COFFS HARBOUR CITY COUNCIL

2 April 2019

Ms C McNally
Secretary
NSW Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Ms McNally

Coffs Harbour Cultural and Civic Space (All Welcome) Request for Secretary's Environmental Assessment Requirements

In accordance with Clause 3 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) and Schedule 1 of State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP), Coffs Harbour City Council request the issue of Secretary's Environmental Assessment Requirements (SEARs) for the State Significant Development (SSD) application for the proposed construction of a new Coffs Harbour Cultural and Civic Space (CHCCS)

The project comes under a Cultural, Recreation and Tourist Facilities in accordance with Clause 13 of Schedule 1 of the SRD SEPP and has an estimated Capital Investment Value (CIV) of $76.5 million. On this basis, the proposal is classified as State Significant Development and SEAR's are therefore sought.

Please find enclosed a preliminary environmental assessment and other supporting documentation to allow for the SEARs to be issued for this project.

Should you require any further clarification or information in regard to this request, please contact the undersigned on 02 6648 4205 or ken.welham@chcc.nsw,gov.au

Regards,

Steve McGrath
General Manager

Locked Bag 155, Coffs Harbour 2450 (Customer Service Centre: 2 Castle Street, Coffs Harbour)
Tel: (02) 6648 4000 Email: coffs.council@chcc.nsw.gov.au
Website: www.coffsharbour.nsw.gov.au
ABN 79 126 214 487

Scoping Report - Request for Secretary's Environmental Assessment Requirements

Coffs Harbour Cultural and Civic Space

GeoLINK
environmental management and design

PO Box 119
Lennox Head NSW 2478
T 02 6687 7666

PO Box 1446
Coffs Harbour NSW 2450
T 02 6651 7666

PO Box 1267
Armidale NSW 2350
T 02 6772 0454

PO Box 229
Lismore NSW 2480
T 02 6621 6677

info@geolink.net.au

Prepared for: Coffs Harbour City Council

UPR	*Description*	*Date Issued*	*Issued By*
3277-1015	First issue	11/04/2019	Simon Waterworth
3277-1024	Second Issue	11/04/2019	Simon Waterworth

Table of Contents

Illustrations

Tables

Plates

Appendices

1. Introduction

1.1 Background

The Coffs Harbour City Council has recently endorsed the Cultural and Civic Space project's Concept Business Case to progress the project into Schematic Design phase and preparation of Approval Documentation. The drivers for this exciting regional project include:

- The need for enhanced cultural and social infrastructure etc. for economic, cultural and social benefits including cultural and tourism economy;
- Developing a cultural and civic precinct and a cultural heart of the city;
- Enhancing amenities, services and programs by providing larger and improved spaces to enable higher level programs, activities and services to be accessed regionally;
- To enable Council to meet service obligations and community demand for things such as meeting space, workshop space, digital workshop space, etc.;
- To invest in a central facility as a catalyst for change and to address some of the socio-economic disadvantages identified in the region such as educational disadvantage, youth disengagement, unemployment and low community participation;
- To address the limitations in Council's current office spaces and Council Chambers;
- To increase the number of meeting spaces for the community; and
- To improve organisational collaborations and staff cultures by locating a number of services in the one central space.

GeoLINK has been engaged by Council to provide town planning services for the project. This report provides planning advice on the planning approval pathway for the project as well as advice on the likely requirements and risks in the development application process.

1.2 Project Description

The Cultural and Civic Space project includes a regional gallery, central library, regional museum, multi-purpose meeting rooms, co-working space, shop, café, function space (including use as Council Chambers), customer service area, Council staff office accommodation and underground car parking. A copy of the Concept Plans for the project are attached as **Appendix A**.

The Cultural and Civic Space is an innovative project that will provide many benefits to the local community. Along with a new fresh and modern building, some of the broader benefits will include:

- Access to cultural opportunities and facilities that are not currently available;
- Cultural precinct and cultural tourism activation opportunity;
- Lifelong learning, educational opportunities and improved literacy;
- Social wellbeing and access to information and connection;
- Economic benefit to artists, creative industries, retail and service sector;
- Vibrant and active City Centre.

