construction materials are able to be stored wholly within the site prior to removal for recycling or disposal. Construction materials waste will be removed from the site to an approved waste management facility.

Once development is complete, general waste will be collected as per existing arrangements for the Centre.

5.8.7 Safety, Security & Crime Prevention

The proposed development has been designed and shall employ measures that are consistent with the CPTED (Crime Prevention Through Environmental Design) principles. Overall, the development is considered to be appropriately designed to minimise opportunities for crime. It is considered that the development would not unreasonably create or aggravate crime risk.

5.8.8 Social & Economic Impacts in the Locality

The proposal is considered to be an appropriate use of the site in a suitable location for the following reasons:

- It supports the range and scope of tourist services needed by the community and provided in a modern facility;
- It provides construction employment opportunities;
- It provides ongoing operational employment opportunities; and
- It provides a welcoming community space.

The proposed development is anticipated to provide a positive social and economic impact in the locality and surrounding region by providing alterations and additions to a culturally significant tourist facility for people in the Bourke area and surrounds.

5.9 Suitability of the Site for the Proposed Development

The suitability of the site for the proposed development has been addressed in the above sections of this report. There are no prohibitive constraints posed by adjacent developments. There does not appear to be any zoning, planning or environmental matters that should hinder the proposed development of the site. In this regard, it can be concluded that the proposal fits into the locality and the site attributes are conducive for the development.

5.10 The Public Interest

The proposal is considered to have a positive impact on the local environment, and it is in the public interest for the development to proceed, in the enhancement of the locality and to provide for additional tourist opportunities in the Bourke and wider community.

6 CONCLUSION

It is recommended that the proposed expansion to the existing Back O' Bourke Information and Exhibition Centre on Lot 153 DP 1068536, commonly known as 49 Moculta Street, Bourke NSW be supported on the following grounds:

- The proposal is considered acceptable in terms of the provisions of Section 4.15 of the *Environmental Planning and Assessment Act 1979*;
- The proposal is permissible with consent and consistent with the relevant development standards and provisions of the *Bourke Local Environmental Plan 2012;*
- The proposal complies with the relevant provisions of the *Bourke Development Control Plan 2013*;
- The proposed development is not anticipated to generate any adverse impacts in the locality;
- The proposed development is considered suitable for the site and its surrounds; and
- The proposed development shall provide a positive social impact for the Bourke and surrounding community.

7 REFERENCES

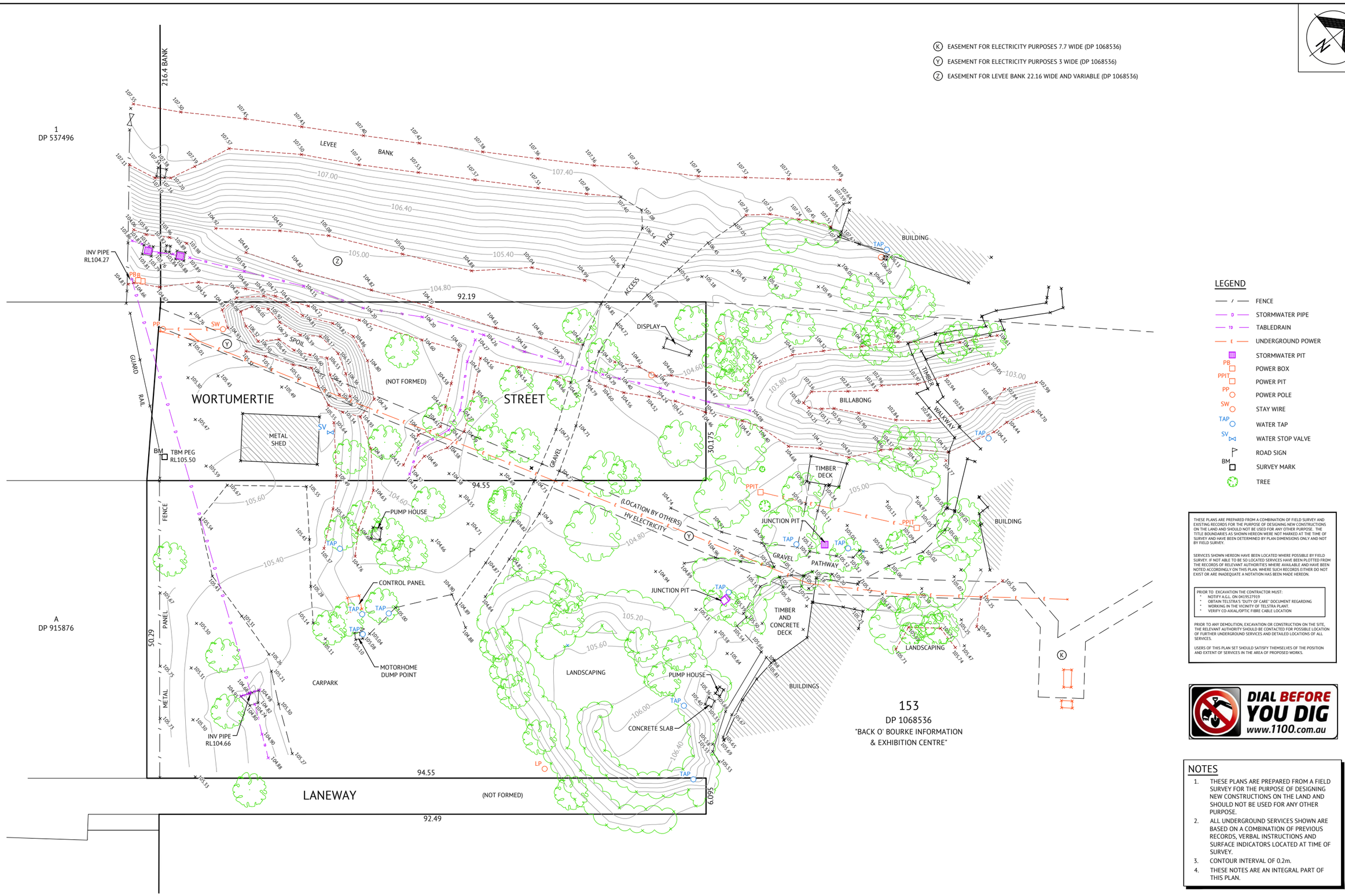
The following key references were utilised as part of this assessment:

- Bourke Development Control Plan 2012
- Bourke Floodplain Risk Management Study and Plan
- Bourke Local Environmental Plan 2012
- NSW Government Spatial Services. (2021). *Six Maps*. Retrieved from http://maps.six.nsw.gov.au/
- SEPP (Resilience and Hazards) 2021

barnson.

APPENDIX A

Survey



(K) EASEMENT FOR ELECTRICITY PURPOSES 7.7 WIDE (DP 1068536)

(Y) EASEMENT FOR ELECTRICITY PURPOSES 3 WIDE (DP 1068536)

(Z) EASEMENT FOR LEVEE BANK 22.16 WIDE AND VARIABLE (DP 1068536)

LEGEND

- FENCE
- STORMWATER PIPE
- TABLEDRAIN
- UNDERGROUND POWER
- STORMWATER PIT
- PB POWER BOX
- PPIT POWER PIT
- PP POWER POLE
- SW STAY WIRE
- TAP WATER TAP
- SV WATER STOP VALVE
- ROAD SIGN
- BM SURVEY MARK
- TREE

THESE PLANS ARE PREPARED FROM A COMBINATION OF FIELD SURVEY AND EXISTING RECORDS FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS ON THE LAND AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE. THE TITLE BOUNDARIES AS SHOWN HEREON WERE NOT MARKED AT THE TIME OF SURVEY AND HAVE BEEN DETERMINED BY PLAN DIMENSIONS ONLY AND NOT BY FIELD SURVEY.

SERVICES SHOWN HEREON HAVE BEEN LOCATED WHERE POSSIBLE BY FIELD SURVEY. IF NOT ABLE TO BE SO LOCATED SERVICES HAVE BEEN PLOTTED FROM THE RECORDS OF RELEVANT AUTHORITIES WHERE AVAILABLE AND HAVE BEEN NOTED ACCORDINGLY ON THIS PLAN. WHERE SUCH RECORDS EITHER DO NOT EXIST OR ARE INADEQUATE A NOTATION HAS BEEN MADE HEREON.

PRIOR TO EXCAVATION THE CONTRACTOR MUST:
- NOTIFY A.G.L. ON 0415927919
- OBTAIN TELSTRA'S "DUTY OF CARE" DOCUMENT REGARDING WORKING IN THE VICINITY OF TELSTRA PLANT.
- VERIFY CO-AXIAL/OPTIC FIBRE CABLE LOCATION

PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

USERS OF THIS PLAN SET SHOULD SATISFY THEMSELVES OF THE POSITION AND EXTENT OF SERVICES IN THE AREA OF PROPOSED WORKS.

DIAL BEFORE YOU DIG www.1100.com.au

NOTES

1. THESE PLANS ARE PREPARED FROM A FIELD SURVEY FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS ON THE LAND AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
2. ALL UNDERGROUND SERVICES SHOWN ARE BASED ON A COMBINATION OF PREVIOUS RECORDS, VERBAL INSTRUCTIONS AND SURFACE INDICATORS LOCATED AT TIME OF SURVEY.
3. CONTOUR INTERVAL OF 0.2m.
4. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN.

ISSUED TO CLIENT

DATE	REV	DESCRIPTION		
19/04/2023	A	ISSUED TO CLIENT	JE	MT
			REC	APP

REVISIONS

Premise

DUBBO OFFICE
1ST FLOOR
62 WINGEWARRA STREET
DUBBO, NSW 2830
PH: (02) 6887 4500
WEB: www.premise.com.au

DESIGNED ----
CHECKED ----
PROJECT MANAGER MATTHEW THORNE
ENGINEERING CERTIFICATION

SCALE
SCALE 1:300 (A1)
0 6 12 18m
SCALE 1:600 (A3)
0 6 12 18m
ORIGINAL SHEET SIZE A1

CLIENT BOURKE SHIRE COUNCIL
PROJECT SURVEYING SERVICES
LOCATION BOURKE INFORMATION & EXHIBITION CENTRE
SHEET TITLE CONTOUR AND FEATURE SURVEY PLAN

JOB CODE 123197_01
SHEET NUMBER DS01
REV A

barnson.

APPENDIX B

AHIMS

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 963852

Client Service ID : 925610

Barnson

Date: 30 August 2024

Unit 1/36 Darling Street
Dubbo New South Wales 2830

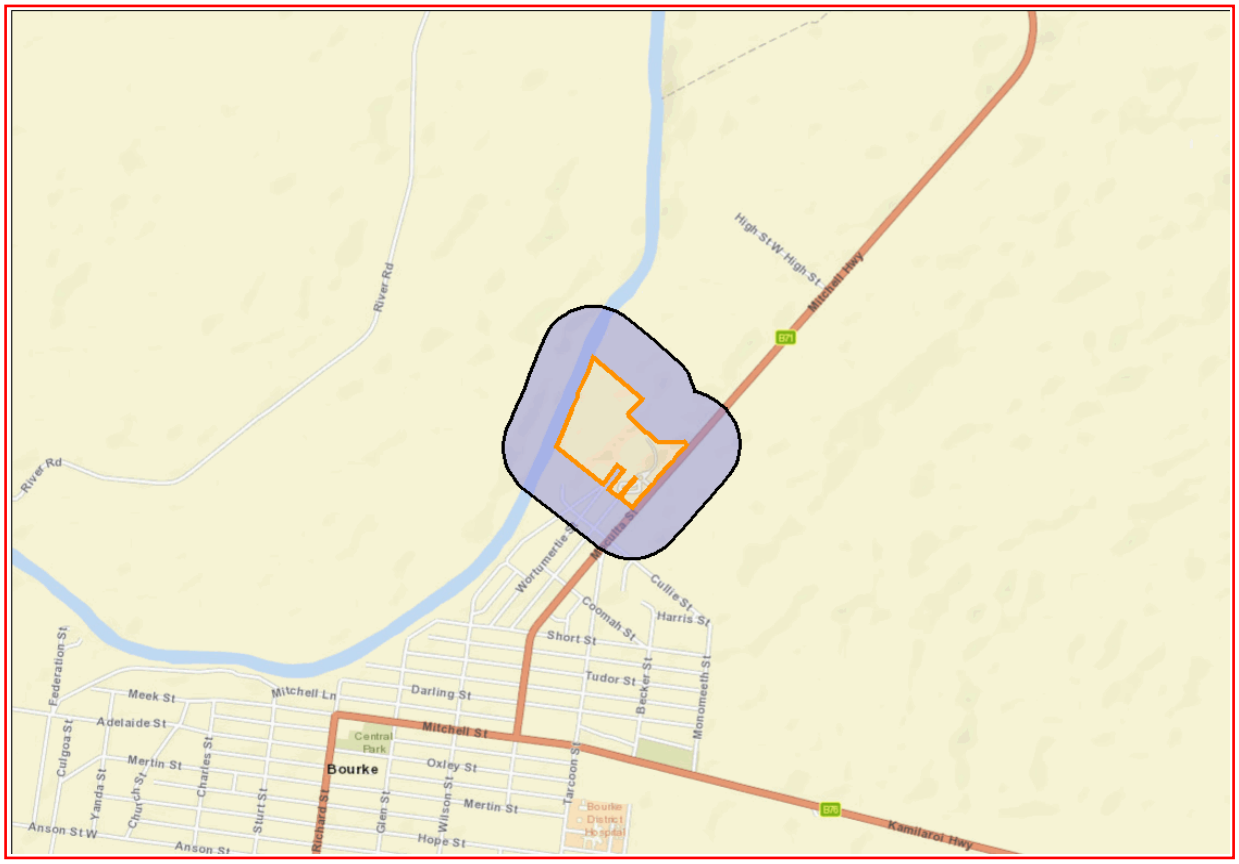
Attention: Sebastian Minehan

Email: sminehan@barnson.com.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 153, DP:DP1068536, Section : - with a Buffer of 200 meters, conducted by Sebastian Minehan on 30 August 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

barnson.

APPENDIX C

Development Plans

Back O' Bourke Building 5

Drawing Transmittal

Architectural

		Date of Issue
	Day	10
	Month	03
	Year	2025

Distribution

Client	Bourke Shire Council	X
Authority	Bourke Shire Council	X

No.		Title	Scale	Issue No
2305	000	Cover + Drawing Transmittal	NTS	B
	001	Materials + Perspectives	NTS	A
	002	Location Plan	1:2000	A
	003	Site Plan	1:500	B
		General Arrangement		
	100	Ground Floor Plan	1:200	B
	101	Roof Plan	1:200	B
		Elevations		
	120	West + South Elevation	1:200	B
	121	East Elevation	1:200	B
		Sections		
	130	Sections	1:200	B

01 Aerial Plan
1:10 000

Aileen Sage

Aileen Sage Architects
Level 2, 397 Riley Street
Surry Hills NSW 2010

Amelia Holliday 0407 263 542
Isabelle Toland 0414 711 254
studio@aileensage.com

Nominated Architect
Amelia Holliday ARB NSW 8115 VIC 17540

General Notes

Comply with relevant authorities' requirements, the National Construction Code, and all relevant Australian Standards. Dimensions are in millimetres unless otherwise noted. Use figured dimensions only. Do not scale. If discrepancies exist, notify the Architect. If in doubt, ask.

Abbreviations

AC	AIRCONDITIONING	PA	PAVING
BAL	BALUSTRADE	PB	PLASTERBOARD
CF	CEILING FAN	REN	RENDER FINISH
CL	CENTRE LINE	RF	RESILIENT FLOORING
CONC	CONCRETE	SC	STRUCTURAL COLUMN
DP	DOWNPIPE	SL	SKYLIGHT
EQ	EQUAL	SP	STEEL PLATE
EXTG	EXISTING	ST	STONE
FG	FIXED GLASS	T	SOLID TIMBER
GR	GRAVEL	TDK	DECKING
OF	OVERFLOW		

North

Wall Legend

- EXTG Construction
- New Construction
- Demolition
- New Tree Location
- Tree to be Relocated

Project

Back O' Bourke Building 5
49 Mooculta St, Bourke NSW 2840

Issue			Drawn By	Checked By
09.12.24	A	DA ISSUE	JW	IT
10.03.25	B	FINAL DA ISSUE	JW	MB

Drawing Title

Cover Sheet + Drawing Transmittal

Phase

Development Application
(Not For Construction)

Drawing Number

BOU-000

Issue

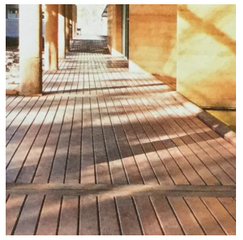
B

01 **Perspective**
NTS

REN - Render
Earth render system, using local materials

CONC - Pigmented Concrete
Pigmented concrete to match tone of earth render

SC - Structural Columns



TDK - Decking

ST - Stone Pavers

RF - Resilient Flooring
ComCork or similar naturally derived resilient flooring

Planted Roof
Endemic planting

02 **Materials**
NTS

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DP	DOWNPIPE	SL	SKYLIGHT
EQ	EQUAL	SP	STEEL PLATE
EXTG	EXISTING	ST	STONE
FG	FIXED GLASS	T	SOLID TIMBER
GR	GRAVEL	TDK	DECKING
OF	OVERFLOW		

Project

Back O' Bourke Building 5
49 Mooculta St, Bourke NSW 2840

Issue			Drawn By	Checked By
09.12.24	A	DA ISSUE	JW	IT

Drawing Title

Materials + Perspective

Phase

Development Application (Not For Construction)

Drawing Number

BOU-001

Issue

A

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Scale 1:2000 @ A3

0 20 40 60 80 100m

North

Abbreviations

AC	AIRCONDITIONING	PA	PAVING
BAL	BALUSTRADE	PB	PLASTERBOARD
CF	CEILING FAN	REN	RENDER FINISH
CL	CENTRE LINE	RF	RESILIENT FLOORING
CONC	CONCRETE	SC	STRUCTURAL COLUMN
DP	DOWNPIPE	SL	SKYLIGHT
EQ	EQUAL	SP	STEEL PLATE
EXTG	EXISTING	ST	STONE
FG	FIXED GLASS	T	SOLID TIMBER
GR	GRAVEL	TDK	DECKING
OF	OVERFLOW		

Wall Legend

- EXTG Construction
- New Construction
- Demolition
- New Tree Location
- Tree to be Relocated

Project

Back O' Bourke Building 5
49 Mooculta St, Bourke NSW 2840

Issue			Drawn By	Checked By
09.12.24	A	DA ISSUE	JW	IT

Drawing Title

Location Plan

Phase

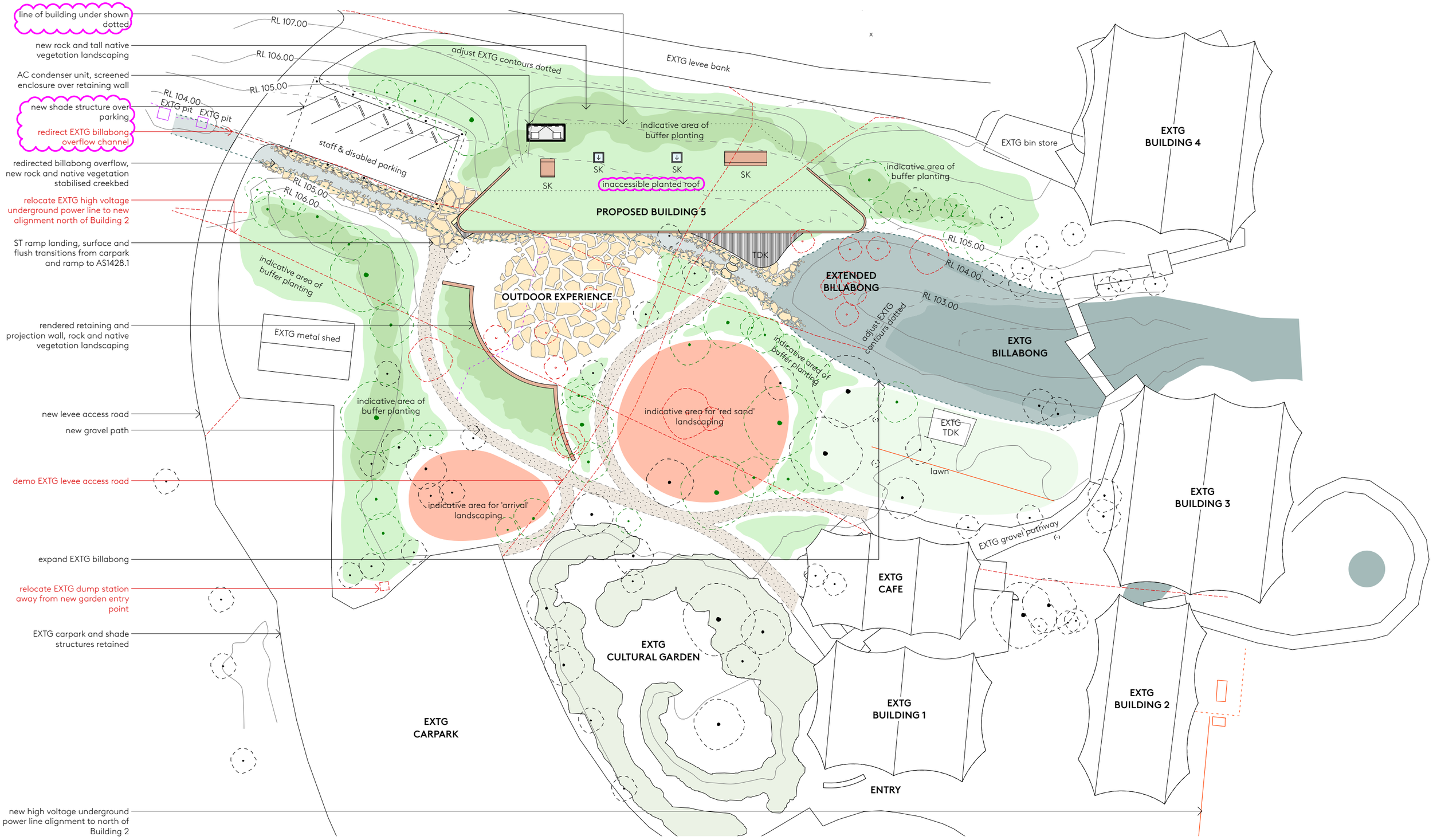
Development Application (Not For Construction)

Drawing Number

BOU-002

Issue

A



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Scale 1:500 @ A3

0 2 5 10 20m

North

Abbreviations

AC	AIRCONDITIONING	PA	PAVING
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CF	CEILING FAN	REN	RENDER FINISH
CL	CENTRE LINE	RF	RESILIENT FLOORING
CONC	CONCRETE	SC	STRUCTURAL COLUMN
DP	DOWNPIPE	SL	SKYLIGHT
EQ	EQUAL	SP	STEEL PLATE
EXTG	EXISTING	ST	STONE
FG	FIXED GLASS	T	SOLID TIMBER
GR	GRAVEL	TDK	DECKING
OF	OVERFLOW		

Wall Legend

- EXTG Construction
- New Construction
- Demolition
- New Tree Location
- Tree to be Relocated

Project

Back O' Bourke Building 5
49 Mooculta St, Bourke NSW 2840

Issue			Drawn By	Checked By
09.12.24	A	DA ISSUE	JW	IT
10.03.25	B	FINAL DA ISSUE	JW	MB

Drawing Title

Site Plan

Phase

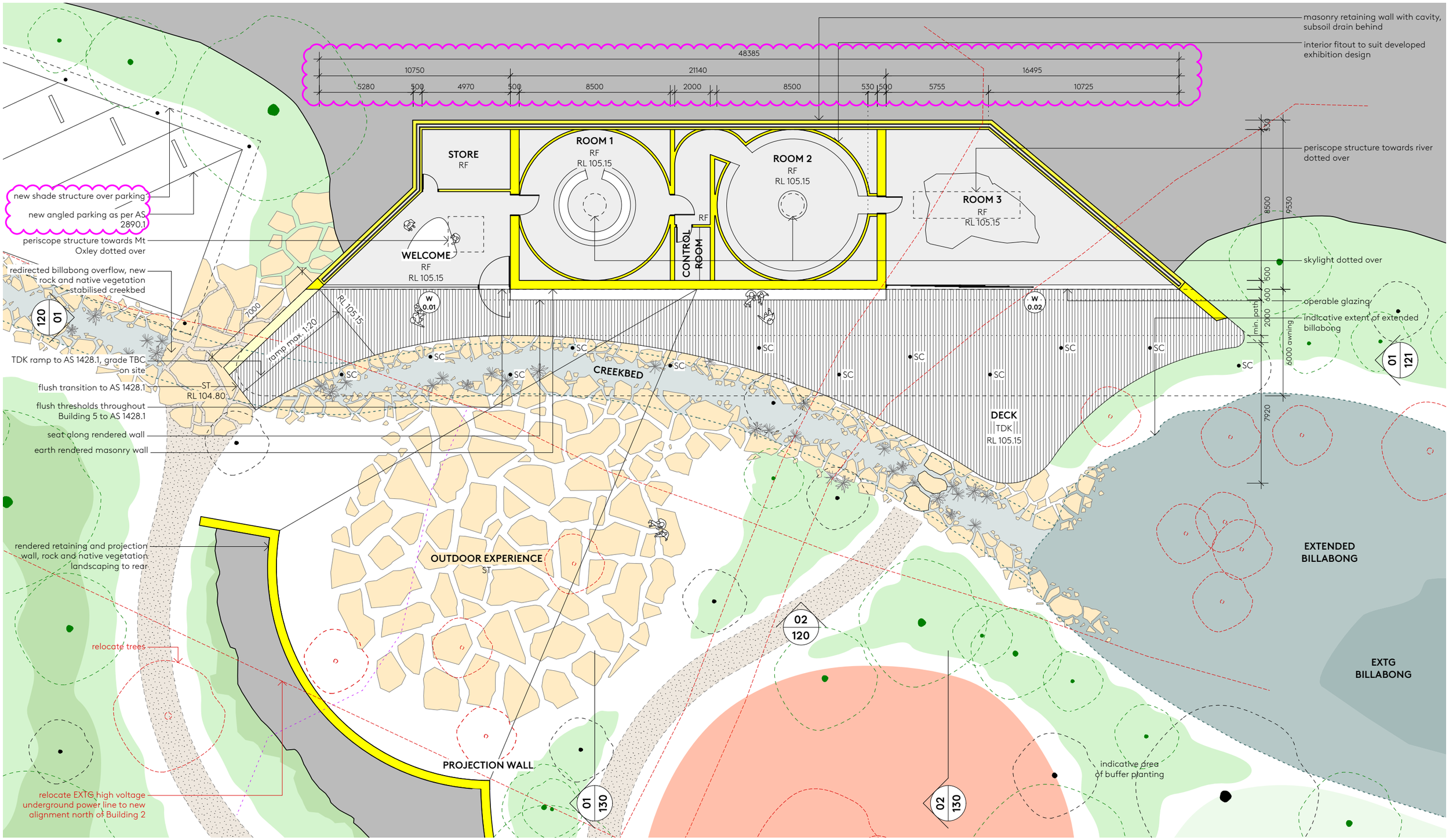
Development Application (Not For Construction)

Drawing Number

BOU-003

Issue

B



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Scale 1:200 @ A3

0 1 2 5 10m

North

Abbreviations

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CL	CENTRE LINE	RF	RESILIENT FLOORING
CONC	CONCRETE	SC	STRUCTURAL COLUMN
DP	DOWNPIPE	SL	SKYLIGHT
EQ	EQUAL	SP	STEEL PLATE
EXTG	EXISTING	ST	STONE
FG	FIXED GLASS	T	SOLID TIMBER
GR	GRAVEL	TDK	DECKING
OF	OVERFLOW		

Wall Legend

- EXTG Construction
- New Construction
- Demolition
- New Tree Location
- Tree to be Relocated

Project

Back O' Bourke Building 5
49 Mooculta St, Bourke NSW 2840

Issue			Drawn By	Checked By
09.12.24	A	DA ISSUE	JW	IT
10.03.25	B	FINAL DA ISSUE	JW	MB

Drawing Title

Ground Floor Plan

Phase

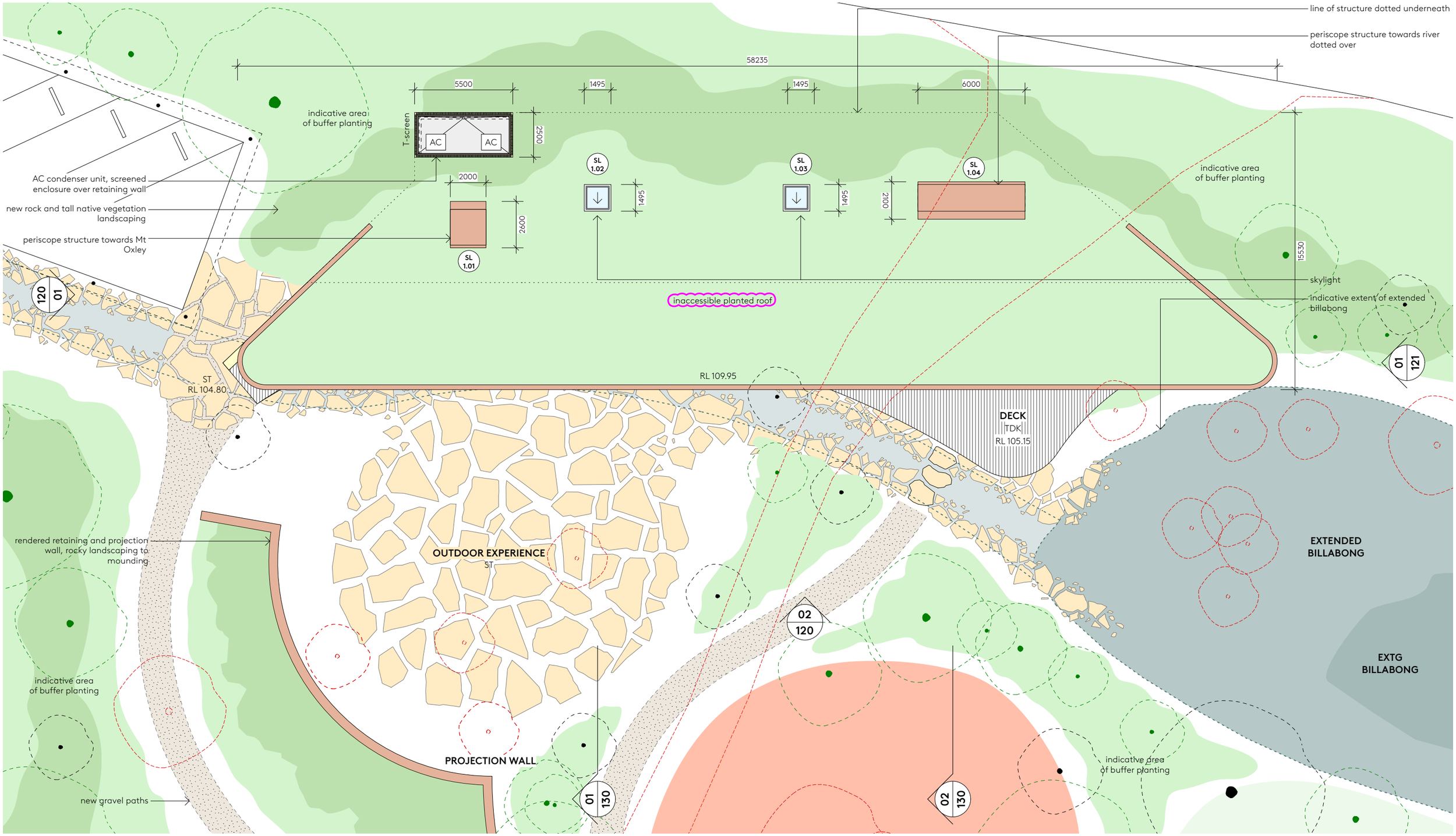
Development Application (Not For Construction)

Drawing Number

BOU-100

Issue

B



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General Notes

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Scale 1:200 @ A3

0 1 2 5 10m

North

Abbreviations

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BAL	BALUSTRADE	PB	PLASTERBOARD
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CL	CENTRE LINE	RF	RESILIENT FLOORING
CONC	CONCRETE	SC	STRUCTURAL COLUMN
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EQ	EQUAL	SP	STEEL PLATE
EXTG	EXISTING	ST	STONE
FG	FIXED GLASS	T	SOLID TIMBER
GR	GRAVEL	TDK	DECKING
OF	OVERFLOW		

Wall Legend

- EXTG Construction
- New Construction
- Demolition
- New Tree Location
- Tree to be Relocated

Project

Back O' Bourke Building 5
49 Mooculta St, Bourke NSW 2840

Issue			Drawn By	Checked By
09.12.24	A	DA ISSUE	JW	IT
10.03.25	B	FINAL DA ISSUE		MB

Drawing Title

Roof Plan

Phase

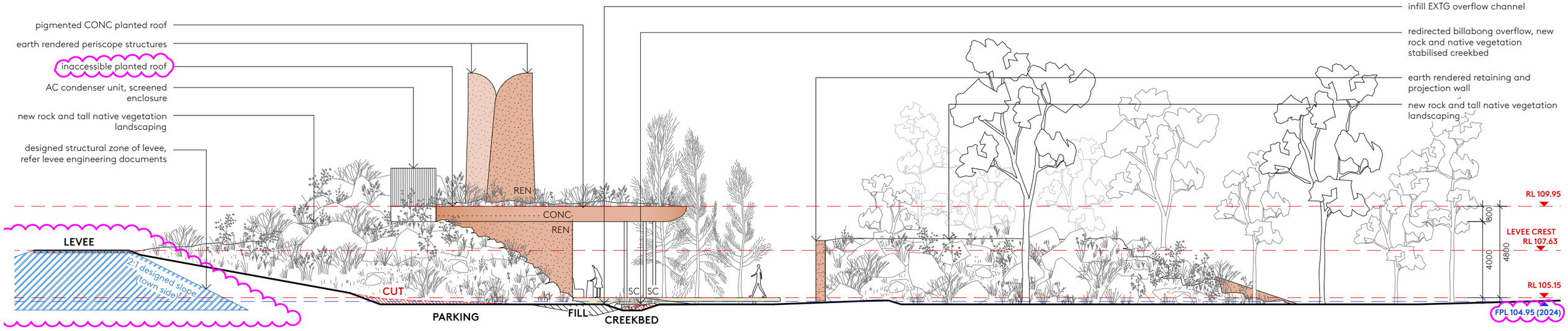
Development Application (Not For Construction)

Drawing Number

BOU-101

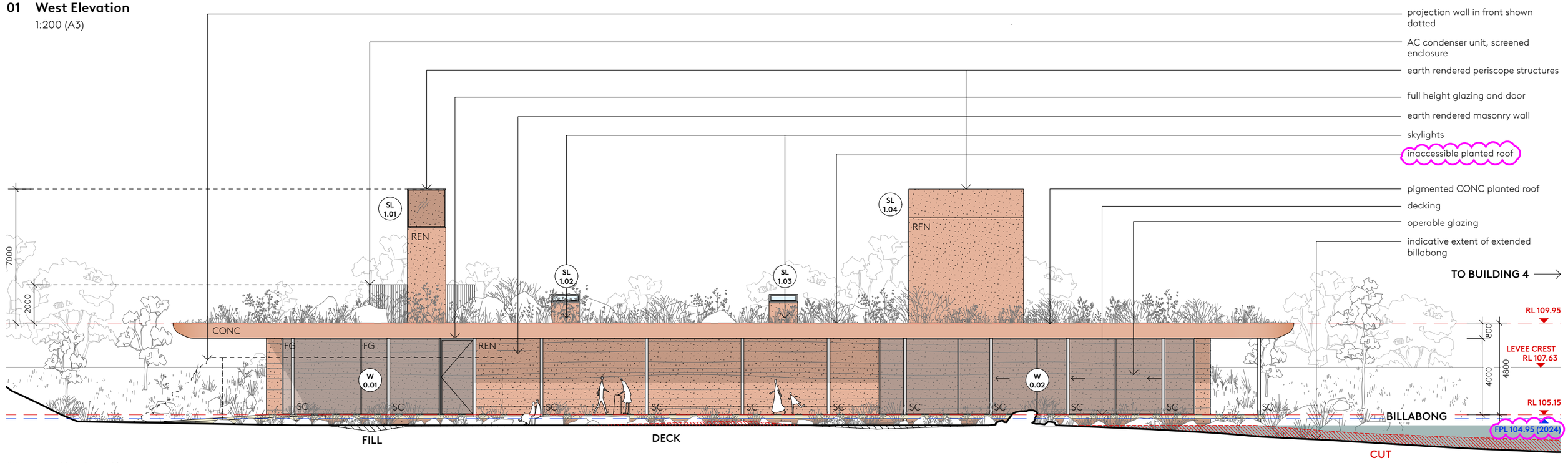
Issue

B



01 West Elevation

1:200 (A3)



02 South Elevation

1:200 (A3)

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Isabelle Toland 0414 711 254
studio@aileensage.com

Nominated Architect
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General Notes

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Scale 1:200 @ A3

0 1 2 5 10m

Abbreviations

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EQ	EQUAL	SP	STEEL PLATE
EXTG	EXISTING	ST	STONE
FG	FIXED GLASS	T	SOLID TIMBER
GR	GRAVEL	TDK	DECKING
OF	OVERFLOW		

Wall Legend

- EXTG Construction
- New Construction
- Demolition
- New Tree Location
- Tree to be Relocated

Project

Back O' Bourke Building 5
49 Mooculta St, Bourke NSW 2840

Issue			Drawn By	Checked By
09.12.24	A	DA ISSUE	JW	IT
10.03.25	B	FINAL DA ISSUE	JW	MB

Drawing Title

West + South Elevations

Phase

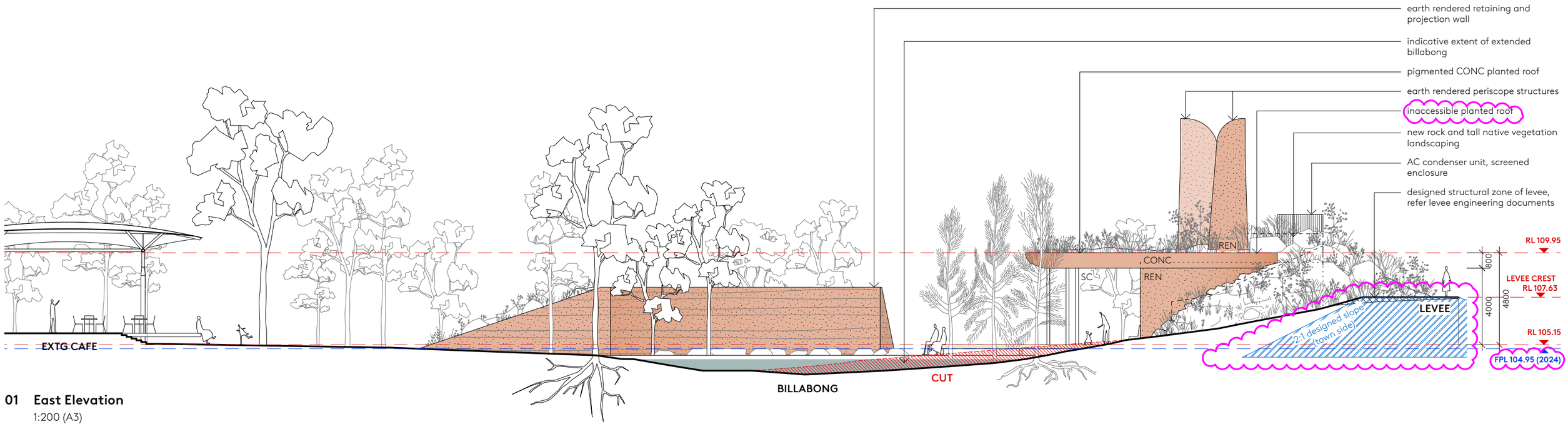
Development Application (Not For Construction)

Drawing Number

BOU-120

Issue

B



01 East Elevation
1:200 (A3)

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Isabelle Toland 0414 711 254
studio@aileensage.com

Nominated Architect
Amelia Holliday ARB NSW 8115 VIC 17540

General Notes

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Scale 1:200 @ A3

0 1 2 5 10m

Abbreviations

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CL	CENTRE LINE	RF	RESILIENT FLOORING
CONC	CONCRETE	SC	STRUCTURAL COLUMN
DP	DOWNPIPE	SL	SKYLIGHT
EQ	EQUAL	SP	STEEL PLATE
EXTG	EXISTING	ST	STONE
FG	FIXED GLASS	T	SOLID TIMBER
GR	GRAVEL	TDK	DECKING
OF	OVERFLOW		

Wall Legend

- EXTG Construction
- New Construction
- Demolition
- New Tree Location
- Tree to be Relocated

Project

Back O' Bourke Building 5
49 Mooculta St, Bourke NSW 2840

Issue			Drawn By	Checked By
09.12.24	A	DA ISSUE	JW	IT
10.03.25	B	FINAL DA ISSUE	JW	MB

Drawing Title

East Elevation

Phase

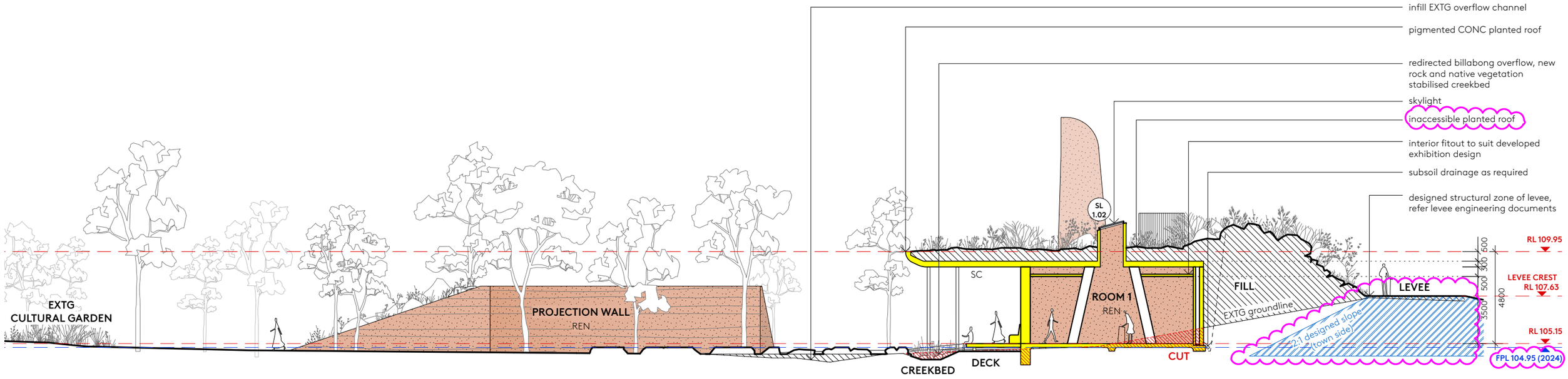
Development Application (Not For Construction)

Drawing Number

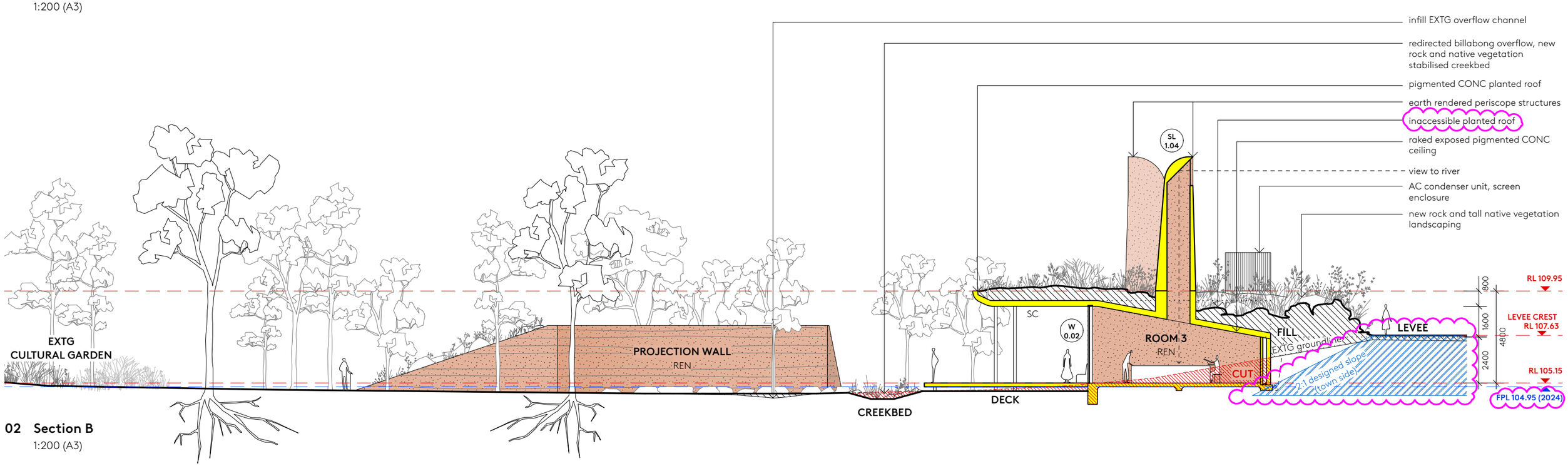
BOU-121

Issue

B



01 Section A
1:200 (A3)



02 Section B
1:200 (A3)

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Nominated Architect
Amelia Holliday ARB NSW 8115 VIC 17540

General Notes

Comply with relevant authorities' requirements, the National Construction Code, and all relevant Australian Standards. Dimensions are in millimetres unless otherwise noted. Use figured dimensions only. Do not scale. If discrepancies exist, notify the Architect. If in doubt, ask.

Scale 1:200 @ A3

0 1 2 5 10m

Abbreviations

AC	AIRCONDITIONING	PA	PAVING
BAL	BALUSTRADE	PB	PLASTERBOARD
CF	CEILING FAN	REN	RENDER FINISH
CL	CENTRE LINE	RF	RESILIENT FLOORING
CONC	CONCRETE	SC	STRUCTURAL COLUMN
DP	DOWNPIPE	SL	SKYLIGHT
EQ	EQUAL	SP	STEEL PLATE
EXTG	EXISTING	ST	STONE
FG	FIXED GLASS	T	SOLID TIMBER
GR	GRAVEL	TDK	DECKING
OF	OVERFLOW		

Wall Legend

- EXTG Construction
- New Construction
- Demolition
- New Tree Location
- Tree to be Relocated

Project

Back O' Bourke Building 5
49 Mooculta St, Bourke NSW 2840

Issue			Drawn By	Checked By
09.12.24	A	DA ISSUE	JW	IT
10.03.25	B	FINAL DA ISSUE	JW	MB

Drawing Title

Sections

Phase

Development Application (Not For Construction)

Drawing Number

BOU-130

Issue

B

barnson.

APPENDIX D

Civil Plan

Stellen
Civil Engineering

Stellen Consulting
Level 1, 27 Belgrave Street
Manly NSW 2095

PO Box 151
Freshwater NSW 2096

+61 2 8021 9233 tel
ABN 61 149 095 189

9 December 2024

Aileen Sage Architects
Level 2, 397 Riley Street
Surry Hills NSW 2010

Janelle Woo <janelle@aileensage.com>

Stormwater drainage for the proposed Back O' Bourke – Building 5

Dear Janelle

Please find attached the drawings describing the stormwater management plan for the proposed development the Bourke Exhibition Centre

The stormwater management plan design is described in the following Stellen drawings:

SW-000	*Revision 0*	*Legend*
SW-100	*Revision 0*	*Pipe Layout Sheet 1*
SW-101	*Revision 0*	*Pipe Layout Sheet 2*
SW-110	*Revision 0*	*Details Sheet 1*

The stormwater design as described by the drawings is generally in accordance with the following with noted exceptions:

- *Australian Standard AS3500.3 (2021) – Plumbing and Drainage: Part 3 Stormwater Drainage.*
- *Bourke Shire Development Control Plan 2012) - s4.6.4 Stormwater Drainage*

We recommend the stormwater management plan (as described in the drawings) as a safe and practical solution to support the development.

Kind regards,

Logan English-Smith
Senior Engineer

Stellen Consulting
Level 1, 27 Belgrave Street, Manly, NSW 2095
T. 0430 472 389
E. logan.englishsmith@stellenconsulting.com.au

BACK O' BOURKE – BUILDING 5

CIVIL WORKS

DRAWING INDEX:

PAVEMENTS

PV–000 PAVEMENT – LEGEND

PV–100 PAVEMENT – LAYOUT SHEET 1

PV–110 PAVEMENT – DETAILS SHEET 1

STORMWATER MANAGEMENT

SW–000 STORMWATER – LEGEND

SW–100 STORMWATER – PIPE LAYOUT SHEET 1

SW–101 STORMWATER – PIPE LAYOUT SHEET 2

SW–110 STORMWATER – DETAILS SHEET 1

SITE PLAN

1: 500

NOT FOR CONSTRUCTION

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	LES	09/12/2024	APPROVED FOR DA SUBMISSION	LES

Scale

AS NOTED

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DRAWN	LES	CHECKED	TK
APPROVED	LES	DATE	09/12/2024

Stellen

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BACK O' BOURKE - BUILDING 5

GENERAL - COVER SHEET

Size	Status	Drg No.	Rev.
A3	APPROVED FOR DA SUBMISSION	GA-000	0

BACK O' BOURKE – BUILDING 5

PAVEMENT DESIGN

DRAWING INDEX:

PAVEMENTS

SUBGRADE PREPARATION

1. EXCAVATE AND BOX OUT THE SUBGRADE TO DESIGN LEVEL.
2. ROLL THE EXPOSED SURFACE USING A ROLLER. ANY HEAVING AND/OR SOFT AREAS IDENTIFIED IN THE ROLLING SHOULD BE EXCAVATED AND REPLACED WITH A SELECT ENGINEERED FILL.
3. ALL FILL MATERIAL REQUIRED TO FORM THE SUBGRADE TO PROPOSED DESIGN LEVEL SHOULD BE PLACED IN LAYERS NOT EXCEEDING 250MM THICKNESS AND COMPACTED TO A MINIMUM 98% STANDARD MAXIMUM DRY DENSITY (SMDD) WITHIN 2% OF OPTIMUM MOISTURE CONTENT (OMC).
4. PROOF ROLL TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.

PAVEMENT PREPARATION

5. THE SUBBASE AND BASE COURSE MATERIAL SHALL BE COMPACTED TO A MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY (MMDD).