1.3 Project Need

The project is all about the economic and cultural future of Coffs Harbour as well as its growth as a major regional hub. The Cultural and Civic Space will help to transform the central business district (CBD) into a vibrant, busy destination that draws in locals and visitors into the centre of Coffs Harbour. A cultural precinct in the city centre will better activate the CBD and bring life, vibrancy, cultural and economic benefits to areas that can otherwise be lifeless outside business hours.

Having a facility that incorporates a modern library and gallery, a youth area and digital media studio, exhibition space, parking, workshops and makers studios, public art, a café, small events space and technology resources, means people of all ages and backgrounds have a reason to visit.

1.4 Purpose of Report

In accordance with Clause 3 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) and Schedule 1 of State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP), Coffs Harbour City Council request the issue of Secretary's Environmental Assessment Requirements (SEARs) for the State Significant Development (SSD) application for the proposed construction of a new Coffs Harbour Cultural and Civic Space (CHC&CS)

The project comes under Cultural, Recreation and Tourist Facilities in accordance with Clause 13 of Schedule 1 of the SRD SEPP and has an estimated Capital Investment Value (CIV) of $76.5 million. On this basis, the Proposal is classified as State Significant Development and SEARS are therefore sought.

The purpose of this report is to provide a preliminary environmental assessment and other supporting documentation to allow for the SEARs to be issued for this project.

The purpose of this report is to provide information on the potential environmental impacts of the Proposal to assist the Secretary of the Department of Planning and Environment to issue SEARs for the Coffs Harbour Cultural and Civic Space Proposal. This report includes:

- A site description and general description of the locality;
- An overview of applicable planning instruments applying to the site/ project;
- Local Environmental Plan (LEP) requirements including zoning, floor space ratio and building heights restrictions;
- Commentary and explanation of all other applicable development controls;
- Commentary on potential environmental and development constraints of the site; and
- A preliminary environmental assessment of the project.

1.5 Further Information

Should any clarification or additional information be required regarding this report, please contact Simon Waterworth of GeoLINK at simonw@geolink.net.au or 02 66517666.

2. The Site and its Context

2.1 Cadastral Description

The proposed Cultural and Civic Space for Coffs Harbour is to be located on lands described as:

- Lot 20 DP758258
- Lot B DP346105
- Lot 123 DP 749233.

An aerial image of the proposed lot is shown on **Illustration 2.1**.

2.2 Site Context

The site is in the main part of the Coffs Harbour City CBD which is on the Mid North Coast of NSW. The site has access from Gordon Street and Riding Lane. Other land uses in proximity to the site include the Coffs Harbour Uniting Church, the main public four storey car park for Coffs Harbour and other commercial development which ranges from one storey dwellings used as office space to three storey office blocks. A locality plan is shown as **Illustration 2.2**.

2.3 Site Analysis

The proposed site of the new Cultural and Civic Space is generally flat. The concept design for the new space is currently being prepared; however, it is likely to be built across most of the lot with limited setbacks form Gordon Street and Riding Lane.

Ornamentally planted shrubs and small tress exist within the site in several small landscape areas. A large fig tree exists adjacent to Lot 123 which overhangs the site.

Lot 20 contains an older style dwelling which is currently being used as an office and carparking and landscaping. Lots B and 123 contains brick buildings that are used for storage and for Council's general operations. Potential environmental and development constraints which will need to be assessed as part of any environmental assessment of the site include:

- Acid Sulphate Soils (Class 4)
- Flooding (below the flood planning level)
- Coastal zone implications
- Aboriginal Heritage
- Non-Aboriginal Heritage
- Access and car parking
- Visual impacts
- Urban design and context
- Ecologically Sustainable Development.

A site analysis plan is shown as **Illustration 2.3**.

Plates 2.1-2.4 show some images of the site and the buildings that currently exist on the site.