STANDARD KERB AND GUTTER NOTES

6. KERBS SHALL BE POURED IN PLAIN CONCRETE AND FINISHED WITH A STEEL TROWEL
7. THE MINIMUM COMPRESSIVE STRENGTH SHALL BE 35MPa AT 28 DAYS

NOT FOR CONSTRUCTION

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
1	LES	18/12/2024	APPROVED FOR DA SUBMISSION	LES
0	LES	09/12/2024	APPROVED FOR DA SUBMISSION	LES

Scale

NA

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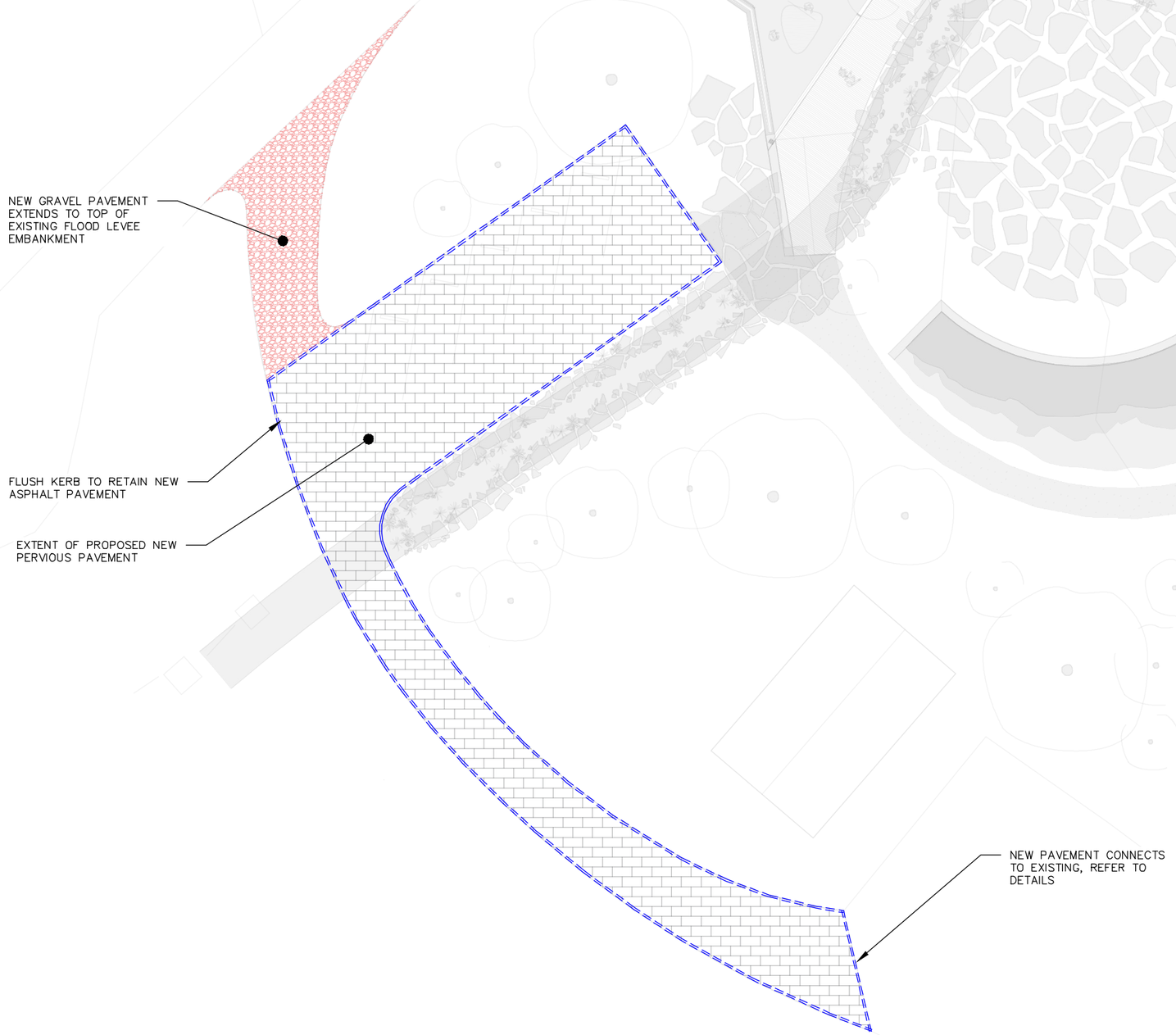
BACK O' BOURKE - BUILDING 5

PAVEMENT - LEGEND

Size	Status	Drg No.	Rev.
A3	APPROVED FOR DA SUBMISSION	PV-000	1



NOT FOR CONSTRUCTION

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
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0	LES	09/12/2024	APPROVED FOR DA SUBMISSION	LES

Scale

1:300

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DRAWN	LES	CHECKED	TK
APPROVED	LES	DATE	18/12/2024

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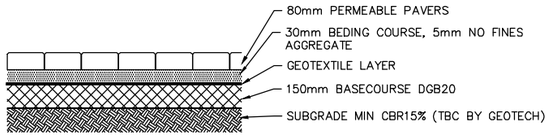
BACK O' BOURKE - BUILDING 5

PAVEMENT - LAYOUT SHEET 1

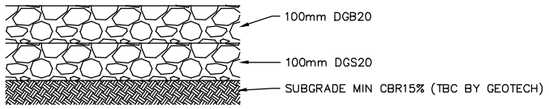
Size	Status	Drg No.	Rev.
A3	APPROVED FOR DA SUBMISSION	PV-100	1



DETAIL 1

PERMEABLE PAVER DETAIL

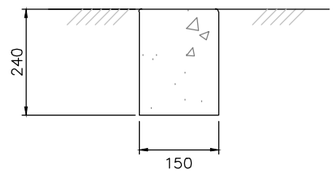
NOT TO SCALE



DETAIL 2

LEVEE GRAVEL PAVEMENT

NOT TO SCALE

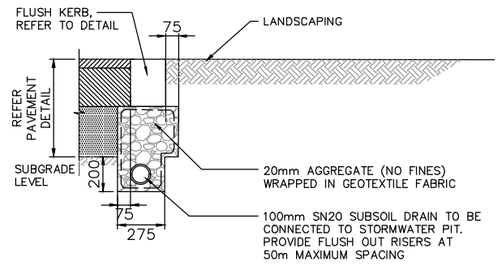


DETAIL 3

EDGE STRIP/FLUSH KERB DETAIL

NOT TO SCALE

SEE DETAIL 5 FOR SUBSOIL DRAINAGE



DETAIL 5

ASPHALT, EDGE STRIP, VERGE INTERFACE DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
1	LES	18/12/2024	APPROVED FOR DA SUBMISSION	LES
0	LES	09/12/2024	APPROVED FOR DA SUBMISSION	IRW

Scale

NOT TO SCALE

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APPROVED	LES	DATE	18/12/2024

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Stellen Consulting ABN 61 149 095 189

BACK O' BOURKE - BUILDING 5

PAVEMENT - DETAILS SHEET 1

Size	Status	Drg No.	Rev.
A3	APPROVED FOR DA SUBMISSION	PV-110	1

BACK O' BOURKE – BUILDING 5

STORMWATER MANAGEMENT PLAN

DRAWING INDEX:

STORMWATER MANAGEMENT

NOTES:

1. ALL DIMENSIONS TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION.
2. SITE LAYOUT BASED ON ARCHITECTURAL PLANS BY AILEEN SAGE ARCHITECTS (NOVEMBER 2024).
3. LOCATION OF ALL SERVICES MUST BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF EXCAVATION WORKS.
4. ALL STORMWATER DRAINAGE PIPES AND ASSOCIATED DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE RELEVANT STANDARDS, THE BUILDING CODE OF AUSTRALIA, MANUFACTURER'S RECOMMENDATIONS AND LOCAL COUNCIL, AS APPLICABLE.
5. ALL INVERT LEVELS PROVIDED ON THIS DRAWING ARE REDUCED TO AHD AND BASED ON INTERPOLATED SURFACE LEVELS AND SYSTEM REQUIREMENTS.
6. WHERE POSSIBLE, PIPEWORK SHALL BE LOCATED EXTERNAL TO THE BUILDING.
7. STORMWATER LINES TO BE SEALED DN150 uPVC UNLESS OTHERWISE NOTED.
8. STORMWATER PIPES TO BE GRADED AT A MINIMUM 1% UNLESS NOTED OTHERWISE.
9. ALL PIPE AND CONDUITS TO BE MARKED IN ACCORDANCE WITH AS1345 – 1995.
10. TRENCHES AND SERVICE SEPARATIONS IN ACCORDANCE WITH AS/NZS 5601, AS/NZS 3500, AND AS/CA S009.

LEGEND:

—— SW —— STORMWATER PIPE

—— SS —— SUBSOIL DRAIN

600 GRATED DRAINAGE PIT AND SIZE

NOT FOR CONSTRUCTION

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
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BACK O' BOURKE - BUILDING 5

STORMWATER - LEGEND

Size	Status	Drg No.	Rev.
A3	APPROVED FOR DA SUBMISSION	SW-000	0

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No.	BY	DATE	DESCRIPTION	APPD
0	LES	09/12/2024	APPROVED FOR DA SUBMISSION	LES

Scale

1:500

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BACK O' BOURKE - BUILDING 5

STORMWATER - PIPE LAYOUT SHEET 1

Size	Status	Drg No.	Rev.
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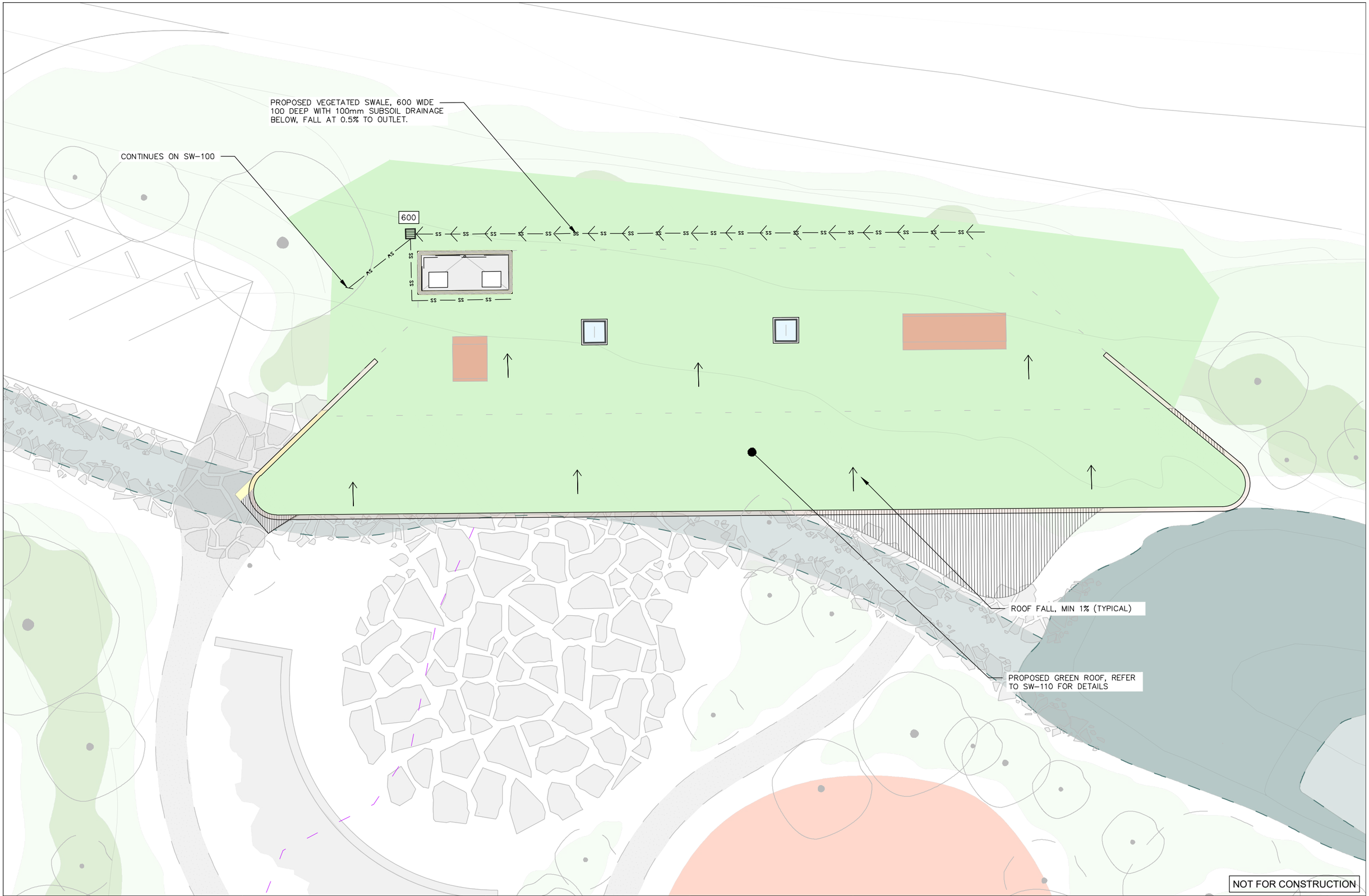

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
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Scale

1:500

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DRAWN	LES	CHECKED	TK
APPROVED	LES	DATE	09/12/2024

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BACK O' BOURKE - BUILDING 5

STORMWATER - PIPE LAYOUT SHEET 1

Size	Status	Drg No.	Rev.
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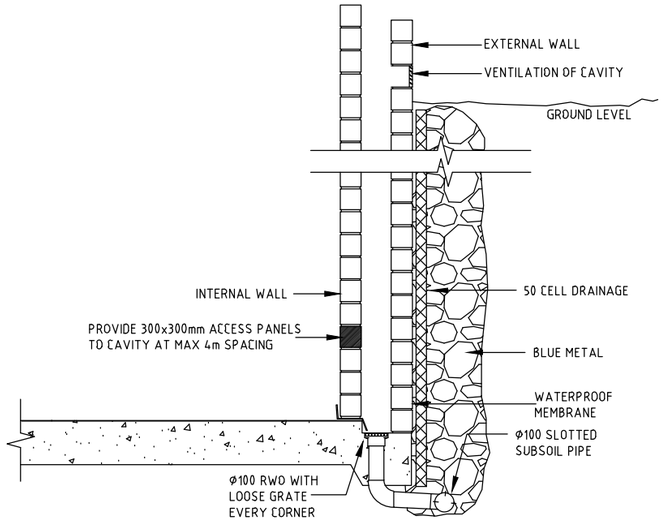
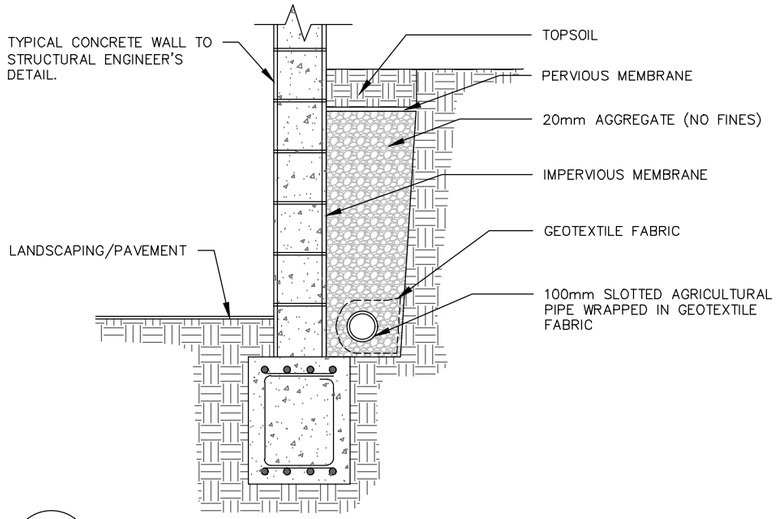


DETAIL 1

CAVITY WALL DRAINAGE

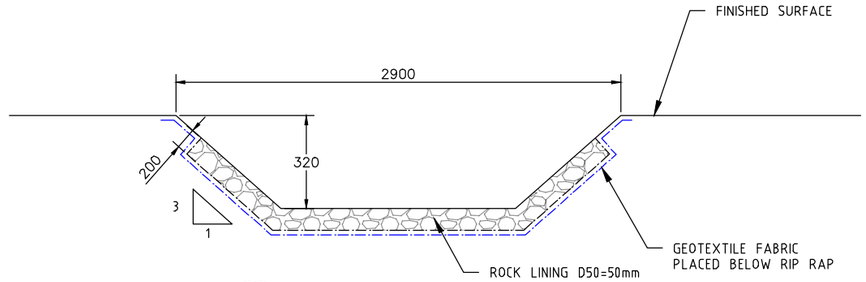
NOT TO SCALE



DETAIL 2

SUBSOIL DRAINAGE BEHIND RETAINING WALL

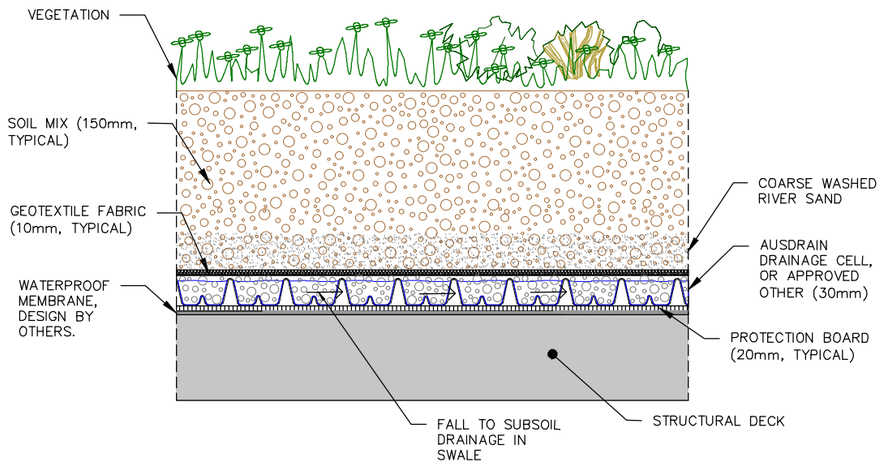
NOT TO SCALE



DETAIL 3

SWALE – ROCK LINED

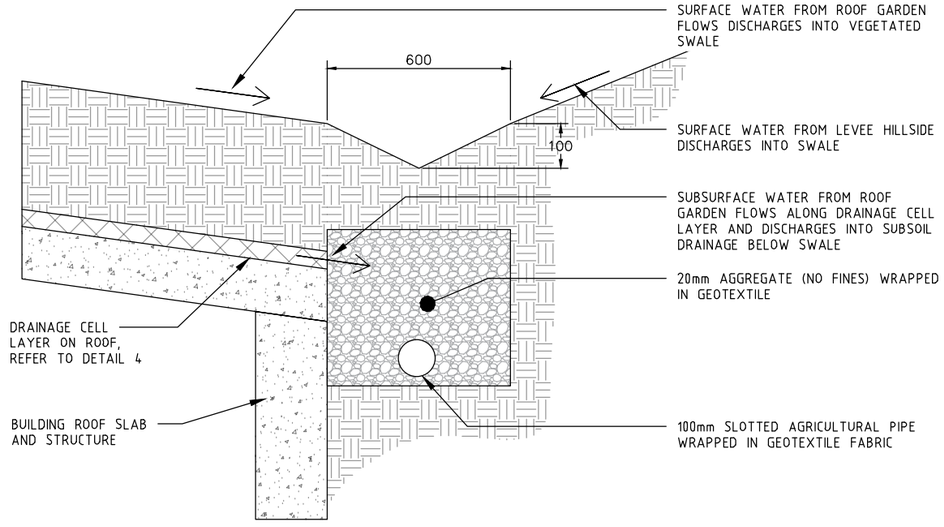
NOT TO SCALE



DETAIL 4

GREEN ROOF / ROOF GARDEN DRAINAGE

NOT TO SCALE



DETAIL 5

ROOF DRAINAGE CHANNEL

NOT TO SCALE

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	LES	09/12/2024	APPROVED FOR DA SUBMISSION	LES

Scale: NA

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APPROVED	LES	DATE	09/12/2024

Stellen

Stellen Consulting ABN 61 149 095 189

BACK O' BOURKE - BUILDING 5

STORMWATER - DETAILS SHEET 1

Size	Status	Drg No.	Rev.
A3	APPROVED FOR DA SUBMISSION	SW-110	0

barnson.

APPENDIX E

Structural Report

barnson.
DESIGN . PLAN . MANAGE

Preliminary Structural Engineering Assessment

Client: Ailieen Sage Architects

Site Address: 49 Mooculta Street Bourke NSW 2840

23 October 2024

Our Reference : 41193-SR01_A

barnson.
DESIGN . PLAN . MANAGE

1300 BARNSON (1300 227 676)
generalenquiry@barnson.com.au
abn. 43 088 342 625

to.
Ailieen Sage Architects
Att: Jason Brook
Po Box 23
Gilgandra NSW 2827

date.
23.10.2024

reference.
41193-SR01_A

Dear Sir,

Bourke Cultural Centre Development at 49 Mooculta Street Bourke NSW 2840 Preliminary Structural Engineering Assessment for Proposed Cultural Centre

As requested, we have reviewed the geotechnical report completed by Barnson Pty Ltd and architectural drawings provided by Aileen Sage Architects for the Back O' Bourke Building 5 Development including the projects proposed impact on the existing levee at 49 Mooculta Street, Bourke, NSW, 2840.

Attached is our report detailing the suitability of the proposed development, including several concept design options to assist with project feasibility.

If you have any further enquiries regarding this matter, please contact the undersigned.

Yours faithfully
BARNSON PTY LTD

Jim Saran
Structural Engineer

DISCLAIMER

This report has been prepared solely for **Ailieen Sage Architects** in accordance with the scope provided by the client and for the purpose(s) as outlined throughout this report.

Barnson Pty Ltd accepts no liability or responsibility for or in respect of any use or reliance upon this report and its supporting material by anyone other than the client.

Project Name:	Preliminary Structural Engineering Assessment for 49 Mooculta Street Bourke NSW 2840
Client:	**Ailieen Sage Architects**
Project Number:	25101
Report Reference:	41193-SR01_A
Date:	23 October 2024

Prepared by:	**Reviewed by:**
	
Thomas Rouse MEng / BTech Structural Engineer	Jim Saran Structural Engineer

Contents

List of Figures

1. BACKGROUND

The following report aims to provide high level engineering advice, and some concept designs to assist with the feasibility assessment of the Back O' Bourke Building 5 development and in particular its potential impact on the existing earth levee structure. This report was commissioned by Ailieen Sage Architects.

This request for a structural review was made due to a variety of concerns with the development in terms of:

- The impact of the development design on the levee in terms of additional surcharge from roof landscaping.
- Concepts designs for the retaining wall structure supporting the landscaped roof and additional fill on the levee bank.

Following is our report detailing the structural integrity of the levee bank as well as design concepts for retaining and supporting the landscaped roof.

2. IMPACT ON LEVEE

After reviewing the Geotechnical report complete by Barnson reference 41193-GR01_A dated 19th September 2024, in association with the proposed development design provided in the draft architectural drawings by Ailieen Sage Architects dated, 22nd August, we consider the proposed scheme to construct the building adjacent to the levee has merit. From our assessment of the proposed impacts from the addition of surcharge loads on the roof and extension of the levee bank over the building, we believe a retaining wall and roof supporting structure will be required to retain the levee bank earth loads as well as the additional roof landscaping surcharge.

Three possible design concepts have been deemed viable to support the proposed development design. These include, reinforced block work, reinforced dincel wall, and reinforced cast-insitu wall.

2.1. Retaining Wall

A structural retaining wall will need to be provided along the rear of the proposed building to, firstly, support the suspended concrete and landscaped roof design, secondly, retain the cut into the existing levee bank and thirdly support additional loading from fill forming the landscaped continuing over the roof. From the architectural drawings, a retaining wall of some 4m in height will be necessary.

The first option for consideration is a reinforced concrete block work wall. For this size wall, 300mm blocks will be required at the base, reduced to 200mm wide block's part way up. The retaining wall leg will need to be approximately 3000 mm long with piers founded into suitable natural ground bearing material. An example of reinforced block wall can be seen in Figure 1 below.

This option is considered as the most economical option but will require a detailed membrane methodology to prevent moisture ingress. A block work wall system in this case is considered a simple construction.

Figure 1: Block Work Retaining Wall – Courtesy Island Block & Paving

The second option is a reinforced concrete cast in-situ wall. This wall will be formed and casted with similar size requirements as the concrete block wall. An example of this type of wall can be seen in Figure 2 below.

This type of construction will be less economical than a reinforced concrete block wall however will be easier to waterproof. Construction of an in-situ wall would require specialist contractors.

Figure 2: Cast In-situ Concrete Retaining Wall – Courtesy J.H. Maxymillian Inc.

The third option that may be viable is to use a reinforced concrete dincel wall construction. This type of wall construction relies upon a permanent plastic formwork and will be casted with similar size requirements as the concrete block wall. An example of this type of wall can be seen in Figure 3 below.

This option would be more expensive than a conventional block work wall but less expensive than a cast in-situ wall. Waterproofing will be similar to that required for a conventional block work wall. Construction of the retaining wall structure using dincel, would require a suitably experienced contractor.

Figure 3: Dincel Wall Retaining Wall – Courtesy Issuu

To assist, a typical retaining wall detail (see Figure 4) is provided for information. This detail illustrates the proposed retaining wall and it's positioning and interaction within the building and levee bank. The retaining wall will be tied into the both the footing and suspended roof concrete slab with new landscaping backfill tapering away from the building to shed any water runoff. The floor slab will be situated on top of the retaining wall footing with an infill stud wall providing the framing for internal claddings.

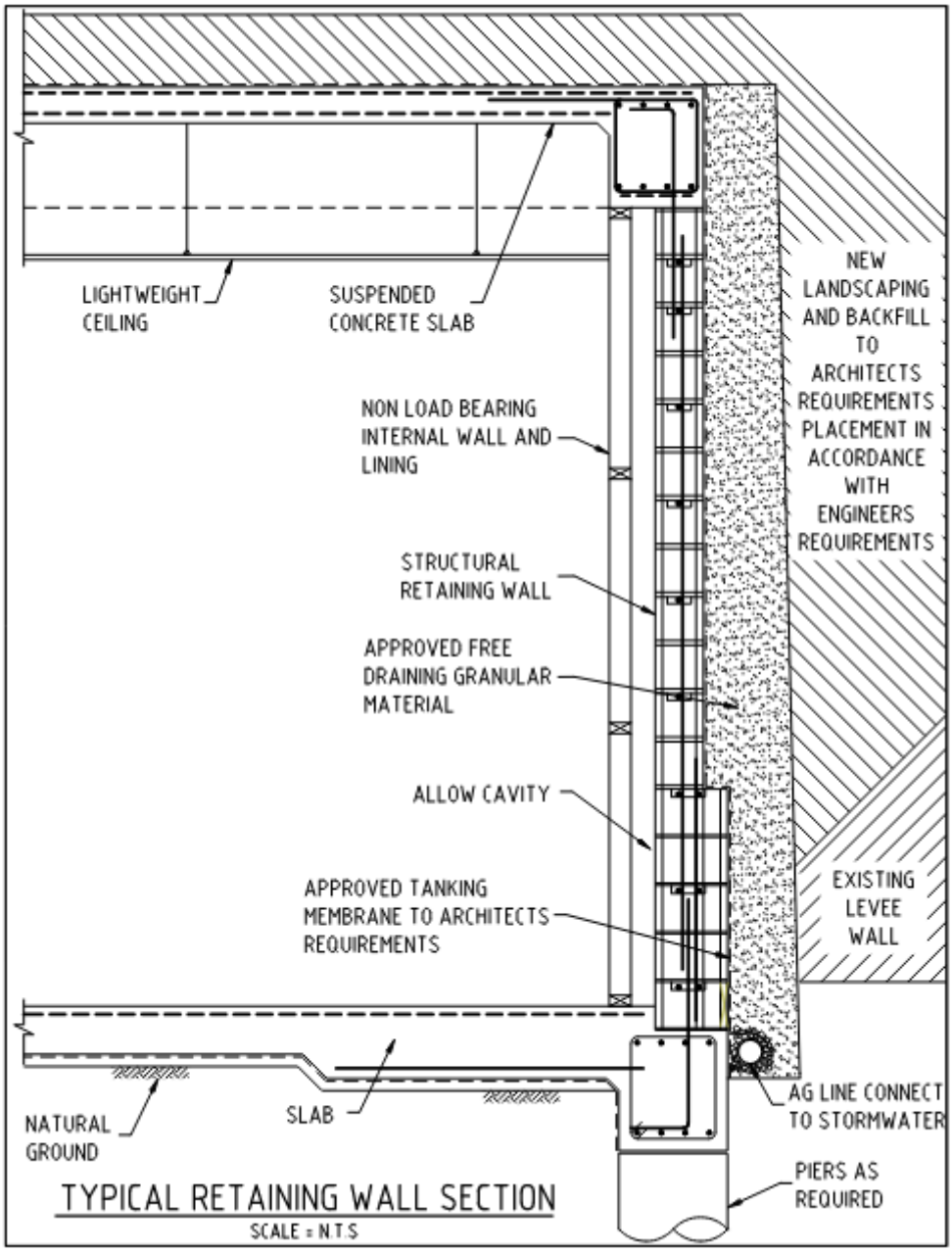


Figure 4: Proposed Development Retaining Wall Section

3. CONCLUSION

A purpose-built retaining wall structure suitably designed by a qualified structural engineer will be required to reduce the risk of sliding and overturning after surcharge material is applied. A structural roof slab will be necessary to transfer surcharge loads onto the external walls.

Barnson has provided three options for the retaining wall construction. These should be considered, and appropriate system adopted based upon ease of construction and pricing.

barnson.

APPENDIX F

Flood Risk Assessment

Stellen
Civil Engineering

Stellen Consulting
Level 1, 27 Belgrave Street
Manly NSW 2095

PO Box 151
Freshwater NSW 2096

+61 2 8021 9233 tel
ABN 61 149 095 189

9 December 2024

Aileen Sage Architects
Level 2, 397 Riley Street
Surry Hills NSW 2010

Janelle Woo <janelle@aileensage.com>

Flood Risk Assessment for the proposed Back O' Bourke – Building 5

Dear Janelle

Stellen Consulting was engaged to assess the proposed development at 49 Mooculta St, Bourke NSW 2840 in reference to potential impacts arising from flooding. This letter provides summary of the key findings of the attached Flood Risk Assessment (Appendix A).

The architectural plans prepared by Aileen Sage Architects proposed construction of a new building (Building 5) set into an existing flood levee, external landscaping works and new car parking.

Council's flood data (Bourke Flood Risk Management Plan, Lyall & Associates, 2022) predicts that during the 1% Annual Exceedance Probability (AEP) rain event some parts of the site will be inundated with floodwaters and subject to localised flooding/ponding.

Based on the flood impact assessment attached (Appendix A), the following can be concluded:

- The site is subject to flooding during the 1%AEP rain event.
- The proposed works will not adversely impact surrounding properties in regard to flooding.
- The Flood Planning Level (FPL) for the development area is 104.95mAHD and includes 500mm freeboard to the 1% AEP flood level.
- The proposed Building 5 has floor levels (105.15mAHD) set above the FPL (104.95mAHD)
- The proposed development is consistent with the flood hazard of the land.
- Provided the recommendation in Appendix A, s4.2 are adopted, the development complies with the flood controls contained in s3.2 of the Bourke Shire Council Development Control Plan (2012).

Kind regards,

Logan English-Smith
Senior Engineer

Stellen Consulting
Level 1, 27 Belgrave Street, Manly, NSW 2095
T. 0430 472 389
E. logan.englishsmith@stellenconsulting.com.au

Appendix A – Flood Risk Assessment

1.0 Introduction

Stellen Consulting was engaged to assess the proposed development at 49 Mooculta St, Bourke NSW 2840 in reference to potential impacts arising from flooding. This report provides assessment of the flooding information specific to the development site.

2.0 Information relied upon

The following documentation has been used in the preparation of this flood report:

- Architectural plans and Survey (Appendix 1)
- Bourke Flood Risk Management Plan, Lyall & Associates (2022)

3.0 Description of the site and proposed works

The site, located at 49 Mooculta St, Bourke NSW, (Lot 151 DP 1068536) falls away from the street toward and flood levee embankment to the north. The flood levee protects Bourke city centre from external flooding within the Darling River.

The development proposes construction of a new building (Building 5) set into the side of the existing flood levee embankment, external landscaping works, new car parking and relocation of an existing embankment access/service road.

4.0 Flooding

Council's flood data (Bourke Flood Risk Management Plan, Lyall & Associates) predicts that during the 1% Annual Exceedance Probability (AEP) rain event some parts of the site will be inundated with floodwaters and subject to localised flooding/ponding.

The relevant flood maps applicable to the development site are attached in Appendix B.

Based on this information, the site is considered flood affected land (Bourke DCP s3.2.1) and is subject to flood controls.

4.1 Flood Planning Level

The Flood Planning Level (FPL) for the development has been calculated based on the predicted 1% AEP flood level maps found in Appendix B. Based on these maps, the maximum depth (other than the existing billabong water body) is expected to be 300mm.

The maximum flood depth occurs at the minimum survey level in this area, using a combination of the predicted flood depth (300mm) and survey levels (104.15mAHD), the 1% AEP flood depth can be calculated as 104.45mAHD.

The FPL for the site is 1% AEP flood level + 500mm freeboard, the FPL is therefore 104.95 mAHD.

4.2 Assessing the development again Council Flood Controls

The section below provides assessment of the flood controls applicable to the development, contained in Section 3.2 of the Bourke Shire Development Control Plan (2012).

3.2.2 Access – Complies

Road access to the site is available during the 1% AEP with a maximum flood hazard classification of H1 (Appendix B), which is “generally safe for vehicles, people and buildings” in accordance with ARR2019.

3.2.3 On-site Sewer Management – Achievable

All new sewer connections and fixtures will be flood proofed to the 1% AEP in accordance with this control.

3.2.4 General Development Requirements – Achievable

Structural engineer to provide certification that the building is capable of withstanding the forces of flood waters and debris during the 1% AEP event prior to construction.

A safe evacuate route from the site is available and shown in Appendix C.

The proposed building will be constructed using an open subfloor.

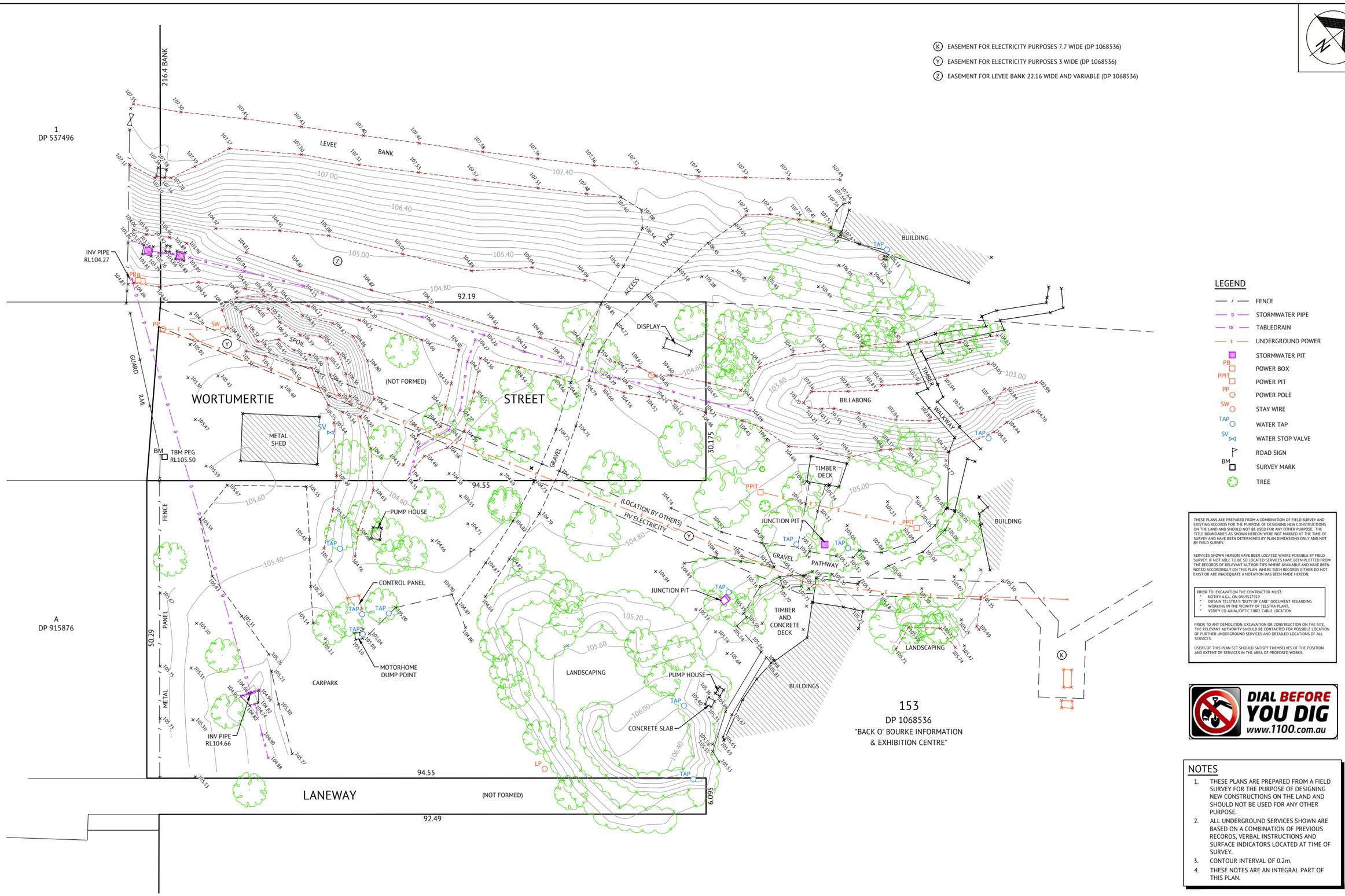
3.2.6 Commercial / Retail / Industrial Development - Complies

The proposed new building has a proposed finished floor level of 105.15 mAHD which is higher than the FPL (104.95mAHD) calculated in s4.1.

3.2.8 Landfilling – Complies

New works within the site are generally proposed at grade, with the majority of works expected to take place outside of the flood affect areas. No impacted as a result of filling is expected as a result of the development.

Appendix A – Architectural Plans and Survey



(K) EASEMENT FOR ELECTRICITY PURPOSES 7.7 WIDE (DP 1068536)

(Y) EASEMENT FOR ELECTRICITY PURPOSES 3 WIDE (DP 1068536)

(Z) EASEMENT FOR LEVEE BANK 22.16 WIDE AND VARIABLE (DP 1068536)

LEGEND

- FENCE
- STORMWATER PIPE
- TABLEDRAIN
- UNDERGROUND POWER
- STORMWATER PIT
- PB POWER BOX
- PPIT POWER PIT
- PP POWER POLE
- SW STAY WIRE
- TAP WATER TAP
- SV WATER STOP VALVE
- ROAD SIGN
- BM SURVEY MARK
- TREE

THESE PLANS ARE PREPARED FROM A COMBINATION OF FIELD SURVEY AND EXISTING RECORDS FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS ON THE LAND AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE. THE TITLE BOUNDARIES AS SHOWN HEREON WERE NOT MARKED AT THE TIME OF SURVEY AND HAVE BEEN DETERMINED BY PLAN DIMENSIONS ONLY AND NOT BY FIELD SURVEY.

SERVICES SHOWN HEREON HAVE BEEN LOCATED WHERE POSSIBLE BY FIELD SURVEY. IF NOT ABLE TO BE SO LOCATED SERVICES HAVE BEEN PLOTTED FROM THE RECORDS OF RELEVANT AUTHORITIES WHERE AVAILABLE AND HAVE BEEN NOTED ACCORDINGLY ON THIS PLAN. WHERE SUCH RECORDS EITHER DO NOT EXIST OR ARE INADEQUATE A NOTATION HAS BEEN MADE HEREON.

PRIOR TO EXCAVATION THE CONTRACTOR MUST:
- NOTIFY A.G.L. ON 0415927919
- OBTAIN TELSTRA'S "DUTY OF CARE" DOCUMENT REGARDING WORKING IN THE VICINITY OF TELSTRA PLANT.
- VERIFY CO-AXIAL/OPTIC FIBRE CABLE LOCATION

PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

USERS OF THIS PLAN SET SHOULD SATISFY THEMSELVES OF THE POSITION AND EXTENT OF SERVICES IN THE AREA OF PROPOSED WORKS.

DIAL BEFORE YOU DIG www.1100.com.au

NOTES

1. THESE PLANS ARE PREPARED FROM A FIELD SURVEY FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS ON THE LAND AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
2. ALL UNDERGROUND SERVICES SHOWN ARE BASED ON A COMBINATION OF PREVIOUS RECORDS, VERBAL INSTRUCTIONS AND SURFACE INDICATORS LOCATED AT TIME OF SURVEY.
3. CONTOUR INTERVAL OF 0.2m.
4. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN.

ISSUED TO CLIENT

DATE	REV	DESCRIPTION		
19/04/2023	A	ISSUED TO CLIENT	JE	MT
			REC	APP

REVISIONS

Premise

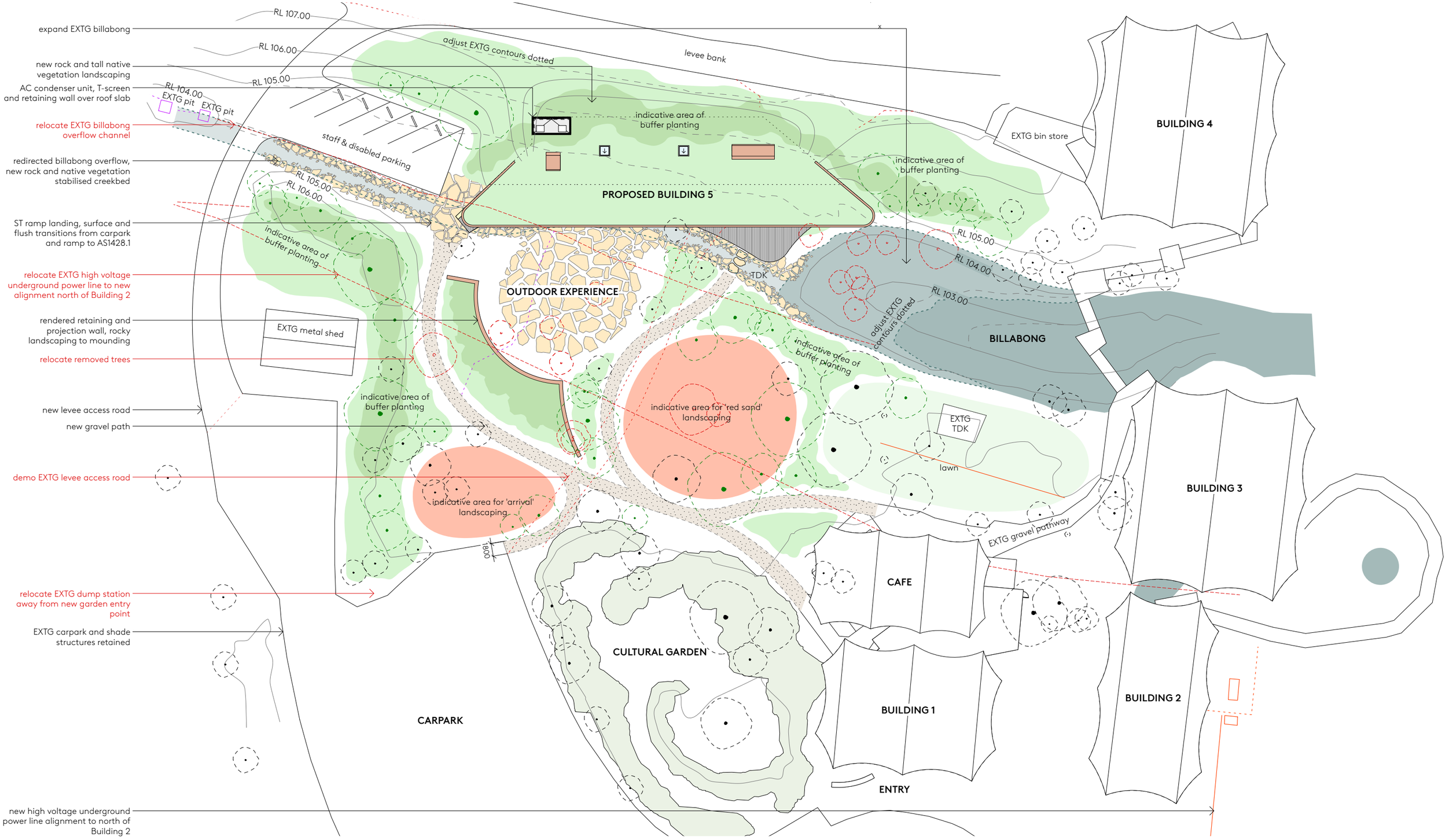
DUBBO OFFICE
1ST FLOOR
62 WINGEWARRA STREET
DUBBO, NSW 2830
PH: (02) 6887 4500
WEB: www.premise.com.au

DESIGNED ----
CHECKED ----
PROJECT MANAGER MATTHEW THORNE
ENGINEERING CERTIFICATION

SCALE
SCALE 1:300 (A1)
0 6 12 18m
SCALE 1:600 (A3)
0 6 12 18m
ORIGINAL SHEET SIZE A1

CLIENT BOURKE SHIRE COUNCIL
PROJECT SURVEYING SERVICES
LOCATION BOURKE INFORMATION & EXHIBITION CENTRE
SHEET TITLE CONTOUR AND FEATURE SURVEY PLAN

JOB CODE 123197_01
SHEET NUMBER DS01
REV A



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Aileen Sage Architects
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Surry Hills NSW 2010

Amelia Holliday 0407 263 542
Isabelle Toland 0414 711 254
studio@aileensage.com

Nominated Architect
Amelia Holliday ARB NSW 8115 VIC 17540

General Notes

Comply with relevant authorities' requirements, the National Construction Code, and all relevant Australian Standards. Dimensions are in millimetres unless otherwise noted. Use figured dimensions only. Do not scale. If discrepancies exist, notify the Architect. If in doubt, ask.

Scale 1:500 @ A3

0 2 5 10 20m

North

Abbreviations

AC	AIRCONDITIONING	HR	HAND RAIL	T	SOLID TIMBER
BAL	BALUSTRADE	JU	JOINERY UNIT	TDK	TIMBER DECK
CF	CEILING FAN	MI	MIRROR	TF	TIMBER FLOORING
CL	CENTRE LINE	OF	OVERFLOW		
CONC	CONCRETE	PA	PAVING		
DP	DOWNPIPE	PB	PLASTERBOARD		
EQ	EQUAL	REN	RENDER FINISH		
EXTG	EXISTING	RF	RESILIENT FLOORING		
FG	FIXED GLASS	SC	STEEL COLUMN		
GR	GRAVEL	SP	STEEL PLATE		
GPO	ELECTRICAL OUTLET	ST	STONE		

Wall Legend

- EXTG Construction
- New Construction
- Demolition
- New Tree Location

Project

Back O' Bourke Building 5
49 Mooculta St, Bourke NSW 2840

Issue			Checked By
22.08.24	01	DRAFT FOR CONSULTANTS	IT
25.11.2024	02	ISSUE FOR CONSULANTS	IT

Drawing Title

Site Plan

Phase

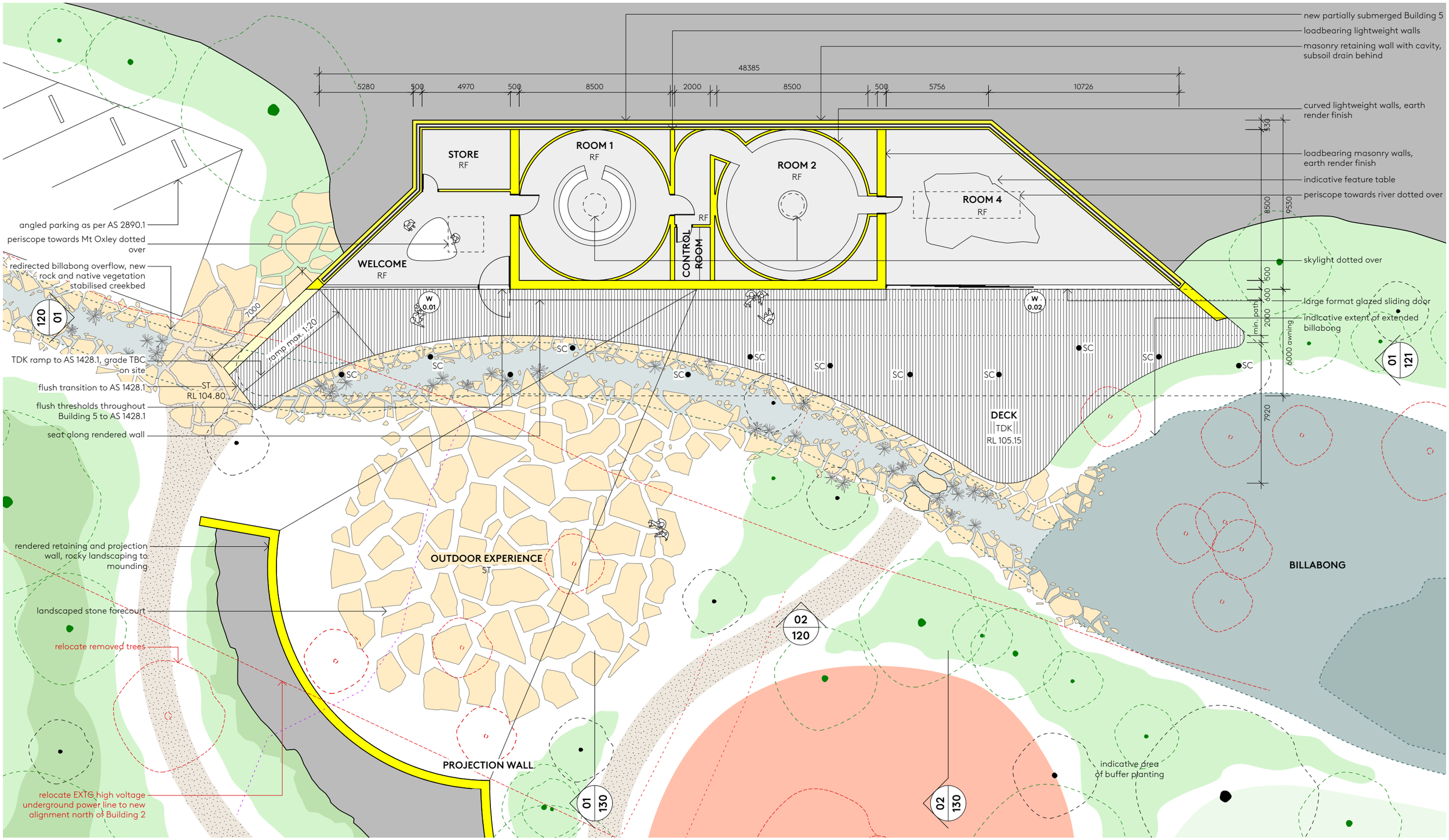
Development Application

Drawing Number

BOU-003

Issue

02



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Scale 1:200 @ A3

0 1 2 5 10m

North

Abbreviations

AC	AIRCONDITIONING	HR	HAND RAIL	T	SOLID TIMBER
BAL	BALUSTRADE	JU	JOINERY UNIT	TDK	TIMBER DECK
CF	CEILING FAN	MI	MIRROR	TF	TIMBER FLOORING
CL	CENTRE LINE	OF	OVERFLOW		
CONC	CONCRETE	PA	PAVING		
DP	DOWNPIPE	PB	PLASTERBOARD		
EQ	EQUAL	REN	RENDER FINISH		
EXTG	EXISTING	RF	RESILIENT FLOORING		
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GR	GRAVEL	SP	STEEL PLATE		
GPO	ELECTRICAL OUTLET	ST	STONE		

Wall Legend

- EXTG Construction
- New Construction
- Demolition
- New Tree Location

Project

Back O' Bourke Building 5
49 Mooculta St, Bourke NSW 2840

Issue			Checked By
22.08.24	01	DRAFT FOR CONSULTANTS	IT
25.11.2024	02	ISSUE FOR CONSULANTS	IT

Drawing Title

Ground Floor Plan

Phase

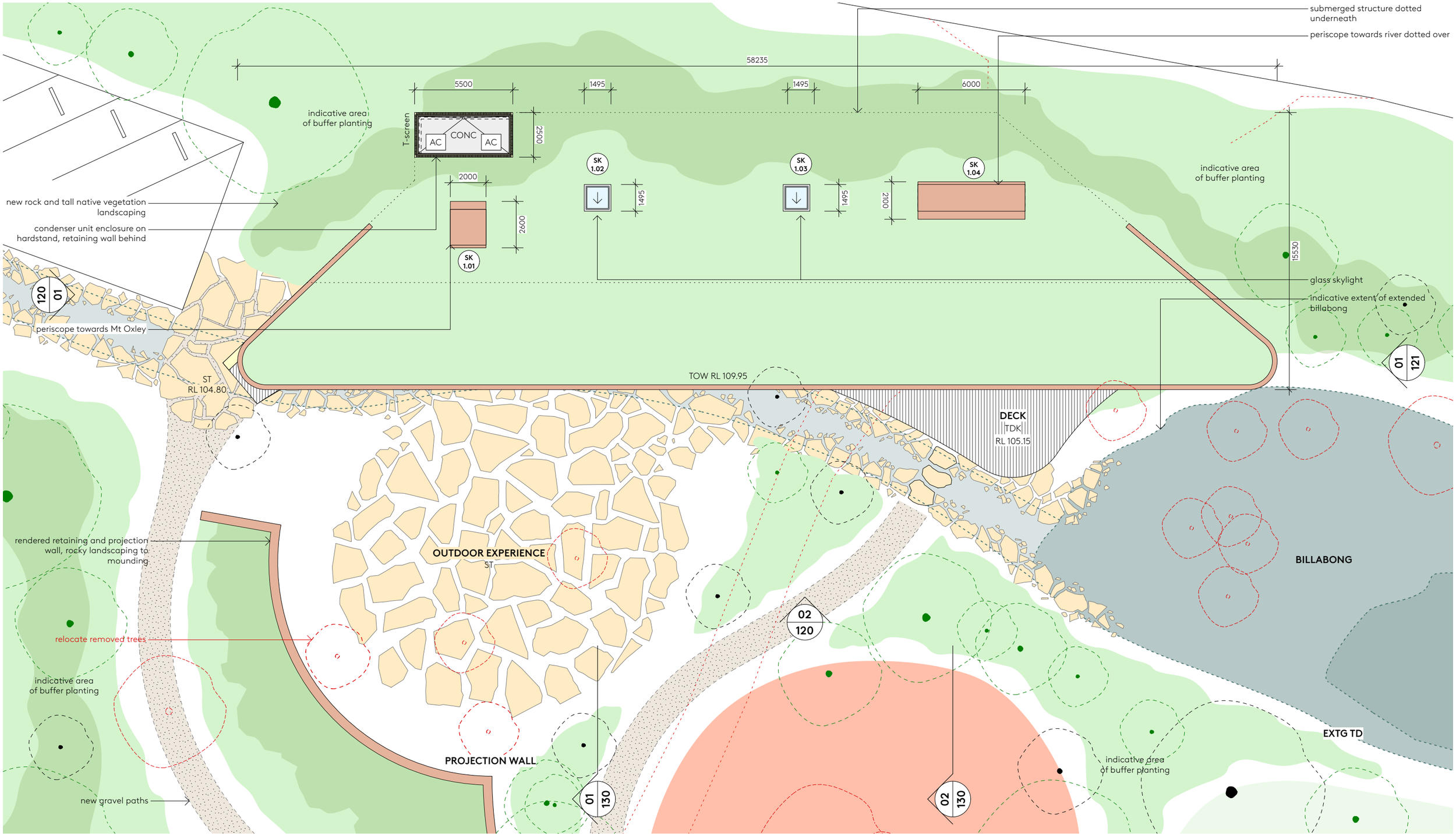
Development Application

Drawing Number

BOU-100

Issue

02



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Scale 1:200 @ A3

0 1 2 5 10m

North

Abbreviations

AC	AIRCONDITIONING	HR	HAND RAIL	T	SOLID TIMBER
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GPO	ELECTRICAL OUTLET	ST	STONE		