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: SJW Date: 11/04/2019
Source of base data: DFS&I

LEGEND

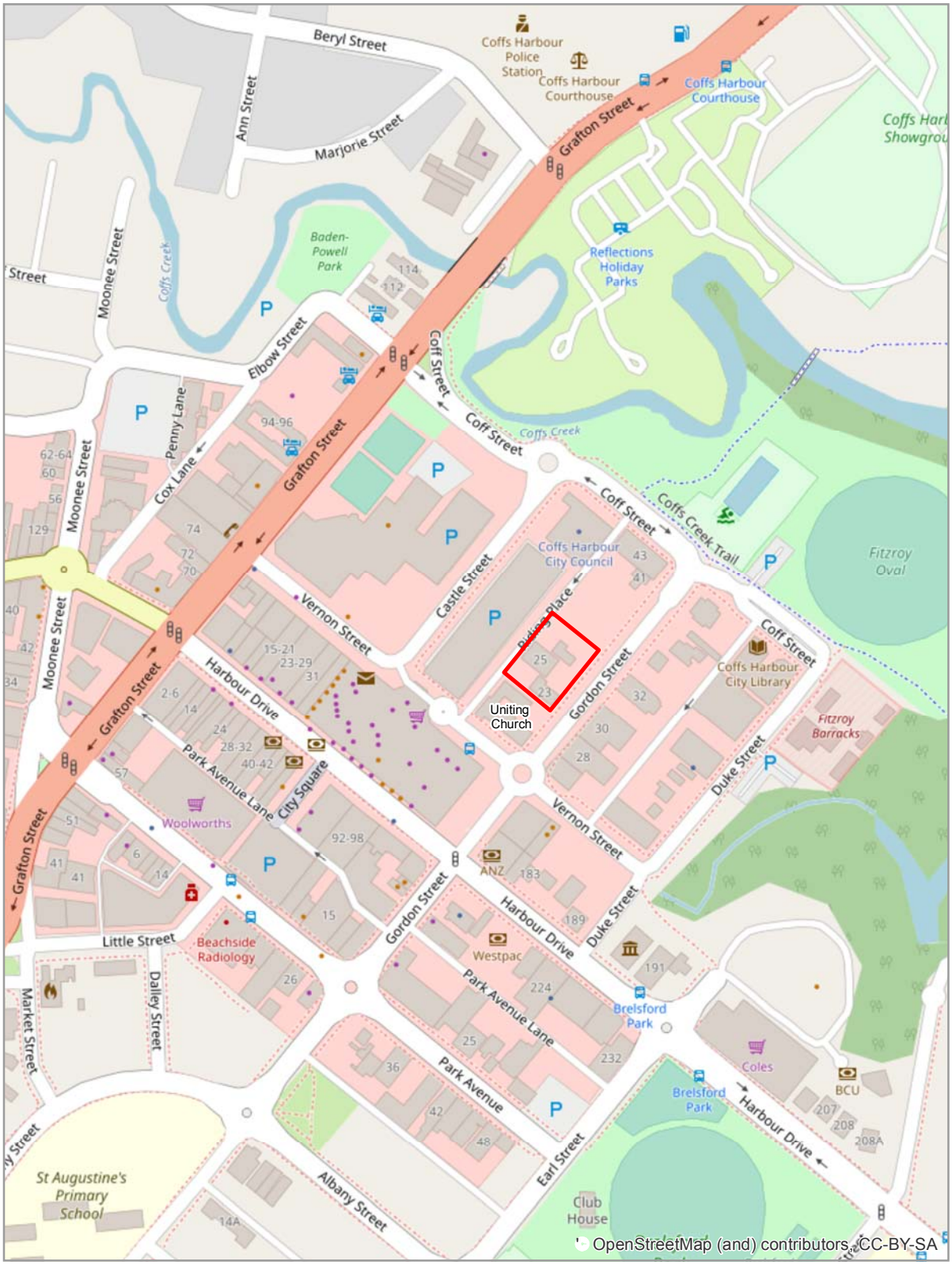
- Proposed Cultural and Civic Space boundary
- Cadastre

0 20

Aerial Plan

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: SJW Date: 11/04/2019
Source of base data: OpenStreetMap



LEGEND

Proposed Cultural and Civic Space boundary

0 100

Site Context

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: SJW Date: 11/04/2019
Source of base data: DFS&I and CHCC