Wall Legend

- EXTG Construction
- New Construction
- Demolition
- New Tree Location

Project

Back O' Bourke Building 5
49 Mooculta St, Bourke NSW 2840

Issue			Checked By
22.08.24	01	DRAFT FOR CONSULTANTS	IT
25.11.2024	02	ISSUE FOR CONSULANTS	IT

Drawing Title

Roof Plan

Phase

Development Application

Drawing Number

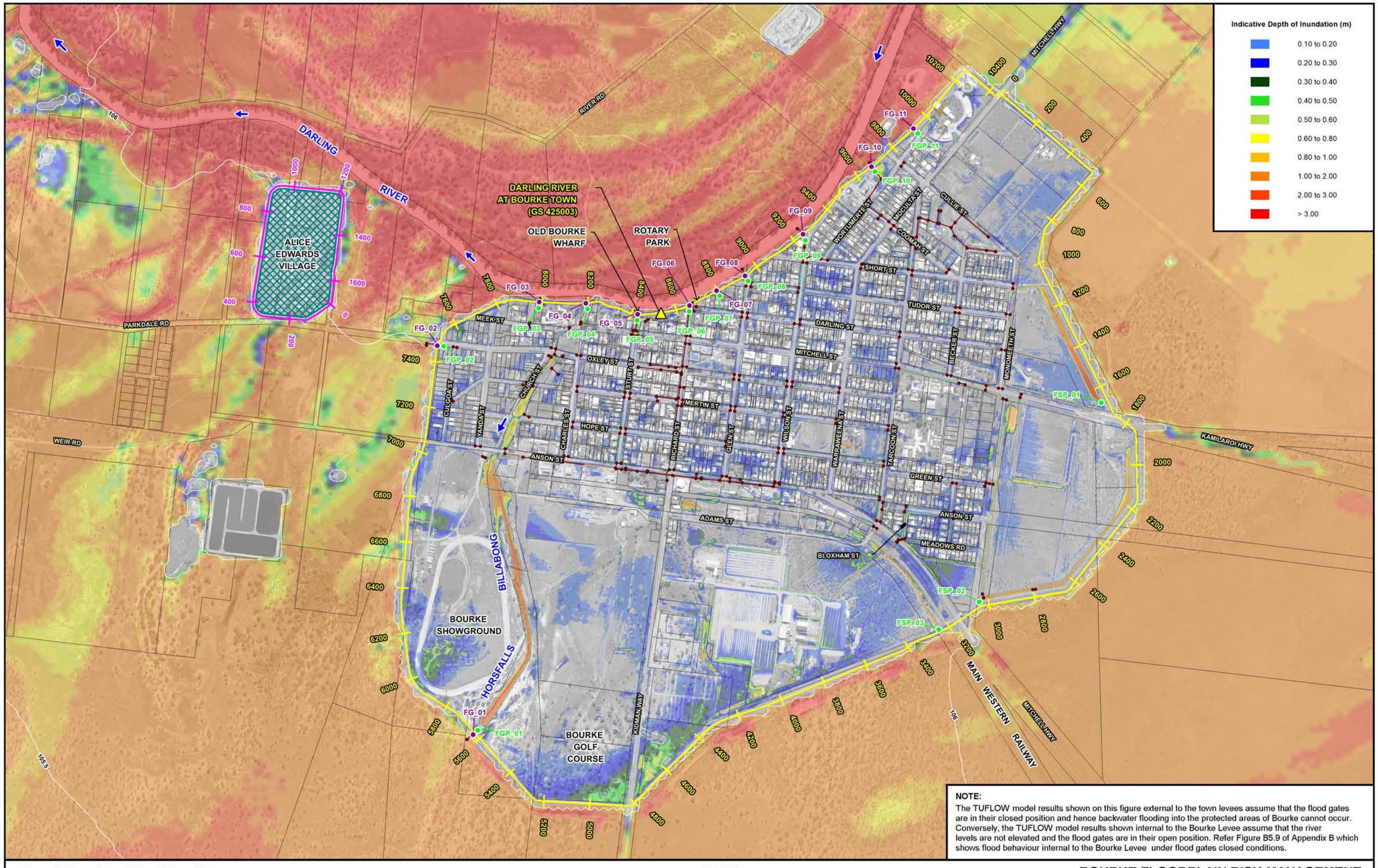
BOU-101

Issue

02

Stellen
Civil and Structural
Engineering

Appendix B – Flood Figures, Bourke Floodplain Risk Management Study and Plan (2022)



NOTE:
The TUFLOW model results shown on this figure external to the town levees assume that the flood gates are in their closed position and hence backwater flooding into the protected areas of Bourke cannot occur. Conversely, the TUFLOW model results shown internal to the Bourke Levee assume that the river levels are not elevated and the flood gates are in their open position. Refer Figure B5.9 of Appendix B which shows flood behaviour internal to the Bourke Levee under flood gates closed conditions.

N

150 0 150 300 450 m

Scale: 1:15,000

Lyall & Associates

Note:
The ground surface model incorporated in TUFLOW is based on LiDAR survey which has been sampled on a 3 m grid and does not necessarily incorporate localised features which can influence flooding behaviour in individual allotments.

Flood depths are therefore approximate only and require interpretation by a suitably qualified engineer to determine flooding behaviour in individual allotments. Any assessment of flooding in individual allotments may also require a site survey.

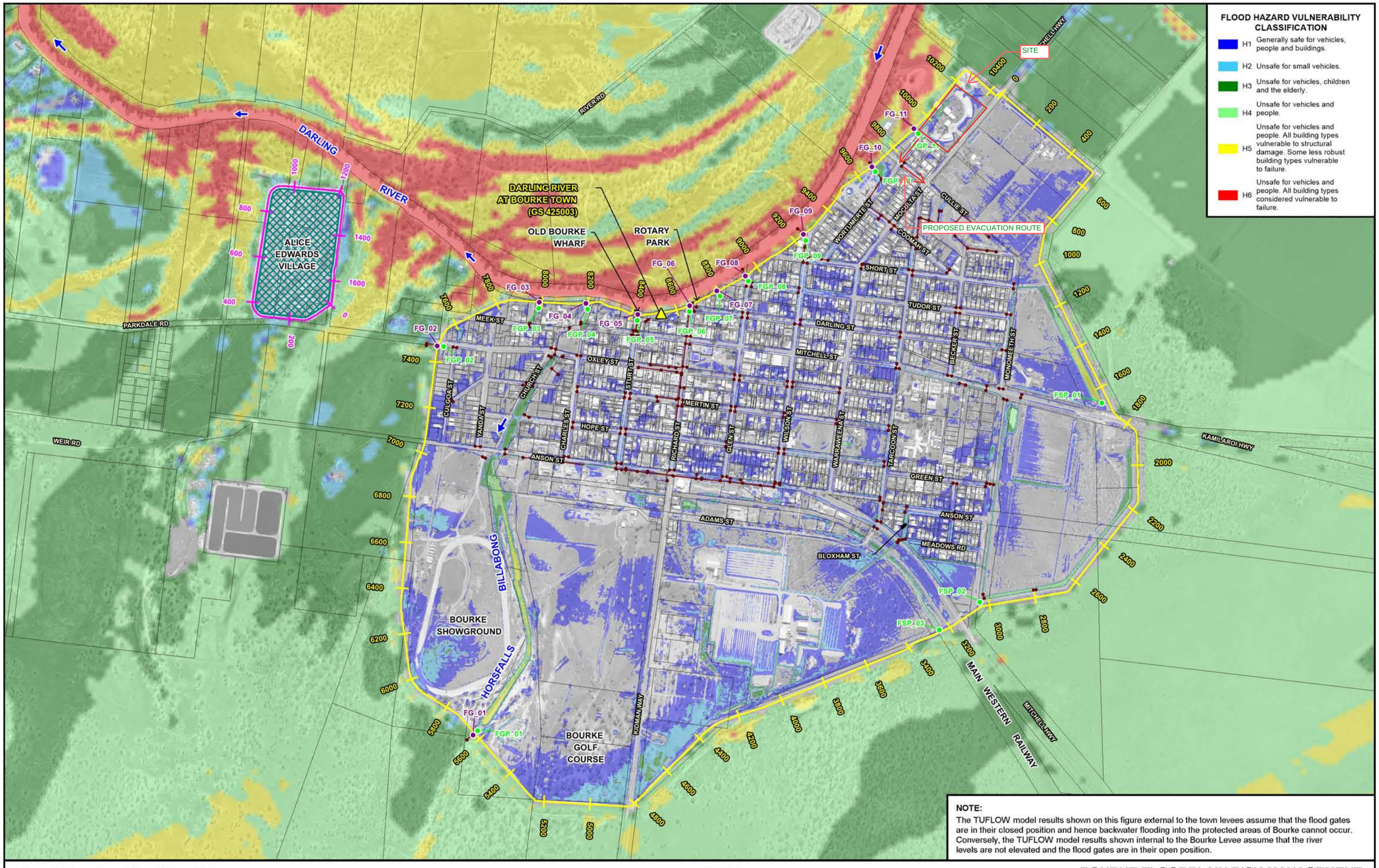
LEGEND

- Alignment of Bourke Levee
- Alignment of Alice Edwards Village Levee
- Flood Gate Location and Identifier
- Pump Location and Identifier
- WaterNSW Stream Gauge
- Modelled Stormwater Network
- Water Surface Elevation Contours (m AHD)
- Local Catchment Flood Behaviour Not Defined Internal to Alice Edwards Village Levee

BOURKE FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Figure 2.5
(Sheet 3 of 3)

INDICATIVE EXTENT AND DEPTHS OF INUNDATION
1% AEP



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N

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Scale: 1:15,000

Lyall & Associates

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- Flood Gate Location and Identifier
- Pump Location and Identifier
- WaterNSW Stream Gauge
- Modelled Stormwater Network
- Local Catchment Flood Behaviour Not Defined Internal to Alice Edwards Village Levee

BOURKE FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

Figure 2.8
(Sheet 3 of 3)

FLOOD HAZARD VULNERABILITY CLASSIFICATION
1% AEP

Stellen
Civil Engineering

Stellen Consulting
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Manly NSW 2095

PO Box 151
Freshwater NSW 2096

+61 2 8021 9233 tel
ABN 61 149 095 189

Appendix C – Evacuation Route

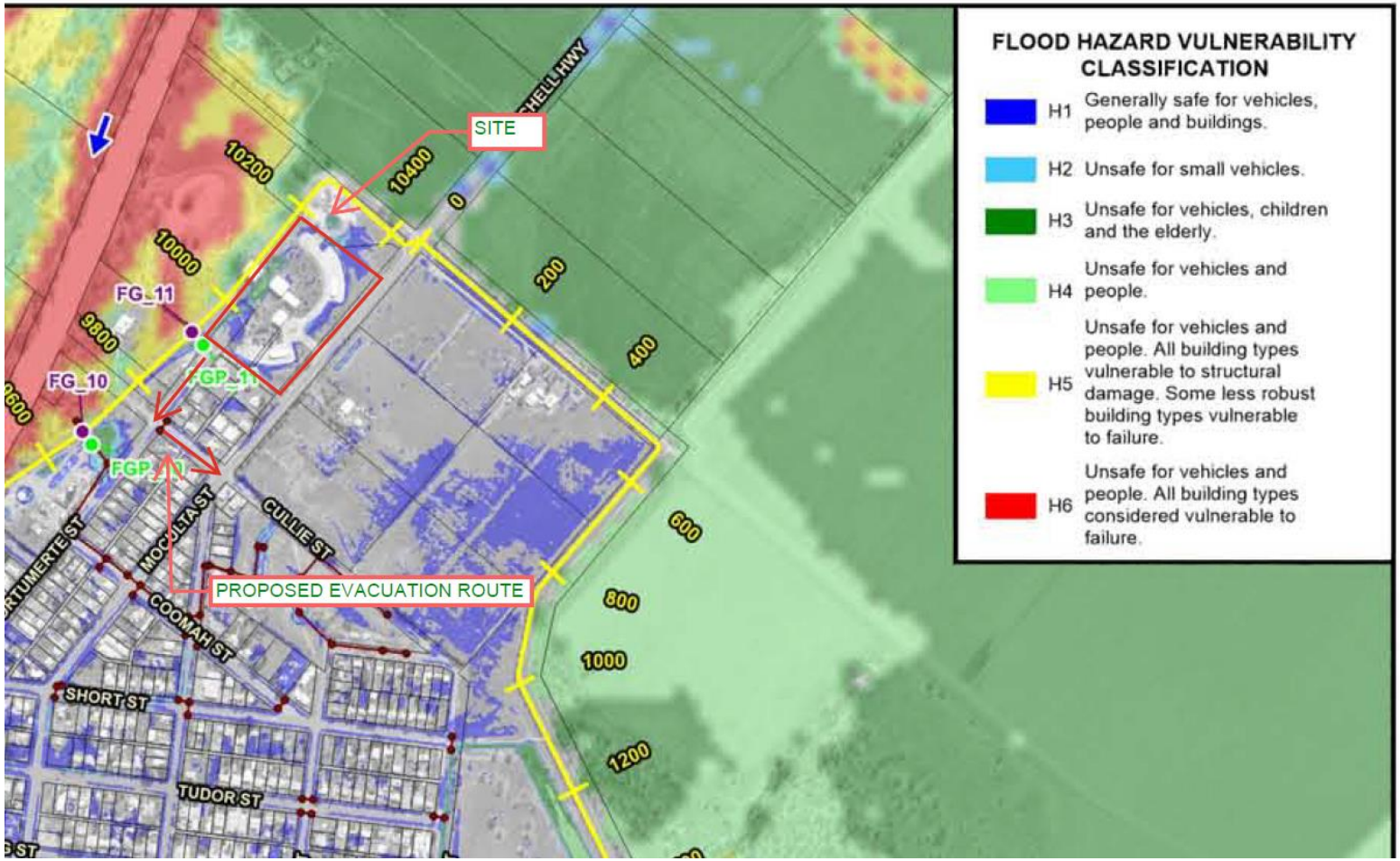

Figure 1 - Proposed evacuation route, background image from Lyal(2022), Figure 2.8

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APPENDIX G

Geotechnical Report

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DESIGN . PLAN . MANAGE

Geotechnical Investigation Report

Client: Aileen Sage Architects

Site Address: "Bourke Cultural Centre" 49 Mooculta Street, Bourke NSW

19 September 2024
Our Reference: 41193-GR01_A

DISCLAIMER

This report has been prepared solely for Aileen Sage Architects in accordance with the scope provided by the client and for the purpose(s) as outlined throughout this report. Barnson Pty Ltd accepts no liability or responsibility for or in respect of any use or reliance upon this report and its supporting material by anyone other than the client.

The accuracy of the advice provided in this report may be limited by unobserved variations in ground conditions across the site in areas between and beyond test locations and by any restrictions in the sampling and testing which was able to be carried out, as well as by the amount of data that could be collected given the project and site constraints. These factors may lead to the possibility that actual ground conditions and materials behaviour observed at the test locations may differ from those which may be encountered elsewhere on the site. If the sub-surface conditions are found to differ from those described in this report, we should be informed immediately to evaluate whether recommendations should be reviewed and amended if necessary.

Project Name:	"Bourke Cultural Centre" 49 Mooculta Street, Bourke NSW
Client:	Aileen Sage Architects
Project Number:	41193
Report Reference:	41193-GR01_A
Date:	19.09.2024
Revision	Revision A

Prepared by:	Reviewed by:
	
Gareth Williams Laboratory Technician	**Andrew Ruming** *BSc* Environmental Geologist

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Appendices

1. INTRODUCTION

The following is a report on the geotechnical assessment of a site in accordance with AS1726-2017 "Geotechnical Site Investigations".

The site investigation was carried out by Barnson Pty Ltd, on behalf of Aileen Sage Architects.

Plate 1 – Area of Investigation

Aileen Sage Architects is proposing to construct a new building at the "Bourke Cultural Centre" 49 Mooculta Street, Bourke NSW. The proposed site features that are covered by this investigation are as follows;

- Proposed building

The investigation comprised two (2) boreholes together with field mapping near the site. Details of the field work and laboratory testing are given in the report together with comments relevant to design and construction practice.

1.1. Terminology

The methods used in this report to describe the soil profiles, including visual classification of material types encountered, are in accordance with Australian standard AS1726-2017 "Geotechnical Site Investigations".

1.2. Limitations

The geotechnical section of Barnson Pty Ltd has conducted this investigation and prepared this report in response to specific instructions from the client to whom this report is addressed. This report is intended for the sole use of the client, and only for the purpose which it is prepared. Any third party who relies on the report or any representation contained in it does so at their own risk.

1.3. Geotechnical Testing

Representative samples from the site were subjected to the following range of tests in accordance with relevant method of Australian Standard AS1289:

- Linear Shrinkage
- Liquid Limit
- pH
- ECe

NATA endorsed reports are attached in *Appendix C*.

2. GENERAL DESCRIPTION OF SITE

The site is situated in the "Bourke Cultural Centre" at 49 Mooculta Street, Bourke NSW.

The site has light to moderate grass or weed cover with existing trees in the vicinity.

The site is sloping moderately to the east. There is an existing levy and cultural centre infrastructure surrounding the area.

Plate 2 – General view of site facing northeast.

Plate 3 – General view of site facing northeast.

Plate 4 – General view of site facing east.

3. SITE HISTORY

A review of Google Earth imagery indicates the site is in similar condition as to when the image was taken in 2007. The site is therefore assumed to have no recent tree removal or fill placed. Images exist back to 1985, yet the image is not clear enough to determine site features. See 2007 aerial image below:

Plate 5 – Aerial Image 2007, Courtesy Google Earth.

4. METHOD OF INVESTIGATION

On the 5th of September 2024, a geotechnical investigation was carried out at the site of the above-mentioned development. The field drilling was carried out by a geotechnical technician who logged the boreholes on site and undertook geological mapping of the nearby area.

A drilling rig with a 90mm auger and tungsten tip was used to excavate two (2) boreholes for the proposed building to depths of 5.0m within the proposed areas. These are identified as boreholes 1 and 2.

4.1. GPS Co-Ordinates

The boreholes were drilled as close as possible to the anticipated location of the proposed structures. GPS Co-ordinates of these were recorded on site to enable plotting of the borehole locations. The following Table 1 shows these co-ordinates.

Table 1: GPS Co-Ordinates of Boreholes

Location	Longitude	Latitude	Proposed Location
Borehole 1	145.948707	-30.080235	Building
Borehole 2	145.948602	-30.080351	Building

The boreholes were recorded on site with a Garmin Oregon 550 handheld GPS, using GDA94 Datum. The co-ordinates have an accuracy of +/- 5m. These locations are also shown on site plan in *Appendix B*. The borehole logs of sub-surface profiles are attached in *Appendix C*

5. GENERAL SUB-SURFACE CONDITIONS

From the bore logs attached it can be seen that the soil encountered to the test end point was as follows:

5.1. Sub-Soils

Alluvial soils were encountered throughout the boreholes. These comprised slightly moist sands, silts and clays to 5.0m as shown in *Appendix C*. The soils were noted to be of a high plasticity, which was confirmed with laboratory testing.

5.2. Regional Geology

Reference to the Bourke 1:250,000 Geological Map indicates the surrounding area consists of "*Floodplains of clayey silt, sand and gravel*".

Rock was not encountered during this investigation.

6. NATA LABORATORY TESTING

Disturbed samples were taken during the field investigation. Laboratory testing was carried out on selected samples of all different material types, with details of the sampling and testing shown below:

Soil Index Properties testing was carried out on samples to aid in classification of the soils encountered and to assist in determining design parameters. This testing results are indicated below:

6.1. Atterberg Limits Testing (LS, LL, PI)

The Plasticity Limit results are summarised in the below table:

Table 2: Atterberg Limits Results (LS, LL, PI):

Borehole No.	Location	Depth (m)	Liquid Limit (%)	Plasticity Index (%)	Linear Shrinkage (%)
Borehole 1	Building	1.0	49	35	16.0
Borehole 1	Building	2.0	62	45	16.0
Borehole 1	Building	3.0	55	42	18.0
Borehole 1	Building	4.0	45	33	15.5
Borehole 1	Building	5.0	35	27	13.0
Borehole 2	Building	1.0	44	29	13.0
Borehole 2	Building	2.0	47	32	16.0
Borehole 2	Building	3.0	47	30	16.0
Borehole 2	Building	4.0	43	32	15.0
Borehole 2	Building	5.0	39	28	14.5

Cohesive soils with a Plasticity Index range of 27-35% are likely to be highly reactive to moisture change.

6.2. Acidic Soils

Acidic ground conditions can be caused by dissolved "aggressive" carbon dioxide, pure and very soft waters, organic and mineral acids and bacterial activity. pH testing was conducted on the site samples to determine if any acidic conditions were present in the soils encountered.

Table 3: Exposure Classification Results

Borehole No.	Sample Depth (m)	Proposed Structure	pH	EC (dS/m)	Exposure Classification
Borehole 1	1.0	Building	7.2	0.478	A1
Borehole 2	1.0	Building	7.4	0.574	A1

These results show the exposure classification as per Table 4.8.1 and 4.8.2 AS3600-2018.

7. SEASONAL SURFACE MOVEMENT

From the laboratory test results, as shown attached, an estimated ground surface movement (Ys) was calculated in accordance with AS2870-2011 (using a change in suction at the soil surface $\Delta\mu$ = 1.5pF and a depth of design suction change, Hs = 4.0m) being:

Ys = 105 - 110mm

Since the site has no other known extraordinary features, it is our opinion that a Site Classification of 'E-D' should be adopted for the site in its present condition.

8. SITE EARTHWORKS RECOMMENDATIONS

8.1. Excavations

Excavations within the natural silt and clay will be achievable using conventional earthmoving equipment. The civil contractor should be responsible for selecting excavation equipment based on the proposed excavation depths and equipment capabilities.

8.2. General Construction Filling

All earthworks performed on site must be undertaken in a controlled manner, in accordance with a suitable earthwork's specification. Filling should be placed, compacted, inspected and tested in accordance with the Level 2 requirements of AS3798-2007.

8.3. General Bulk Fill Material

All general fill materials used shall be approved clean, hard material, deposited and compacted in the locations specified. Unless notified otherwise, general fill shall be sourced from excavations within the project area. The following conditions should also be satisfied:

- General filling must be compacted to a minimum dry density ratio of 98-100% relative to standard compaction at a moisture content of -2% to +2% of standard optimum moisture content.
- Filling should proceed in layers of 300mm maximum loose thicknesses.
- Layers of filling should be horizontal or benched to suit the surrounding topography.
- The existing subgrade should NOT be used as bulk fill, due to high plasticity.

8.4. Temporary Batter Slopes

Temporary batter slopes in soil should be graded no steeper than 2 Horizontal (H) in 1 Vertical (V), and protected from erosion by re-directing any surface water flows from the batter face, revegetating etc.

8.5. Permanent Batter Slopes

Permanent Batter slopes in clay should be no steeper than 3 Horizontal (H) in 1 Vertical (V) and protected from erosion. Alternatively, fill embankments may be retained with properly designed and constructed retaining walls.

9. DESIGN PARAMETERS DISCUSSION

9.1. Shallow Footings

Footings should be founded into the natural soil with adequate bearing capacity.

The estimated allowable bearing capacity of the natural borehole soil at 0.5m into very stiff clay is 100kPa. The allowable bearing capacity was estimated from DCP results, drilling penetration, soil type and soil moisture on the day of assessment. The soil shear strength and bearing capacity may decrease with increase in soil moisture.

9.2. Deep Footings

Pile foundations shall be designed in accordance with AS2159. Estimated soil parameters for bored piles are outlined in Table 4. Fill material is unsuitable for foundation.

The soil shear strength and bearing capacity may decrease with increase in soil moisture.

Table 4: Geotechnical Parameters

Depth (m)	Soil Type (Natural Soil)	Soil Moisture	Drilling Penetration	Cu (kPa)	C (kPa)	Allowable Shaft Adhesion (kPa)	Allowable Bearing Capacity (kPa)
1.0	Sandy CLAY	<PL	Hard	150	5	-	200
2.0	Sandy CLAY	<PL	Hard	>200	5	25	275
3.0	Sandy CLAY	<PL	Hard	>200	5	30	350

Cu- Undrained Shear Strength, C- Drained Cohesion, PL- Plastic Limit, LL- Liquid Limit,

The soil shear strength and bearing capacity will reduce with increase in soil moisture. Groundwater seepage is likely to vary seasonally and is a significant geotechnical limitation. Excavations and pier holes may require pumping and are subject to collapse.

Pile foundation allowable bearing capacity was determined in accordance with AS2159 with a geotechnical reduction factor of Ø = 0.45. all foundations and piers should be inspected by a suitably qualified person to confirm geotechnical properties.

10. CONCLUSION

The testing methods adopted are indicative of the site's sub-surface conditions to the depths excavated and to specific sampling and/or testing locations in this investigation, and only at the time the work was carried out.

The accuracy of geotechnical engineering advice provided in this report may be limited by unobserved variations in ground conditions across the site in areas between and beyond test locations and by any restrictions in the sampling and testing which was able to be carried out, as well as by the amount of data that could be collected given the project and site constraints.

These factors may lead to the possibility that actual ground conditions and materials behaviour observed at the test locations may differ from those which may be encountered elsewhere on the site.

If the sub-surface conditions are found to differ from those described in this report, we should be informed immediately to evaluate whether recommendations should be reviewed and amended if necessary.

barnson.

APPENDIX A

General Notes

GEOTECHNICAL INVESTIGATION GENERAL NOTES

This report contains the results of a geotechnical investigation conducted for a specific purpose and client. The results should not be used by other parties, or for other purposes, as they may contain neither adequate nor appropriate information. In particular, the investigation does not cover contamination issues unless specifically required to do so by the client.

TEST HOLE LOGGING

The information on the test hole logs (boreholes, test pits, exposures etc.) is based on a visual and tactile assessment, except at the discrete locations where the test information is available (field and/or laboratory results). The borehole logs include both factual data and inferred information. Reference should be made to the relevant sheets for the explanation of logging procedures (Soil and Rock Descriptions, Core Log Sheet Notes etc).

GROUNDWATER

Unless otherwise indicated, the water levels presented on the borehole logs are the levels of free water or seepage in the bore hole recorded at the given time of measuring. The actual groundwater level may differ from this recorded level depending on material permeability's (i.e. depending on response time of the measuring instrument). Further, variations of this level could occur with time due to such effects as seasonal, environmental and tidal fluctuations or construction activities. Confirmation of groundwater levels, phreatic surfaces or piezometric pressures can only be made by appropriate instrumentation techniques and monitoring programmes.

INTERPRETATION OF RESULTS

The discussion or recommendations contained within this report normally are based on a site evaluation from discrete borehole area. Generalised, idealised or inferred subsurface conditions (including any geotechnical cross-sections) have been assumed or prepared by interpolation and/or extrapolation of these data. As such these conditions are an interpretation and must be considered as a guide only.

CHANGE IN CONDITIONS

Local variations or anomalies in the generalised ground conditions do occur in the natural environment, particularly between discrete borehole locations. Additionally, certain design or construction procedures may have been assumed in assessing the soil-structure interaction behaviour of the site. Furthermore, conditions may change at the site from those encountered at the time of the geotechnical investigation through construction activities and constantly changing natural forces.

Any change in design, in construction methods, or in ground conditions as noted during construction, from those assumed or reported should be referred to this firm for appropriate assessment and comment.

GEOTECHNICAL VERIFICATION

Verification of the geotechnical assumptions and/or model is an integral part of the design process – investigation, construction verification and performance monitoring. Variability is a feature of the natural environment and, in many instances, verification of soil or rock quality, or foundation levels are required. There may be a requirement to extend foundation depths to modify a foundation system or to conduct monitoring as a result of this natural variability. Allowance for verification by geotechnical personnel accordingly should be recognised and programmed during construction.

FOUNDATIONS

Where referred to in the report, the soil or rock quality, or the recommendation depth of any foundation (piles, caissons footings etc.) is an engineering estimate. The estimate is influenced and perhaps limited, by the fieldwork method and testing carried out in connection with the site investigation, and other pertinent information as has been made available. The material quality and/or foundation depth remains, however, an estimate and therefore liable to variation. Foundation drawings, designs and specifications should provide for variations in the final depth, depending upon the ground conditions at each point of support, and allow for geotechnical verification.

REPRODUCTION OF REPORTS

Where it is desired to reproduce the information contained in our geotechnical report, or other technical information, for the inclusion in contract documents or engineering specification of the subject development, such reproductions should include at least all of the relevant test hole and test data, together with the appropriate standard description sheets and remarks made in the written report of a factual or descriptive nature.

ROCK

Rock Strength

Rock strength is a scale of strength, based on point load index testing, or field testing.

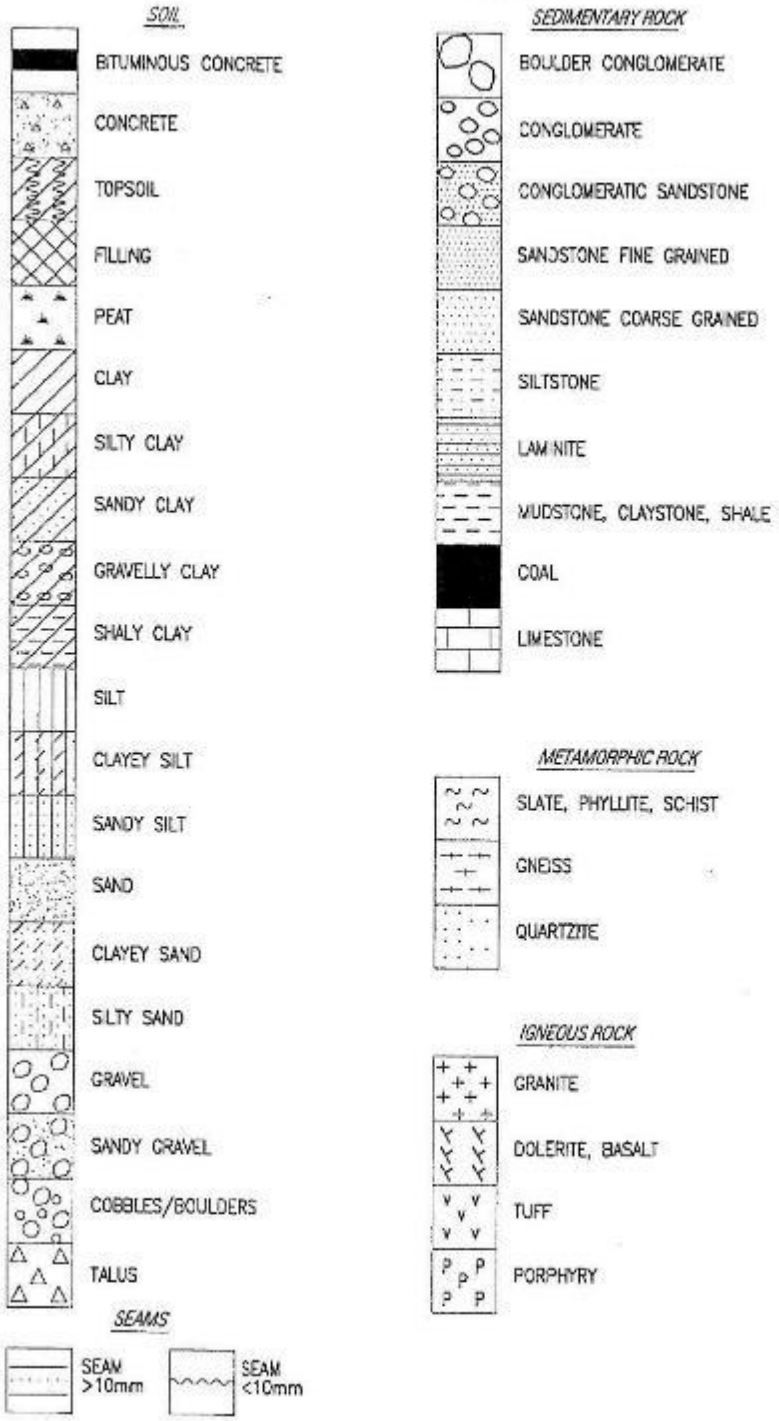
Term	Letter Symbol	Point load index (MPa) Is (50)	Field guide to strength
Extremely low	EL	< 0.03	Easily remoulded by hand to a material with soil properties.
Very low	VL	0.03 – 0.1	Material crumbles under firm blows with sharp end of pick.
Low	L	0.1 – 0.3	Easily scored by knife, has dull sound under hammer.
Medium	M	0.3 – 1.0	Readily scored with knife, core pieces broken by hand with difficulty
High	H	1 – 3	Rock rings under hammer, core piece broken by pick only.
Very high	VH	3 – 10	Hand specimen breaks with pick after more than one blow.
Extremely high	EH	> 10	Hand specimen breaks with pick after several than one blow.

Rock Weathering

Rock weathering is the degree of rock weathering, determined in the field.

Term	Letter Symbol	Definition
Residual soil	RS	Soil developed on extremely weathered rock.
Extremely weathered rock	XW	Soil is weathered to such an extent that it has soil properties, i.e. it disintegrates or can be remoulded in water.
Distinctly weathered rock	DW	Rock strength usually changed by weathering. The rock may be discoloured, usually by iron staining, porosity is increased.
Slightly weathered rock	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock.
Fresh rock	FR	Rock shows no sign of decomposition or staining.

GRAPHIC SYMBOLS FOR SOIL & ROCK



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APPENDIX B

Site Plan & Borehole Locations


Borehole 1
Borehole 2

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APPENDIX C

Borehole Logs

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Barnson
www.barnson.com.au
Phone: 1300 227 676

Geotechnical Log - Borehole

Borehole 1

Latitude	: -30.080235	Location	: "Bourke Cultural Center" 49 Mooculta Street, Bourke NSW	Job Number	: 41193
Longitude	: 145.948707	Logged By	: GW	Client	: Aileen Sage Architects
Total Depth	: 5 m	Date	: 05/09/2024	Project	: Geotechnical Investigation

Drilling Method	Depth (m)	Graphic Log	Classification Code	Material Description	DCP graph	Samples: Disturbed sample	Remarks
Auger drill with TC bit	0.4		ML	Alluvial Clayey to sandy SILT very stiff to hard, medium plasticity, brown, fine grained sand, w < pl.	3 8 12 16 19 26		
			CH	Alluvial Sandy CLAY hard, high plasticity, brown, fine grained sand, inorganic, w < pl.		LS=16.0%, PI=35%	
	1						
						LS=16.0%, PI=45%	
	2						
						LS=18.0%, PI=42%	
	3						
	3.7		CH	Alluvial Sandy CLAY hard, high plasticity, orange-brown, fine grained sand, inorganic, w < pl.			
	4					LS=15.5%, PI=33%	
	4.4		SC	Alluvial Clayey SAND very dense, medium plasticity clay, orange, fine grained, moist.			
	4.6		CI-CH	Alluvial Sandy CLAY hard, medium to high plasticity, brown, fine grained sand, inorganic, w < pl.			
				Borehole 1 Terminated at 5m		LS=13.0%, PI=27%	

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Geotechnical Log - Borehole

Borehole 2

Latitude	: -30.080351	Location	: "Bourke Cultural Center" 49 Mooculta Street, Bourke NSW	Job Number	: 41193
Longitude	: 145.948602	Logged By	: GW	Client	: Aileen Sage Architects
Total Depth	: 5 m	Date	: 05/09/2024	Project	: Geotechnical Investigation

Drilling Method	Depth (m)	Graphic Log	Classification Code	Material Description	DCP graph	Samples: Disturbed sample	Remarks
			ML	Alluvial Clayey to sandy SILT very stiff to hard, medium plasticity, brown, fine grained sand, w < pl.	3 5 18		
	0.4		CH	Alluvial Sandy CLAY hard, high plasticity, brown, fine grained sand, inorganic, w < pl.		LS=13.0%, PI=29%	
	1						
	2					LS=16.0%, PI=32%	
	3					LS=16.0%, PI=30%	
	3.7		CH	Alluvial Sandy CLAY hard, high plasticity, orange-brown, fine grained sand, inorganic, w < pl.			
	4					LS=15.0%, PI=32%	
	4.4		SC	Alluvial Clayey SAND very dense, medium plasticity clay, orange, fine grained, moist.			
	4.6		CI-CH	Alluvial Sandy CLAY hard, medium to high plasticity, brown, fine grained sand, inorganic, w < pl.			
				Borehole 2 Terminated at 5m		LS=14.5%, PI=28%	

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APPENDIX D

NATA Laboratory Reports

Material Test Report

Barnson Pty Ltd
Dubbo Laboratory
16 L Yarrandale Road Dubbo NSW 2830
Phone: 1300 BARNSON
Email: jeremy@barnson.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Jeremy Wiatkowski
Geotechnical Technician
NATA Accredited Laboratory Number: 9605

Report Number:	**41193-1**
Issue Number:	1
Date Issued:	16/09/2024
Client:	Aileen Sage Architects
	397 Riley Street, Surry Hills NSW 2010
Contact:	Janelle Woo
Project Number:	41193
Project Name:	Geotechnical Investigation
Project Location:	"Bourke Cultural Center" 49 Mooculta Street, Bourke NSW
Work Request:	11162
Date Sampled:	05/09/2024
Dates Tested:	05/09/2024 - 13/09/2024
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Site Selection:	Selected by Client
Location:	"Bourke Cultural Center" 49 Mooculta Street, Bourke NSW

Sample Details							
Sample Number	D24-11162A	D24-11162B	D24-11162C	D24-11162D	D24-11162E		
Date Sampled	05/09/2024	05/09/2024	05/09/2024	05/09/2024	05/09/2024		
Sample Location	Borehole 1 Lat: -30.080235 Long: 145.948707	Borehole 1 Lat: -30.080235 Long: 145.948707	Borehole 1 Lat: -30.080235 Long: 145.948707	Borehole 1 Lat: -30.080235 Long: 145.948707	Borehole 1 Lat: -30.080235 Long: 145.948707		
Sample Depth	1.0m	2.0m	3.0m	4.0m	5.0m		
Material	Brown Sandy CLAY	Brown Sandy CLAY	Brown Sandy CLAY	Orange-Brown Sandy CLAY	Brown Sandy CLAY		
Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)						**Min**	**Max**
Sample History	Oven Dried	Oven Dried	Oven Dried	Oven Dried	Oven Dried		
Preparation Method	Dry Sieve	Dry Sieve	Dry Sieve	Dry Sieve	Dry Sieve		
Liquid Limit (%)	49	62	55	45	35		
Plastic Limit (%)	14	17	13	12	8		
Plasticity Index (%)	35	45	42	33	27		
Linear Shrinkage (AS 1289 3.4.1)						**Min**	**Max**
Sample History	Oven Dried	Oven Dried	Oven Dried	Oven Dried	Oven Dried		
Preparation Method	Dry Sieve	Dry Sieve	Dry Sieve	Dry Sieve	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2	AS 1289.3.1.2	AS 1289.3.1.2	AS 1289.3.1.2	AS 1289.3.1.2		
Linear Shrinkage (%)	16.0	16.0	18.0	15.5	13.0		
Cracking Crumbling Curling	Curling	Curling	Curling	Curling	None		

Material Test Report

Report Number: 41193-1
Issue Number: 1
Date Issued: 16/09/2024
Client: Aileen Sage Architects
397 Riley Street, Surry Hills NSW 2010
Contact: Janelle Woo
Project Number: 41193
Project Name: Geotechnical Investigation
Project Location: "Bourke Cultural Center" 49 Mooculta Street, Bourke NSW
Work Request: 11162
Date Sampled: 05/09/2024
Dates Tested: 05/09/2024 - 13/09/2024
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Site Selection: Selected by Client
Location: "Bourke Cultural Center" 49 Mooculta Street, Bourke NSW

Barnson Pty Ltd
Dubbo Laboratory
16 L Yarrandale Road Dubbo NSW 2830
Phone: 1300 BARNSON
Email: jeremy@barnson.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Jeremy Wiatkowski
Geotechnical Technician
NATA Accredited Laboratory Number: 9605

Sample Details							
Sample Number	D24-11162F	D24-11162G	D24-11162H	D24-11162I	D24-11162J		
Date Sampled	05/09/2024	05/09/2024	05/09/2024	05/09/2024	05/09/2024		
Sample Location	Borehole 2 Lat: -30.080351 Long: 145.948602	Borehole 2 Lat: -30.080351 Long: 145.948602	Borehole 2 Lat: -30.080351 Long: 145.948602	Borehole 2 Lat: -30.080351 Long: 145.948602	Borehole 2 Lat: -30.080351 Long: 145.948602		
Sample Depth	1.0m	2.0m	3.0m	4.0m	5.0m		
Material	Brown Sandy CLAY	Brown Sandy CLAY	Brown Sandy CLAY	Orange-Brown Sandy CLAY	Brown Sandy CLAY		
Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)						**Min**	**Max**
Sample History	Oven Dried	Oven Dried	Oven Dried	Oven Dried	Oven Dried		
Preparation Method	Dry Sieve	Dry Sieve	Dry Sieve	Dry Sieve	Dry Sieve		
Liquid Limit (%)	44	47	47	43	39		
Plastic Limit (%)	15	15	17	11	11		
Plasticity Index (%)	29	32	30	32	28		
Linear Shrinkage (AS 1289 3.4.1)						**Min**	**Max**
Sample History	Oven Dried	Oven Dried	Oven Dried	Oven Dried	Oven Dried		
Preparation Method	Dry Sieve	Dry Sieve	Dry Sieve	Dry Sieve	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2	AS 1289.3.1.2	AS 1289.3.1.2	AS 1289.3.1.2	AS 1289.3.1.2		
Linear Shrinkage (%)	13.0	16.0	16.0	15.0	14.5		
Cracking Crumbling Curling	None	Curling	None	Curling	Curling		

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APPENDIX E

CSIRO Guide

Foundation Maintenance and Footing Performance:
A Homeowner's Guide

CSIRO

BTF 18
replaces
Information
Sheet 10/91

Buildings can and often do move. This movement can be up, down, lateral or rotational. The fundamental cause of movement in buildings can usually be related to one or more problems in the foundation soil. It is important for the homeowner to identify the soil type in order to ascertain the measures that should be put in place in order to ensure that problems in the foundation soil can be prevented, thus protecting against building movement.

This Building Technology File is designed to identify causes of soil-related building movement, and to suggest methods of prevention of resultant cracking in buildings.

Soil Types

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and clay. Quite often, foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Clay soils are subject to saturation and swell/shrink problems.

Classifications for a given area can generally be obtained by application to the local authority, but these are sometimes unreliable and if there is doubt, a geotechnical report should be commissioned. As most buildings suffering movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. The table below is Table 2.1 from AS 2870, the Residential Slab and Footing Code.

Causes of Movement

Settlement due to construction
There are two types of settlement that occur as a result of construction:

- Immediate settlement occurs when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular (particularly sandy) soil is susceptible.
- Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will usually take place during the first few months after construction, but has been known to take many years in exceptional cases.

These problems are the province of the builder and should be taken into consideration as part of the preparation of the site for construction. Building Technology File 19 (BTF 19) deals with these problems.

Erosion
All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay with a sand component of say 10% or more can suffer from erosion.

Saturation
This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume – particularly imported sand fill for bedding and blinding layers. However, this usually occurs as immediate settlement and should normally be the province of the builder.

Seasonal swelling and shrinkage of soil
All clays react to the presence of water by slowly absorbing it, making the soil increase in volume (see table below). The degree of increase varies considerably between different clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be noticeable unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building, and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

Shear failure
This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. There are two major post-construction causes:

- Significant load increase.
- Reduction of lateral support of the soil under the footing due to erosion or excavation.
- In clay soil, shear failure can be caused by saturation of the soil adjacent to or under the footing.

GENERAL DEFINITIONS OF SITE CLASSES

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites with only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes
H	Highly reactive clay sites, which can experience high ground movement from moisture changes
E	Extremely reactive sites, which can experience extreme ground movement from moisture changes
A to P	Filled sites
P	Sites which include soft soils, such as soft clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soils subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise

Tree root growth
Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:

- Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.
- Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

Unevenness of Movement

The types of ground movement described above usually occur unevenly throughout the building's foundation soil. Settlement due to construction tends to be uneven because of:

- Differing compaction of foundation soil prior to construction.
- Differing moisture content of foundation soil prior to construction.

Movement due to non-construction causes is usually more uneven still. Erosion can undermine a footing that traverses the flow or can create the conditions for shear failure by eroding soil adjacent to a footing that runs in the same direction as the flow.

Saturation of clay foundation soil may occur where subfloor walls create a dam that makes water pond. It can also occur wherever there is a source of water near footings in clay soil. This leads to a severe reduction in the strength of the soil which may create local shear failure.

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually spreads to the interior. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Swelling gradually reaches the interior soil as absorption continues. Shrinkage usually begins where the sun's heat is greatest.

Effects of Uneven Soil Movement on Structures

Erosion and saturation
Erosion removes the support from under footings, tending to create subsidence of the part of the structure under which it occurs. Brickwork walls will resist the stress created by this removal of support by bridging the gap or cantilevering until the bricks or the mortar bedding fail. Older masonry has little resistance. Evidence of failure varies according to circumstances and symptoms may include:

- Step cracking in the mortar beds in the body of the wall or above/below openings such as doors or windows.
- Vertical cracking in the bricks (usually but not necessarily in line with the vertical beds or perpends).

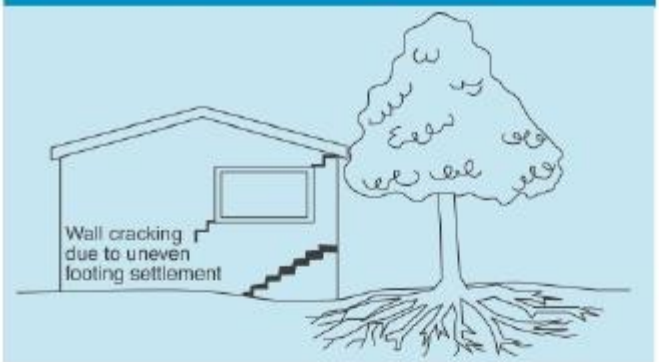
Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

Seasonal swelling/shrinkage in clay
Swelling foundation soil due to rainy periods first lifts the most exposed extremities of the footing system, then the remainder of the perimeter footings while gradually permeating inside the building footprint to lift internal footings. This swelling first tends to create a dish effect, because the external footings are pushed higher than the internal ones.

The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers and joists, the floor can be bouncy. Externally there may be visible dishing of the hip or ridge lines.

As the moisture absorption process completes its journey to the innermost areas of the building, the internal footings will rise. If the spread of moisture is roughly even, it may be that the symptoms will temporarily disappear, but it is more likely that swelling will be uneven, creating a difference rather than a disappearance in symptoms. In buildings with timber flooring supported by bearers and joists, the isolated piers will rise more easily than the strip footings or piers under walls, creating noticeable doming of flooring.

Trees can cause shrinkage and damage



As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the external footings. The doming is accentuated and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

Movement caused by tree roots
In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

Complications caused by the structure itself
Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

Effects on full masonry structures
Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.

The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

Effects on framed structures
Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation cause a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

Effects on brick veneer structures
Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

Water Service and Drainage

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem.
Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.
- Corroded guttering or downpipes can spill water to ground.
- Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

Seriousness of Cracking

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. The table below is a reproduction of Table C1 of AS 2870.

AS 2870 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

Prevention/ Cure

Plumbing
Where building movement is caused by water service, roof plumbing, sewer or stormwater failure, the remedy is to repair the problem. It is prudent, however, to consider also rerouting pipes away from the building where possible, and relocating taps to positions where any leakage will not direct water to the building vicinity. Even where gully traps are present, there is sometimes sufficient spill to create erosion or saturation, particularly in modern installations using smaller diameter PVC fixtures. Indeed, some gully traps are not situated directly under the taps that are installed to charge them, with the result that water from the tap may enter the backfilled trench that houses the sewer piping. If the trench has been poorly backfilled, the water will either pond or flow along the bottom of the trench. As these trenches usually run alongside the footings and can be at a similar depth, it is not hard to see how any water that is thus directed into a trench can easily affect the foundation's ability to support footings or even gain entry to the subfloor area.

Ground drainage
In all soils there is the capacity for water to travel on the surface and below it. Surface water flows can be established by inspection during and after heavy or prolonged rain. If necessary, a grated drain system connected to the stormwater collection system is usually an easy solution.

It is, however, sometimes necessary when attempting to prevent water migration that testing be carried out to establish watertable height and subsoil water flows. This subject is referred to in BTF 19 and may properly be regarded as an area for an expert consultant.

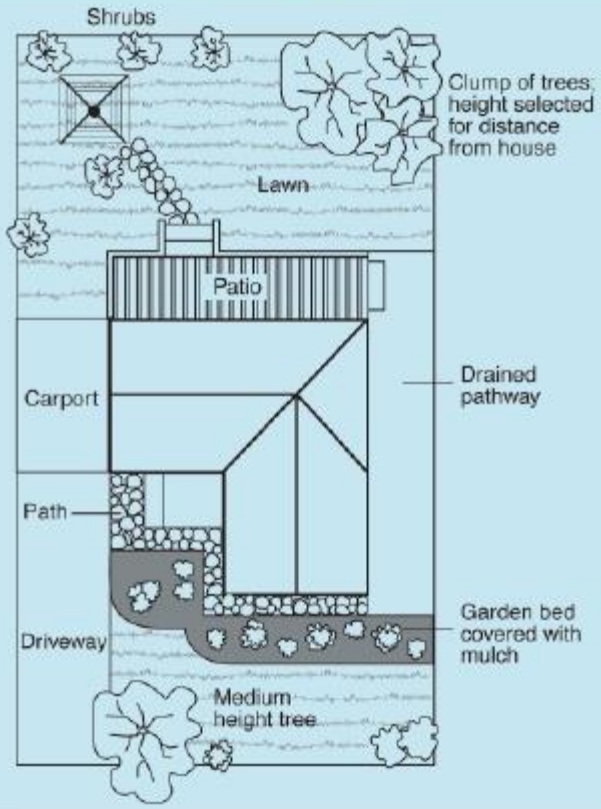
Protection of the building perimeter
It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

For this reason, particularly where problems exist or are likely to occur, it is recommended that an apron of paving be installed around as much of the building perimeter as necessary. This paving

CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS

Description of typical damage and required repair	Approximate crack width limit (see Note 3)	Damage category
Hairline cracks	<0.1 mm	0
Fine cracks which do not need repair	<1 mm	1
Cracks noticeable but easily filled. Doors and windows stick slightly	<5 mm	2
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weathertightness often impaired	5–15 mm (or a number of cracks 3 mm or more in one group)	3
Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted	15–25 mm but also depend on number of cracks	4

Gardens for a reactive site



should extend outwards a minimum of 900 mm (more in highly reactive soil) and should have a minimum fall away from the building of 1:60. The finished paving should be no less than 100 mm below brick vent bases.

It is prudent to relocate drainage pipes away from this paving, if possible, to avoid complications from future leakage. If this is not practical, earthenware pipes should be replaced by PVC and backfilling should be of the same soil type as the surrounding soil and compacted to the same density.

Except in areas where freezing of water is an issue, it is wise to remove taps in the building area and relocate them well away from the building – preferably not uphill from it (see BTF 19).

It may be desirable to install a grated drain at the outside edge of the paving on the uphill side of the building. If subsoil drainage is needed this can be installed under the surface drain.

Condensation
In buildings with a subfloor void such as where bearers and joists support flooring, insufficient ventilation creates ideal conditions for condensation, particularly where there is little clearance between the floor and the ground. Condensation adds to the moisture already present in the subfloor and significantly slows the process of drying out. Installation of an adequate subfloor ventilation system, either natural or mechanical, is desirable.

Warning: Although this Building Technology File deals with cracking in buildings, it should be said that subfloor moisture can result in the development of other problems, notably:

- Water that is transmitted into masonry, metal or timber building elements causes damage and/or decay to those elements.
- High subfloor humidity and moisture content create an ideal environment for various pests, including termites and spiders.
- Where high moisture levels are transmitted to the flooring and walls, an increase in the dust mite count can ensue within the living areas. Dust mites, as well as dampness in general, can be a health hazard to inhabitants, particularly those who are abnormally susceptible to respiratory ailments.

The garden
The ideal vegetation layout is to have lawn or plants that require only light watering immediately adjacent to the drainage or paving edge, then more demanding plants, shrubs and trees spread out in that order.

Overwatering due to misuse of automatic watering systems is a common cause of saturation and water migration under footings. If it is necessary to use these systems, it is important to remove garden beds to a completely safe distance from buildings.

Existing trees
Where a tree is causing a problem of soil drying or there is the existence or threat of upheaval of footings, if the offending roots are subsidiary and their removal will not significantly damage the tree, they should be severed and a concrete or metal barrier placed vertically in the soil to prevent future root growth in the direction of the building. If it is not possible to remove the relevant roots without damage to the tree, an application to remove the tree should be made to the local authority. A prudent plan is to transplant likely offenders before they become a problem.

Information on trees, plants and shrubs
State departments overseeing agriculture can give information regarding root patterns, volume of water needed and safe distance from buildings of most species. Botanic gardens are also sources of information. For information on plant roots and drains, see Building Technology File 17.

Excavation
Excavation around footings must be properly engineered. Soil supporting footings can only be safely excavated at an angle that allows the soil under the footing to remain stable. This angle is called the angle of repose (or friction) and varies significantly between soil types and conditions. Removal of soil within the angle of repose will cause subsidence.

Remediation

Where erosion has occurred that has washed away soil adjacent to footings, soil of the same classification should be introduced and compacted to the same density. Where footings have been undermined, augmentation or other specialist work may be required. Remediation of footings and foundations is generally the realm of a specialist consultant.

Where isolated footings rise and fall because of swell/shrink effect, the homeowner may be tempted to alleviate floor bounce by filling the gap that has appeared between the bearer and the pier with blocking. The danger here is that when the next swell segment of the cycle occurs, the extra blocking will push the floor up into an accentuated dome and may also cause local shear failure in the soil. If it is necessary to use blocking, it should be by a pair of fine wedges and monitoring should be carried out fortnightly.

This BTF was prepared by John Lewer FAIB, MIAMA, Partner, Construction Diagnosis.

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barnson.

APPENDIX H

ESD Documentation

Aileen Sage Architects
Back O Bourke, Building 5
ESD Initiatives

COMMERCIAL-IN-CONFIDENCE

ISSUED 18DEC2024

Team Catalyst
ACN 114 572 084
"Driving Sustainability through Teamwork"
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CONTENTS

Revision History

Revision No.	Revision Date	Description
1	18/12/2024	Content page edits
0	04/12/2024	ESD Initiatives Report

1 INTRODUCTION

Team Catalyst has been engaged to provide the Section J - JV3 Analysis for an exhibition centre - Building 5, Back O Bourke located at 48 Mooculta street, Bourke, NSW 2840. The location of the proposed development falls with NCC climate zone 4.

Bourke experiences hot dry summers with cool winters and has a high diurnal range between day and nighttime temperatures.

This report documents the sustainability measures that have been incorporated as part of the architectural design and the energy efficiency features proposed by the design team as part of the early design stage. These measures will be accounted for in our Section J calculations to ensure that the development meets the Energy and Comfort requirements of NCC 2022.

The centre is a class 9b structure with a floor area of less than 1000m2. It is an all-electric building and therefore complies with the objectives of the Sustainable Building SEPP 2022.

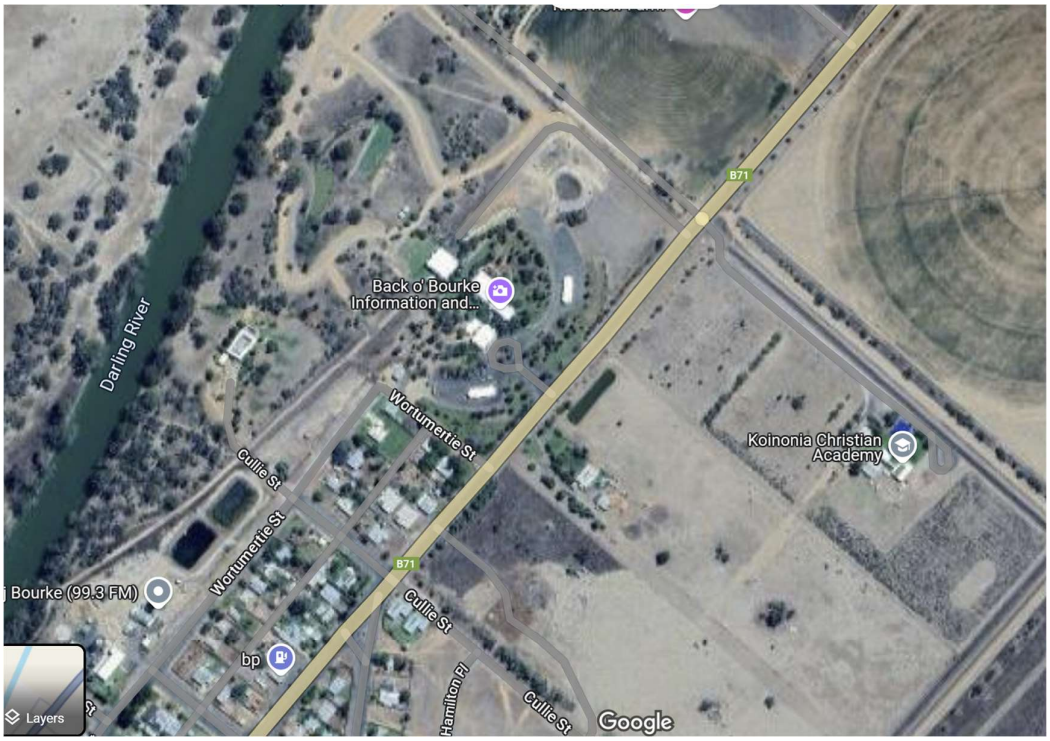


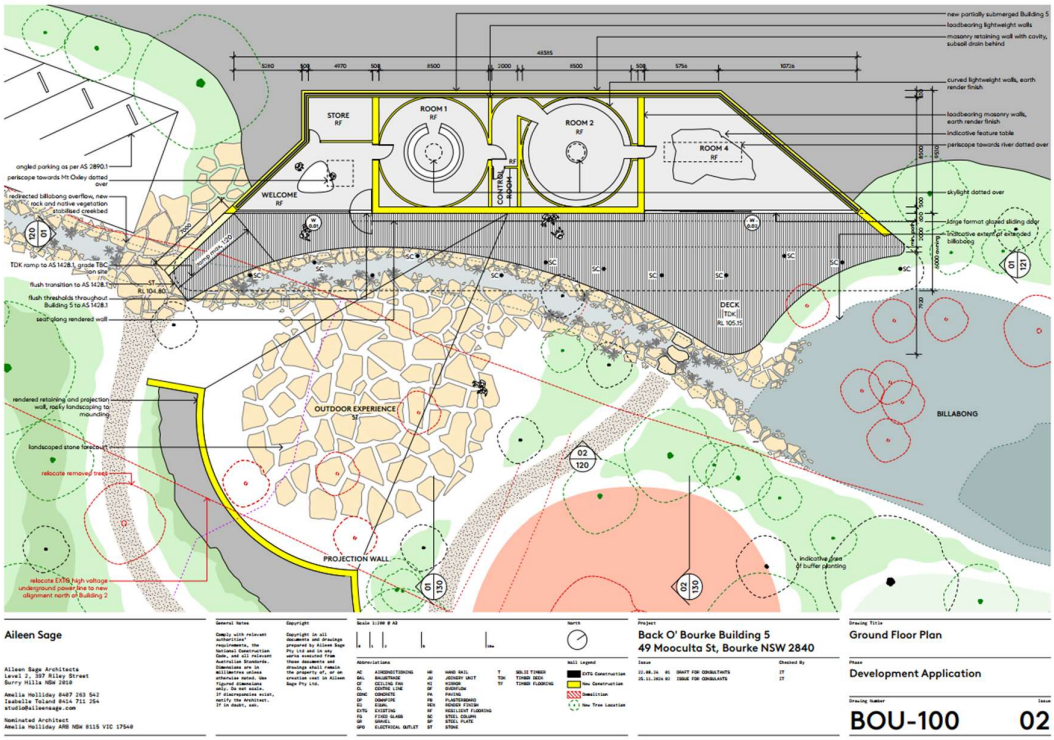
Figure 1: Location, Back O Bourke, Bourke NSW is classified as Climate Zone 4 with Warm Dry Summer and Cool Winter.

2 ESD INITIATIVES

2.1 ARCHITECTURAL DESIGN

The proposed development aims to create a sustainable and culturally inclusive building, and the design is sympathetic to the local climate and building use. It incorporates passive solar strategies and use of natural materials to reduce summer heat gain and winter heat loss.

- Bourke has very hot summers and a cool winter. The exhibition centre primarily operates during the day, with intermittent peak occupancy, depending on the arrival of a bus load of people. Therefore the design strategies aim to reduce cooling loads and manage heating loads.
- Three sides of the structure are protected with earth berms and direct solar load from the roof is minimised by having a green roof. The thermal mass protected by earth berms will allow the mass to stabilise and help maintain warmer temperature in winter.
- The exhibition centre faces south, with deep overhangs to cut off summer sun. The Welcome area and Room 4 have big glazed door that allows for adequate daylighting, however, the entire southern wall is shaded with deep overhangs, to cut off direct solar access, there by reducing the cooling load.
- Design of mass structures – masonry walls and earth berm for superior thermal mass, temperature and noise control, strength and durability and low embodied energy



2.2 CONSTRUCTION MATERIALS AND INTERNAL FINISHES

The development aims to source materials that has low embodied energy and high recycled content. Timber is to be sourced from certified sustainable supply chains. Options for recycled concrete are being explored. Internal finishes are to be Low in volatile organic compounds (VOC). Wall and ceiling/roof construction to be tested for impacts of condensation to minimise maintenance and replacement costs.

2.3 ENERGY EFFICIENCY

The entire centre is proposed to be "ALL Electric" to eliminate the use of fossil fuels. The following measures are proposed to improve energy efficiency and occupant thermal comfort.

- Energy Efficient Air Conditioning (HVAC) systems to be designed to provide optimum occupant comfort and also minimise refrigerant leaks.
- Low energy LED light fittings to be used throughout the facility.
- Sub - Metering of all end uses as required to help monitor energy use.

2.4 BIODIVERSITY AND LANDSCAPING

The following are proposed to safeguard the existing biodiversity in the region.

- Use of drought tolerant native species in landscaping plant selection to enhance on site vegetation and improve soil health and overall biodiversity.
- Incorporation of WSUD principles to minimise pollutant runoff.
- Three waste streams – landfill, recycling and one other (organics, e-waste and batteries) to be provided on site.

3 CONCLUSION

The proposed exhibition centre within Back O Bourke focuses on sustainable and energy-efficient design to better harmonize with local environment. This can include using natural materials, such as masonry walls for construction and implementing water conservation measures. The goal is to create a self-sufficient and eco-friendly environment that provides comfort and well-being to both the visitors and the wider community.

Aileen Sage

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Aileen Sage PTY LTD
ABN 49164730938
Nominated Architect
Amelia Holliday
ARB NSW 8115 VIC 17540

10th March 2025

To whom it may concern
For DA Submission

RE: **SEPP Sustainable Building 2022 – Chapter 3 Standard for non-residential development**
Back o' Bourke Information and Exhibition Centre, Building 5

The purpose of this letter is to address the relevant development consent requirements outlined in Chapter 3.2 Development consent for non-residential development of the State Environmental Planning Policy (Sustainable Buildings) 2022.

State Environmental Planning Policy (Sustainable Buildings) 2022
Chapter 3 Standards for non-residential development

3.2 Development consent for non-residential development		
	Requirement	Response
(1)(a)	The minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials,	- No demolition is proposed for this development - Materials left from excavation will be re-used in on-site landscaping. - Earth render finish is to be composed primarily of locally sourced materials - Timbers are to be locally sourced and recycled where possible - Opportunity to use low carbon concrete mix incorporating recycled and waste materials eg. fly ash - Opportunity for hybrid steel and timber structural columns
(b)	a reduction in peak demand for electricity, including through the use of energy efficient technology,	- Please refer to SEPP Memo from Team Catalyst dated 04.03.25

(c)	a reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design,	- The development has been designed to address Bourke's hot semi-arid climate characterised by hot, dry summers and cool winters, and high diurnal swings with the following strategies:
		  - Partially submerged building design with masonry walls and earth berms on three sides uses thermal mass to minimise heat transfer and stabilise temperature
		  - Planted roof protects roof structure from heat gain
		  - Compact building footprint
		  - Low glass-to-mass ratio
		  - Limited external wall area
		  - Thermal zoning
		  - Controlled exhibition environments (Room 1 and Room 2) are fully enclosed, with high thermal mass, minimal glazing and improved air tightness
		  - Southeast facing glazing and deep eaves protect from solar heat gain
		  - Narrow building footprint and southeast-facing openings provides indirect natural daylighting, minimising need for artificial lighting
		  - Raked ceilings encourage convection airflow and natural ventilation in Welcome and Room 3
		  - Building oriented to capture southeasterly breezes

		- The building's soft landscape setting provides shade and incorporates natural water features for evaporative cooling - Mixed mode ventilation opportunities - Opportunity to introduce natural ventilation to periscopes - use stack effect to draw cool air through the building and purge heat
(d)	the generation and storage of renewable energy,	- Please refer to Bourke Shire Council's letter dated 12.02.25 regarding Generation and Storage of Renewable Energy
(e)	the metering and monitoring of energy consumption,	- Please refer to SEPP Memo from Team Catalyst dated 04.03.25 - Sub-metering allows for effective monitoring of energy use and future solar PV install
(f)	the minimisation of the consumption of potable water.	- Please refer to SEPP Memo from Team Catalyst dated 04.03.25 - No amenities requiring consumption of potable water is included within the development - Drought-tolerant native planting species reduces consumption of water in landscaping - Landscape irrigation will be supplied by town supply of raw (non-potable) water

Embodied emissions attributed to the development of Building 5 at the Back o' Bourke Information and Exhibition Centre have been quantified in a NABERS Embodied Emissions Materials Form completed by Mitchell Brandtman and included in this DA submission.

Please contact us should you require any further information.

Yours sincerely,

Isabelle Toland
Director

Amelia Holliday
Director

BOURKE SHIRE COUNCIL

29 Mitchell St, Bourke, N.S.W. 2840
P.O. Box 21, Bourke, N.S.W. 2840
Telephone (02)6830 8000
Email: bourkeshire@bourke.nsw.gov.au
Web: http://www.bourke.nsw.gov.au

Please address all communications to the General Manager

Our Ref: LB: EA

12 February 2025

Janelle Woo
Project Lead
Aileen Sage Architects
Level 2, 397 Riley Street
Surry Hills NSW 2010

Dear Janelle

Re: Generation and Storage of Renewable Energy

Thank you for your query regarding how the further development of the Back O' Bourke Exhibition Centre through an additional building will meet the relevant SEPP clause regarding Generation and Storage of Renewable Energy.

The following initiatives will be considered for the projects energy and storage capabilities.

- An allowance has been made in the architectural design, to ensure that land in proximity to the development is available for PV installation in the future.
- The main switchboard will be designed to allow for a future battery installation.
- A reduction in the reliance of mechanical heating and cooling by passive design elements within the building. This includes rooftop plantings, landscaped surrounds, earth mounding to the western side and large verandah to eastern side.

I trust that these will be suitable initiatives to meet the relevant SEPP.

Please let me know if there are additional queries regarding this matter.

Yours sincerely,

Leonie Brown
General Manager

MEMORANDUM

FROM: Team Catalyst Pty Ltd **DATE :** 04MARCH2025

TO : Whom it may concern, DA submission

SUBJECT: SEPP Sustainable Building 2022 – Chapter 3 Standard for non-residential development Back o' Bourke Information and Exhibition Centre, Building 5

The purpose of this letter is to address the relevant development consent requirements outlined in Chapter 3.2 Development consent for non-residential development of the State Environmental Planning Policy (Sustainable Buildings) 2022. It specifically refers to 3.2 (1) b,d,e and f.

3.2 (1) b	a reduction in peak demand for electricity, including through the use of energy efficient technology	• A reduction of 2.33% in Airconditioning energy when compared to a DTS Reference building • An efficient VRF system has been modelled instead of low performing DX options available for the building
3.2 (1) d	the generation and storage of renewable energy,	• Please refer to Bourke Shire Council's letter dated 12FEB2025 regarding Generation and Storage of Renewable Energy
3.2 (1) e	the metering and monitoring of energy consumption,	• NCC 2022 Section J9D3 requires end use monitoring for buildings for building over 500sqm. The floor area for building 5 is less than 500sqm. Electricity is the only fuel source, and the highest end use consumption is for HVAC. There is no domestic hot water consumption. Hence J9D3 is not applicable for this development.
3.2 (1) f	the minimization of the consumption of potable water.	• No amenities requiring consumption of potable water is included within the development • There is no requirement for domestic hot water • The HVAC system does not use water for heat rejection.

Team Catalyst
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m: 0430013947

Mitchell Brandtman
Expert cost management

EDC Report

49 Mooculta Street, Bourke NSW 2840

Prepared for: Bourke Shire Council

Contact: James Brandtman
Phone: 02 9541 8000
Email: james@mitbrand.com

Date: 28 February 2025
Issue: 1.0

1. Excecutive Summary

As requested, we have prepared an Estimated Development Cost (EDC) estimate for the proposed works based upon the available documentation. This estimate has been prepared for the consent authority in accordance with the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) and as per the Planning Circular PS 24-002 titled "Changes to how development costs are calculated for planning purposes" issued by the NSW Government dated 27 February 2024.

Based on current market rates and the documentation provided, the estimated cost for the works is $5,159,295 ($5,675,224 inclusive of $515,929 GST).

The costs are inclusive of builders work, labour, materials and plant, preliminaries, contingency, escalation, profit and overheads and consultant's fees.

Refer to Attachment 1 for full details of our EDC estimate

Description	Construction Cost
Demolition & Remediation	$ 30,870
Construction, Plant & Equipment	$ 4,451,537
Consultants & Additional Fees	$ 358,593
Contingency	$ 242,050
Escalation	$ 76,246
Project EDC {Excluding GST} – for SSD/SSI	**$ 5,159,295**
GST	$ 515,929
Project EDC {Including GST} – for NON SSD/SSI	**$ 5,675,224**
GFA	
GFA m2 (AIQS defined)	621
Construction Cost/m2	**$ 9,139**

2. Documentation

The following documents/drawings have been used in the preparation of this Cost Estimate:

Design drawings prepared by Aileen Sage Architects dated December 2024.

Sheet No.	DWG Name	Rev.
000	Cover + Drawing Transmittal	A
001	Materials + Perspectives	A
002	Location Plan	A
003	Site Plan	A
100	Ground Floor Plan	A
101	Roof Plan	A
120	West + South Elevation	A
121	East Elevation	A
130	Sections	A

3. Design

The works covered by this estimate relates to the development of an additional building to existing information and exhibition centre including external works and landscaping.

The subject development has a Gross Floor Area of 621 m2.

The works include but are not limited to:

FOUNDATIONS:	Reinforced concrete slab on ground with a combination of strip and pad footings and structural retaining walls.
STRUCTURE:	Reinforced concrete suspended slab supported by loadbearing walls and columns.
ENVELOPE:	Masonry external walls with aluminium framed windows and doors. Concrete slab green roof.
INTERNAL WALLS:	Combination of structural and lightweight stud framed walls with plasterboard linings.
CEILINGS:	Plasterboard ceiling lining throughout.
FINISHES:	Selected floor finish throughout.
SERVICES:	Hydraulic services including water supply and drainage. Electric works including specialty lighting and exhibition fit-out. Ventilation to services areas. Air-conditioning throughout.
EXTERNAL WORKS	New deck and creek. New paving. New outdoor experience complete with retaining wall and paving. New car park. Landscaping as required.

4. Exclusions

The following exclusions have been made in the preparation of this estimate:

- Amounts payable on the cost of land including Development Contributions Land costs including legal fees and stamp duty.
- Costs related to any part of the development subject to a separate development consent or approval.
- Land costs including costs of purchasing, holding and marketing.
- Ongoing maintenance or use of the development.
- Finance costs.

5. Qualifications

We confirm the accuracy of the attached estimate in alignment with the provided documents, covering all stages and activities related to the identified development as of the date of this report.

We note that the above estimate is considered preliminary only and we recommend a full detailed assessment be carried out as the design documentation progresses.

This estimate has been prepared for the purposes of a DA Council submission only. The use of this report for sales or marketing purposes is strictly prohibited.

6. EDC Definition

The Environmental Planning & Assessment (EP&A) Regulation defines the EDC of a proposed development as: The estimated cost of carrying out the development, including the following:

- the design and erection of a building and associated infrastructure
- the carrying out of a work
- the demolition of a building or work
- fixed or mobile plant and equipment.

but does not include:

- amounts payable, or the cost of land dedicated, or other benefit provided, under a condition imposed under the EP&A Act, Division 7.1 or 7.2 or a planning agreement
- costs relating to a part of the development or project that is the subject of a separate development consent or approval
- land costs, including costs of marketing and selling land
- costs of the ongoing maintenance or use of the development
- Goods and Services Tax (GST)

Yours Sincerely

MITCHELL BRANDTMAN

James Brandtman
Associate
BCMP, CQS AAIQS (#9246)

Attachment 1 – EDC Estimate

Attachment 1

EDC Estimate

Mitchell Brandtman
Expert cost management

Elemental Summary

Project: 42112 **Details:** EDC Estimate
Building: 49 Mooculta St, Bourke

Code	Description	Quantity	Unit	Rate	Subtotal	Factor	Total
SB	Substructure				334,204		334,204
CL	Columns				18,000		18,000
RF	Roof				571,488		571,488
EW	External Walls				56,230		56,230
WW	Windows				166,700		166,700
NW	Internal Walls				87,630		87,630
ND	Internal Doors				10,750		10,750
WF	Wall Finishes				123,840		123,840
FF	Floor Finishes				40,460		40,460
CF	Ceiling Finishes				91,660		91,660
FT	Fitments & Specialty Fitout				299,000		299,000
AC	Air Conditioning				138,720		138,720
FP	Fire Protection				3,400		3,400
LP	Electric Light and Power				182,150		182,150
XP	Site Preparation				30,870		30,870
XR	Roads, Footpaths, Paved Areas				241,120		241,120
XL	Landscaping & Improvements				1,102,240		1,102,240
XN	External Walls, Fencing, Gates				79,449		79,449
	Subtotal						**3,577,911**
PR	Preliminaries				572,466		572,466
OH	Overheads & Margin				332,030		332,030
	Subtotal						**4,482,407**
XX	Consultant's & Additional Fees				358,593		358,593
YY	Contingency (5%)				242,050		242,050
ZZ	Escalation (3% p.a for 6 months)				76,246		76,246
	TOTAL (EXCL GST)						**5,159,295**
	GST						515,929
	TOTAL						**5,675,224**
	GFA	621	m2				
	Cost/m2	9,139	/m2				

5,675,224

NSW Government
4 Parramatta Square
Parramatta NSW 2150
nabers.gov.au

NABERS Embodied emissions materials form

New non-residential developments must complete this form

From 1 October 2023, all new non-residential developments must report on embodied emissions using this form in NSW, where the NSW government's State Environmental Planning Policy (Sustainable Buildings SEPP) 2022 applies. You must disclose the amounts of key materials at the development application and construction certificate stages.

More on the Sustainable Buildings SEPP

Embodied carbon emissions are generated across the full life cycle of a building from "cradle to grave". Embodied carbon made up 16% of the whole-of-life carbon footprint of Australia's buildings in 2019 [1]. The purpose of this form is to report on material quantities only, to support project team discussions about potential reduction in emissions from key materials. The form does not include embodied emissions factors. This reporting form will be updated to reflect the NABERS Embodied Carbon tool when it's available in 2024.

Step 1: About the building

In the 'About the building' tab, you will add the location, function, and type of building you are planning to construct. You will also need to add information that describes the building, including gross floor area, number of floors, area of carpark, and more. Collecting this information will allow the NSW Government to compare similar buildings.

Step 2: Quantity of materials

In the 'Quantity of materials' tab, you will add the amounts of materials that you will use to construct your building. You only need to complete those fields relevant to your building. Leave fields that aren't relevant to your building blank. We recognise that there will be uncertainty, particularly at DA stage, so please use your best estimates where information is unknown (e.g., based on past projects).

How much do I need to include?

You must include all parts of the building delivered by the main contractor, covering at least 80% of the total materials bill. For example, if you spent $100,000 on materials, you need to include the material amounts of at least $80,000 of those materials in this form.

Wherever possible, consider materials costs only, not labour, plant or equipment. However, where you cannot split out the materials costs, please simply be consistent in the way the costs are reported throughout the spreadsheet.

Enter the **quantity of materials** (excluding labour, plant, equipment, margins and taxes) for:

(1) Structure (substructure and superstructure) within the envelope of the building. Also include any ancillary buildings that are necessary for the main building to function (for example, plant that is in a separate building).

(2) Envelope (cladding, curtain walls, roofing, windows, doors etc.)

(3) Permanent internal walls and doors. At minimum, this should include all structural walls.

(4) External works (hard landscaping, carparks, etc.) outside of the building envelope.

Enter the **cost of materials** (excluding labour, plant, equipment, margins and taxes) for:

(5) Building services (mechanical, electrical, plumbing, vertical transport, etc.) required to run the core of the building. Exclude special equipment required by a particular tenant.

You must enter the amounts of materials in SI units (commonly known as the metric system). These are generally consistent across the various products on the market. However, you might need to convert the units of some materials (for example, convert volume to kg).

Step 3: Certifier details

In the 'Certifier' tab you will add the details of the person who has entered data, and the person who has certified the accuracy of the data. The certifier must be a quantity surveyor, designer, engineer or NABERS assessor.

Step 4: Attach to approval

Attach this Excel spreadsheet to your development application or construction certificate application.

The data collected in this form will be used by the NSW Government to inform future policy development.

Help!

If you have general questions about reporting on the embodied emissions of your building, you should contact your local council or consent authority.

If you have technical questions about this spreadsheet, please contact NABERS:
nabers@environment.nsw.gov.au

---

[1] Green Building Council of Australia, 2021, https://new.gbca.org.au/news/gbca-news/gbca-and-thinkstep-release-embodied-carbon-report/

Step 1: About the building

Fill out blue cells

Building location and site data	Value	Unit	Note	Comment
Building address	49 Mooculta St Bourke NSW			
Postcode	2840		Required	Postcode of building
Town/city	Bourke		Town/city/suburb/region automated from postcode (may not give exact	Town/city/suburb/region of the building site.
Distance to nearest major city/town	2	km	Enter for rural/regional locations only	Declare the shortest route by road to your site from the centre of your nearest major city (>100,000 people). The route must be traversable by a semitrailer truck.
Project stage	Development Application		Required	Stage of development
New build or major renovation?	New build		Required	
Brownfield or greenfield site?	Brownfield		Required	

Floor area by NCC building classification	Gross (GFA)	Net (NLA/NSA/UFA)	Unit	Note	
Please enter all floor areas relevant to your building. Leave areas blank if not applicable. Please enter Gross Floor Area (GFA) for all building classifications. Please also enter the corresponding net area (Net Lettable Area, Net Sellable Area or Usable Floor Area) where it is commonly used for that building classification.					
Class 1a: Detached residential buildings			m²	Required for Class 1a: Detached residential houses, townhouses	Gross Floor Area (GFA), as defined by the AIQS Australian Cost Management Manual
Class 1b: Boarding houses and hostels			m²	Required for Class 1b: Boarding house, guest house, hostel	Net area (Net Lettable Area, Net Sellable Area, Usable Floor Area), as defined by the PCA's Method of Measurement
Class 2: Multi-unit residential buildings			m²	Required for Class 2: Multi-unit residential, including apartment buildings	
Class 3: Other residential buildings			m²	Required for Class 3: Other residential buildings	
Class 4: Residential inside non-residential			m²	Required for Class 4: Residential building inside a non-residential building, e.g., caretaker residence	
Class 5: Office buildings			m²	Required for Class 5: Office building	
Class 6: Retail buildings			m²	Required for Class 6: Retail building, e.g., shop, restaurant, café	
Class 7a: Carparks			m²	Required for Class 7a: Carparks	
Class 7b: Warehouse-type buildings			m²	Required for Class 7b: Warehouses, wholesalers and storage facilities	
Class 8: Industrial buildings			m²	Required for Class 8: Industrial buildings, e.g., factories and workshops	
Class 9a: Healthcare buildings			m²	Required for Class 9a: Healthcare, e.g., hospitals, clinics, day surgeries	
Class 9b: Civic buildings	621	290	m²	Required for Class 9b: Civic buildings, e.g., theatres, civic centres, train stations	
Class 9c: Aged care and personal care buildings			m²	Required for Class 9c: Aged care and personal care	
Class 10a: Non-habitable buildings			m²	Required for Class 10a: Non-habitable buildings including sheds, carports and private garages	
Class 10b: Miscellaneous structures			m²	Required for Class 10b: Miscellaneous structures, including fences, masts, antennas, retaining walls and swimming pools	
Class 10c: Bushfire shelters			m²	Required for Class 10c: Bushfire shelters not attached to a Class 1a building	
Total	621	290	m²	Required: Sum of m² inputs must be more than 0.	

Project information	Value	Unit	Note	
Total cost of project	5,159,295	AUD excl	Required	Include labour, materials, transport, plant, equipment and professional fees. Exclude GST, land, finance, escalation and other costs.
Building design life	50	years	Required	If uncertain, enter 50 years
Estimated envelope life		years	Optional	
Estimated replacement cycle for mechanical services		years	Optional	
Estimated replacement cycle for vertical transportation		years	Optional	

Dimensions of the building and the site	Value	Unit	Note	
Site area	6,173	m²	Required	Total area of site to external boundary.
Shared services or infrastructure	Yes		Required	Indicate if there are shared services that the building utilises, or shared foundations, basement or podium
Building footprint area	621	m²	Required	Total floor area of the ground floor measured to the outside edge of the floorplate.
Typical floor area (if different to building footprint a		m²	Only needed if different to row above	
Typical floor perimeter	152	m	Required	
Area of external carpark (not included in GFA)	0	m^2	Required. Enter 0 if not applicable.	
Area of external hardstand (not included in GFA)	0	m^2	Required. Enter 0 if not applicable.	
Area of other hard landscaping (not included in G	0	m^2	Required. Enter 0 if not applicable.	Include all other impervious areas. For example, patios, paths and driveways (not already included in carparks and hardstands above).
Number of floors/storeys above ground, including	1	no.	Required	
Number of floors/storeys below ground	0	no.	Required. Enter 0 if not applicable.	
Number of floors/storeys of car parking	0	no.	Required. Enter 0 if not applicable.	
Total height above ground	7	m	Required	Measured from the average finished grade to the highest point of the building, excluding protrusions (lighting rods, masts, chimneys, etc.)

Structural material choices	Value	Unit	Note	
Foundation type	Spot/pad footing		Required	
Frame type (dominant)	Reinforced concrete		Required	
Suspended floor type (typical)	Reinforced concrete		Only needed for multi-storey buildings	
Describe low carbon materials specified in your building (e.g. green concrete, low carbon bricks)	TBC		Required	
Describe recycled content specified in your building (e.g. recycled steel)	TBC		Required	

Step 2: Quantity of materials

Complete all blue cells that are applicable to the building. Leave items that aren't applicable blank. out blue cells

Material category	Sub-category 1	Sub-category 2	Sub-category 3	Value	Unit of measure	Comment	AIQS ACMM Code	ICMS3 (Level 3 Codes Construction)
Structure								
The structural parts of the building that are below ground (substructure) and above ground (superstructure). This includes fill below the substructure, foundations, basement levels, suspended floors, wall structure, roof structure, stairs, lift shafts and balconies								
Coverage of structural material spend	-	-	-	95	%	Required. Coverage of spend for structural elements entered below. Minimum requirement = 80%. Exclude head contractor preliminaries and margins.		
Concrete in-situ	≤10 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>10 MPa to ≤20 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>20 MPa to ≤32 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>32 MPa to ≤40 MPa	-	-	412.0	m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>40 MPa to ≤50 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>50 MPa to ≤60 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>60 MPa to ≤80 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>80 MPa to ≤100 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>100 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete pre-cast panel	-	-	-		m³	Please enter reinforcing steel in relevant line items below. If not known at DA stage, please make your best estimate. If not known at CC stage, please ask your supplier. Enter as cubic metres, calculated as (area in m²) * (thickness in mm / 1000).	01_SB or 02-11	02 or 03
Concrete block	Hollow core	-	-	53.0	m³	Please include all block fill concrete and all reinforcing steel in relevant line items above/below	01_SB	02 or 03
Concrete block/brick	Solid	-	-		m³	Enter as cubic metres, calculated as (area in m²) * (thickness in mm / 1000)	01_SB	02 or 03
Concrete block/brick	Solid AAC	-	-		m³	Solid Aerated Autoclaved Concrete (AAC) block. Enter as cubic metres, calculated as (area in m²) * (thickness in mm / 1000).	01_SB	02 or 03
Mortar	-	-	-		kg		01_SB	02 or 03
Reinforcing steel	Bar & mesh	-	-	42,045	kg	**Include all reinforcing steel bar/mesh in the building's structure in this row.** Usually this is calculated as kg/m³ per concrete element and then summed. Example: 10 m³ of 40 MPa concrete @ 100 kg/m³ + 5 m³ of 50 MPa concrete @ 150 kg/m³ = 1,750 kg reinforcing steel	01_SB or 02-11	02 or 03
Reinforcing steel	Fibre & strand	-	-		kg	**Include all steel fibre reinforcing and steel strand in the building's structure in this row**	01_SB or 02-11	02 or 03
Structural steel	Hot rolled structural	-	-	3	t	Examples include universal beams, universal columns and welded beams	01_SB	02 or 03
Structural steel	Cold formed structural	-	-		t	Examples include C purlins, Z purlins and all light gauge steel framing	01_SB	02 or 03
Structural steel	Other welded structural	-	-		t		01_SB	02 or 03
Structural steel	Plate	-	-		t	Include any allowance for connections here	01_SB	02 or 03
Structural steel	Sheet	-	-		t		01_SB	02 or 03
Stainless steel	-	-	-		t	Primarily for engineered timber structure connections	02_11	02 or 03
Reinforced concrete piles	Concrete	-	-		m³	Please enter reinforcing steel in the line below. If not known at DA stage, please make your best estimate. If not known at CC stage, please ask your supplier.	01_SB	02 or 03
Reinforced concrete piles	Steel reinforcing				kg	If not known at DA stage, please make your best estimate. If not known at CC stage, please ask your supplier.	01_SB	02 or 03

Steel piles	-	-	-		t			01_SB	02 or 03
Timber poles/piles	-	-	-		m³	Where concrete and reinforcing steel are also used, enter these in the rows above.		01_SB	02 or 03
Timber (solid)	Sawn softwood	-	-		m³	Where concrete and reinforcing steel are also used, enter these in the rows above.		02_11	02 or 03
Timber (solid)	Sawn hardwood	-	-		m³			02_11	02 or 03
Timber (engineered)	CLT	-	-		m³			02_11	02 or 03
Timber (engineered)	Glulam	-	-		m³			02_11	02 or 03
Timber (engineered)	LVL	-	-		m³			02_11	02 or 03
Timber (engineered)	OSB	-	-		m³	Enter as cubic metres, calculated as (area of wall in m²) * (thickness in mm / 1000)		02_11	02 or 03
Brick	Heat cured	-	-		m³	Enter as cubic metres, calculated as (area of wall in m²) * (thickness in mm / 1000)		02_11	02 or 03
Structural Insulated Panel	Steel outer	-	-		m²			01_SB	02 or 03
Structural Insulated Panel	Aluminium outer	-	-		m²			01_SB	02 or 03
Structural Insulated Panel	Engineered timber outer	-	-		m²			01_SB	02 or 03
Fill	-	-	-		t	Include purchased material only. Exclude site-won material.		01_SB	01
Sand & gravel	-	-	-		t	Include purchased material only. Exclude site-won material and sand/gravel in concrete.		01_SB	01
Waterproofing membrane	Bituminous	-	-		m²			01_SB	01 or 02 or 03
Waterproofing membrane	Polyethylene	-	-		m²			01_SB	01 or 02 or 03
Other structural (Describe	and add unit >>)	-	-			Please enter a description for any structural material that does not fit a predefined classification			
Other structural (Describe	and add unit >>)	-	-			Please enter a description for any structural material that does not fit a predefined classification			
Other structural (Describe	and add unit >>)	-	-			Please enter a description for any structural material that does not fit a predefined classification			

Envelope

The skin of the building that separates the internal building from the external environment. This includes the roof cladding, wall cladding, windows, doors and internal/external shading. It also includes insulation and the internal wall lining of envelope walls

Coverage of envelope mat	-	-	-	88	%	Required. Coverage of spend for the envelope items you have entered below. Minimum requirement = 80%. Exclude head contractor preliminaries and margins.			
Roof cladding	Profiled steel	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap in the roofing sheets. This row includes all metal-coated and pre-painted steel sheets where steel is the base metal. Examples include: galvanised steel, zinc-aluminium (zincalume) coated steel and zinc-aluminium-magnesium (ZAM) coated steel, whether painted or unpainted.		05_RF	03 or 04
Roof cladding	Profiled aluminium	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap in the roofing sheets. This row also includes pre-painted aluminium sheets.		05_RF	03 or 04
Roof cladding	Profiled zinc	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap in the roofing sheets. This row also includes pre-painted zinc sheets.		05_RF	03 or 04
Roof cladding	Membrane	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap in the membrane sheets.		05_RF	03 or 04
Roof cladding	Tiles (traditional clay)	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap between the tiles.		05_RF	03 or 04
Roof cladding	Tiles (concrete)	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap between the tiles.		05_RF	03 or 04
Roof cladding	Other (Please describe >>)		-		m²	Please enter a description for any roofing that does not fit a predefined classification		05_RF	03 or 04
Wall cladding	Bricks (heat cured)	-	-		m²	Enter as m² of wall area. Heat-cured bricks use a kiln or furnace to raise the brick temperature above ambient temperature during curing process.		06_EW	03 or 04
Wall cladding	Bricks (air dried)	-	-		m²	Enter as m² of wall area. Air-dried bricks are cured using ambient temperature.		06_EW	03 or 04
Wall cladding	Bricks (under fired)	-	-		m²	Enter as m² of wall area.		06_EW	03 or 04
Wall cladding	Bricks (concrete)	-	-		m²	Enter as m² of wall area		06_EW	03 or 04
Wall cladding	Mortar and render	-	-	3,755	kg			06_EW	03 or 04

Wall cladding	Profiled steel	-	-		m²	Enter as m² of wall area. Exclude allowances for overlap in the cladding sheets, offcuts, etc. This row includes all metal-coated and pre-painted steel sheets where steel is the base metal. Examples include: galvanised steel, zinc-aluminium (zincalume) coated steel and zinc-aluminium-magnesium (ZAM) coated steel, whether painted or unpainted.	06_EW	03 or 04
Wall cladding	Profiled aluminium	-	-		m²	Enter as m² of wall area. Exclude allowances for overlap in the cladding sheets, offcuts, etc. This row also includes pre-painted aluminium sheets.	06_EW	03 or 04
Wall cladding	Profiled zinc	-	-		m²	Enter as m² of wall area. Exclude allowances for overlap in the cladding sheets, offcuts, etc. This row also includes pre-painted zinc sheets.	06_EW	03 or 04
Wall cladding	GRC cladding	-	-		m²	Enter as m² of wall area. GRC = Glass Reinforced Concrete.	06_EW	03 or 04
Wall cladding	Timber weatherboards	-	-		m²	Enter as m² of wall area. Exclude allowances for overlap between weatherboards, offcuts, etc.	06_EW	03 or 04
Wall cladding	Fibre cement board	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc.	06_EW	03 or 04
Wall cladding	Terracotta	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc.	06_EW	03 or 04
Wall cladding	Brick tiles / veneers	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc.	06_EW	03 or 04
Wall cladding	Plasterboard	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc. Include both external wall linings and internal wall linings for envelope walls.	12_WF or 06_EW	03 or 04
Wall cladding	Plywood	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc. Include both external wall linings and internal wall linings for envelope walls.	12_WF or 06_EW	03 or 04
Wall cladding	Other (Please describe >>)		-		m²	Please enter a description for any wall cladding that does not fit a predefined classification	06_EW or 12_WF	03 or 04
Windows & doors	Aluminium frame	Single glazed	-		m²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Aluminium frame	Double glaze	-	107	m²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Aluminium frame	Triple glazed	-		m²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Timber frame	Single glazed	-		m²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Timber frame	Double glaze	-		m²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Timber frame	Triple glazed	-		m²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	uPVC frame	Single glazed	-		m²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	uPVC frame	Double glaze	-		m²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	uPVC frame	Triple glazed	-		m²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Frameless	Single glazed			m²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Frameless	Double glazed			m²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Frameless	Triple glazed			m²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Other (Please describe >>)		-		m²	Please enter a description for any windows or doors that do not fit a predefined classification	07_WW or 08_ED	03 or 04
Curtain wall	Single skin façade	Glazed panel	Single glazed		m²	Please declare all single-skin façade area in this section. All double-skin façade area should be entered in the next section. Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Single skin façade	Glazed panel	Double glazed		m²	Include all double glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Single skin façade	Glazed panel	Triple glazed		m²	Include all triple glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Single skin façade	Opaque pane	Aluminium cladding		m²		06_EW	03 or 04
Curtain wall	Single skin façade	Opaque pane	GRC cladding		m²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Curtain wall	Single skin façade	Opaque pane	Insulated shadow box		m²		06_EW	03 or 04
Curtain wall	Single skin façade	Opaque pane	Brick cladding		m²		06_EW	03 or 04
Curtain wall	Single skin façade	Opaque pane	Stone cladding		m²		06_EW	03 or 04
Curtain wall	Double skin façade	Glazed panel	Single glazed		m²	Please declare all double-skin façade area in this section. Please declare as the area of the curtain wall and do not enter the inner and outer skins twice. Include all single glazing, including standard, toughened, laminated and low-E.	06_EW	03 or 04

Curtain wall	Double skin façade	Glazed panel	Double glazed		m²	The type of glazing refers to the building's envelope wall, not including the outer skin	06_EW	03 or 04
Curtain wall	Double skin façade	Glazed panel	Triple glazed		m²	The type of glazing refers to the building's envelope wall, not including the outer skin	06_EW	03 or 04
Curtain wall	Double skin façade	Opaque pane	Aluminium cladding		m²		06_EW	03 or 04
Curtain wall	Double skin façade	Opaque pane	GRC cladding		m²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Curtain wall	Double skin façade	Opaque pane	Insulated shadow box		m²		06_EW	03 or 04
Curtain wall	Double skin façade	Opaque pane	Brick cladding		m²		06_EW	03 or 04
Curtain wall	Double skin façade	Opaque pane	Stone cladding		m²		06_EW	03 or 04
Curtain wall	Other (Please describe >>)		-		m²	Please enter a description for any curtain wall that does not fit a predefined classification	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Glazed sectio	Single glazed		m²	Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Glazed sectio	Double glazed		m²	Include all double glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Glazed sectio	Triple glazed		m²	Include all triple glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque secti	Aluminium cladding		m²		06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque secti	GRC cladding		m²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque secti	Insulated shadow box		m²		06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque secti	Brick cladding		m²		06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque secti	Stone cladding		m²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Glazed sectio	Single glazed		m²	Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Steel frame	Glazed sectio	Double glazed		m²	Include all double glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Steel frame	Glazed sectio	Triple glazed		m²	Include all triple glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque secti	Aluminium cladding		m²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque secti	GRC cladding		m²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque secti	Insulated shadow box		m²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque secti	Brick cladding		m²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque secti	Stone cladding		m²		06_EW	03 or 04
Stick-framed wall system	Other (Please describe >>)		-		m²	Please enter a description for any wall system that does not fit a predefined classification	06_EW	03 or 04
Wall louvre system	Aluminium	-	-		m²		06_EW	03 or 04
External shading system	Aluminium frame	Aluminium cla	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	GRC claddinç	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000). GRC = Glass-fibre Reinforced Concrete.	06_EW	03 or 04
External shading system	Aluminium frame	Terracotta cla	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Stone claddin	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Pre-cast conc	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Timber	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Glass (opagu	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Steel	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Other (Please describe >>)		-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
Roller doors	Steel profile	-	-	250	m²	Please note unit is <u>square metres</u>, not quantity	08_ED	03 or 04
Roller doors	Hardwood over steel	-	-		m²	Please note unit is <u>square metres</u>, not quantity	08_ED	03 or 04
Roller doors	Softwood over steel	-	-		m²	Please note unit is <u>square metres</u>, not quantity	08_ED	03 or 04
Revolving doors	Glass/aluminium/steel	-	-		no.		08_ED	03 or 04
Fire-rated doors	Engineered timber	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	08_ED	03 or 04

Fire-rated doors	Steel	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	08_ED	03 or 04
Fire-rated doors	Aluminium/glass	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	08_ED	03 or 04
Insulation	Glass wool / fibreglass	-	-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Stone wool	-	-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Polyester	-	-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Expanded polystyrene	-	-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Other (Please describe >>)	-	-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Other (Please describe and	add unit >>)	-	-			Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and	add unit >>)	-	-			Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and	add unit >>)	-	-			Please enter a description for any envelope material that does not fit a predefined classification		

Permanent internal walls and doors

Walls and doors within the building that are either structural or designed to be permanent.

Coverage of material spend on permanent internal walls and doors				85	%	Enter the % coverage of spend for the items you have entered below. There is no minimum requirement: enter what you know. This should include all structural walls. Exclude head contractor preliminaries and margins.		
Interior wall (permanent)	Steel (light framing)	-	-	2	t		09_NW	03 or 04
Interior wall (permanent)	Timber framing	-	-		m³		09_NW	03 or 04
Interior wall (permanent)	AAC panel (reinforced)	-	-		m²	Panels of autoclaved aerated concrete (AAC) with reinforcing steel. E.g., Hebel.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Concrete-filled steel pane	-	-		m²	Panels made from a steel sheet outer with an aerated concrete core. E.g., Speedpanel.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Plasterboard	-	-	245	m²	Enter as single-layer equivalent. If using 2 layers, multiply the area by 2.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Plywood	-	-		m²	Enter as single-layer equivalent. If using 2 layers, multiply the area by 2.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Fibre cement sheet	-	-		m²	Enter as single-layer equivalent. If using 2 layers, multiply the area by 2.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Insulation	-	-		m²		09_NW or 12_WF	03 or 04
Interior wall (permanent)	Glass	-	-		m²		09_NW or 12_WF	03 or 04
Interior wall (permanent)	Other (Please describe >>)	-	-		m²	Please enter a description for any internal wall that does not fit a predefined classification	09_NW or 12_WF	03 or 04
Internal door (permanent)	Aluminium/glass	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Timber/glass	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Timber solid lightweight	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Fire resistant	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Steel	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Other (Please describe >>)	-	-		no.	Please enter a description for any internal door that does not fit a predefined classification	11_ND	03 or 04
Other (Please describe and	add unit >>)	-	-			Please enter a description for any material that does not fit a predefined classification		
Other (Please describe and	add unit >>)	-	-			Please enter a description for any material that does not fit a predefined classification		
Other (Please describe and	add unit >>)	-	-			Please enter a description for any material that does not fit a predefined classification		

Services

					Unit of measure			
Building services included within the main building contract. If the building components that are the subject of the development application or the construction certificate are base building only, then only enter these items. If you cannot split services by type, please enter them all in								
Mechanical services	-	-	-	138,720	AUD excl. G	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	28_SS	05
Vertical transportation	-	-	-		AUD excl. G	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	28_SS	05

Electrical services		-	-	-	182,150	AUD excl. G	Electrical services including the main power supply, backup generators, security and communications. Excluding solar installations. Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	26_LP	05
Solar photovoltaic installati		-	-	-		AUD excl. G	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	26_LP_LPGP	05
Plumbing/hydraulic service		-	-	-	53,487	AUD excl. G	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	18_PD and 19_WS	05 or 06
Fire services					24,638	AUD excl. G	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	25_FPSS04 or 39 XWAW_03 or 4	05
Other services (Please describe)		-	-	-		AUD excl. G	Please group all other services here, meaning that coverage will always be 100% for services. Enter only the material costs (excluding labour, plant, equipment, margins and taxes)	29_SS or multiple	

External works

The materials associated with hard landscaping and outbuildings on the site but outside the building envelope.
This includes hardstands, carparks, driveways, covered walkways, decks, patios, awnings.

Coverage of spend on exte		-	-	-	85	%	Required. Coverage of spend for external works (excluding soft landscaping) entered below. Minimum requirement = 80%. Exclude head contractor preliminaries and margins		
Asphalt		-	-	-		t		33_XR	07
Concrete in-situ	≤10 MPa		-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_	07
Concrete in-situ	>10 MPa to ≤20 MPa		-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_	07
Concrete in-situ	>20 MPa to ≤32 MPa		-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_	07
Concrete in-situ	>32 MPa to ≤40 MPa		-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_	07
Concrete in-situ	>40 MPa to ≤50 MPa		-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_	07
Concrete in-situ	>50 MPa		-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_	07
Pavers, bricks and blocks	Concrete		-	-		m²		33_XR	07
Pavers, bricks and blocks	Clay		-	-		m²		33_XR	07
Reinforcing steel	Bar & mesh		-	-		kg	**Include all reinforcing steel bar/mesh in the external works in this row.** Usually this is calculated as kg/m³ per concrete element and then summed. Example: 10 m³ of 40	33_XR or 34_XN or 35_XB or 36_	07
Reinforcing steel	Fibre & strand		-	-		kg	**Include all steel fibre reinforcing and steel strand in the external works in this row.**	33_XR or 34_XN or 35_XB or 36_	07
Structural steel		-	-	-		t		02_11	07
Structural aluminium		-	-	-		t	Includes structures, louvre systems, etc.	35_XB	07
External roof/wall cladding	Polycarbonate		-	-		m²	Enter as profiled polycarbonate sheet that would ordered, including allowance for overlap	35_XB	07
External roof/wall cladding	PVC		-	-		m²	Enter as profiled PVC sheet that would ordered, including allowance for overlap	35_XB	07
External roof/wall cladding	Bitumen sheet		-	-		m²	Enter as bituminous sheet that would ordered, including allowance for overlap	35_XB	07
External roof/wall cladding	Steel profile		-	-		m²	Enter as profiled steel sheet that would ordered, including allowance for overlap	35_XB	07
Fill		-	-	-	558	t	Include purchased material only. Exclude site-won material.	33_XR or 34_XN or 35_XB or 36_	07
Sand & gravel		-	-	-	82	t	Include purchased material only. Exclude site-won material and sand/gravel in concrete.	33_XR or 34_XN or 35_XB or 36_	07
Timber (solid)	Sawn softwood		-	-		m³		33_XR or 34_XN or 35_XB or 36_	07
Timber (solid)	Sawn hardwood		-	-	8.0	m³		33_XR or 34_XN or 35_XB or 36_	07
Timber (engineered)	CLT		-	-		m³		33_XR or 34_XN or 35_XB or 36_	07
Timber (engineered)	Glulam		-	-		m³		33_XR or 34_XN or 35_XB or 36_	07
Timber (engineered)	LVL		-	-		m³		33_XR or 34_XN or 35_XB or 36_	07
Timber (engineered)	OSB		-	-		m³		33_XR or 34_XN or 35_XB or 36_	07

Fabric (awning/sunshade)					m²		35_XB or 36_XL	07
Other (Please describe and	Natural stone paving	-	-	19.0	m³	Please enter a description for any external works that does not fit a predefined classification		
Other (Please describe and	add unit >>)	-	-			Please enter a description for any external works that does not fit a predefined classification		
Other (Please describe and	add unit >>)	-	-			Please enter a description for any external works that does not fit a predefined classification		

Step 3: Certifier details

Fill out blue cells

The material quantities must be determined through an itemised list of building materials (such as a bill of quantities) and certified by a quantity surveyor, designer, engineer or NABERS Assessor.

Person that completed this form	Value	Note
Name	James Brandtman	Required
Company	Mitchell Brandtman	Required
ABN	38 372 658 067	
Profession	Quantity Surveyor	Required
Qualification or registration	MAIQS CQS #9246	Required

Person that certified the details in this form	Value	Note
Name	James Brandtman	Required
Company	Mitchell Brandtman	Required
ABN	38 372 658 067	
Profession	Quantity Surveyor	Required
Qualification or registration	MAIQS CQS #9246	Required

Confirmation of certification	Value	Note
Are 80% of material costs captured for the building's structure, envelope and external works?	Yes	Required
If no - why not?		

Additional comments from data provider
N/A

Additional comments of certifier
N/A

Attach this Excel spreadsheet to your development application or construction certificate application.