LEGEND

- Proposed Cultural and Civic Space boundary
- Cadastre
- Contour at 2m intervals
- Overhanging fig tree
- Coast and Escarpment Blackbutt Dry Forest
- Coastal Paperbark Swamp Oak Floodplain Forest
- Environmental plantings
- Exotic vegetation
- Native remnant vegetation

0 30

Site Analysis

Plate 2-1 Front of the building at 23 Gordon Street

Plate 2-2 Rear of the Building at 23 Gordon Street

Plate 2-3 Front of the Building at 25-31 Gordon Street

Plate 2-4 Rear of the Building at 25-31 Gordon Street

3. Planning Approval Pathway

3.1 Permissibility

3.1.1 Zone

The site is zoned B3 Commercial Core. The objectives of this zone are:

- To provide a wide range of retail, business, office, entertainment, community and other suitable land uses that serve the needs of the local and wider community.
- To encourage appropriate employment opportunities in accessible locations.
- To maximise public transport patronage and encourage walking and cycling.
- To ensure that the scale and nature of future development reinforces the role of the Coffs Harbour central business district as the primary commercial, employment and retail centre in the region.
- To ensure that the design of new commercial buildings makes a positive contribution to the streetscape through opportunities for improved pedestrian links, retention and creation of view corridors and the provision of a safe public domain.

3.1.2 Definition of use

The Proposal potentially involves three defined uses that have separate definitions under Coffs Harbour Local Environmental Plan 2013 (LEP 2013). These definitions are:

Community facility which means *a building or place:*

a. owned or controlled by a public authority or non-profit community organisation, and
b. used for the physical, social, cultural or intellectual development or welfare of the community.

Public Administration Building which means *a building used as offices or for administrative or other like purposes by the Crown, a statutory body, a council or an organisation established for public purposes, and includes a courthouse or a police station.*

Information and education facility which means *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.*

All three land uses are permissible with development consent within the B3 Commercial Core zone.

3.1.3 State Significant Development

Clause 8 of SRD SEPP states that development is declared to be SSD for the purposes of the *Environmental Planning and Assessment Act 1979* (EP&A Act) if:

- *the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act, and*
- *the development is specified in Schedule 1 or 2.*

The Proposal does not meet any requirements for it to be classified as Development Without Consent. Schedule 1 of SRD SEPP identifies cultural, recreation and tourist facilities (which include information and education facilities, including museums and art galleries) with a CIV of $30 million as SSD. The project has a CIV of $76.5 million. On this basis, the Proposal is classified as State Significant Development and SEAR's are therefore sought.

4. Statutory Planning Considerations

4.1 Coffs Harbour Local Environmental Plan 2013

4.1.1 General Provisions

The relevant clauses of Coffs Harbour LEP 2013 are discussed in **Table 4.1**.

Table 4.1 Coffs Harbour Local Environmental Plan 2013

Local Planning Instruments and Controls		
LEP 2013	Clause 4.3 Height of Buildings	The subject site has a maximum height control of 28 m. The proposed building will have a maximum height of less than 40 m. An exception to the Height of Buildings development standard would need to be applied for as part of the SSD Application. It should be noted that Council is currently reviewing Height of Building controls under this clause by way of a Planning Proposal. The Planning Proposal effects land in the vicinity of the Proposal. The project team has made a submission to this Planning Proposal.
	Clause 4.4 Floor Space Ratio	The site has a maximum floor space ratio of 3.5:1. The Proposal will need to comply with this requirement or an exception to the Floor Space Ratio development standard would need to be applied for as part of the SSD Application.
	Clause 5.6 Architectural Roof Features	This clause contains provisions relating to architectural roof features and seeks to promote their use to provide high quality urban form and design outcomes for prominent buildings. The design of the Coffs Harbour Cultural and Civil Space will need to have regard to the provisions of this clause.
	Clause 5.9 Preservation of Trees or Vegetation	The objective of this clause is to preserve the amenity of the area, including biodiversity values, through the preservation of trees and other vegetation. Any removal of native vegetation on the site would require development consent unless exempt.
	Clause 7.1 Acid Sulfate Soils (ASS)	The site is located within land mapped as Class 4 ASS. Given the likely amount of excavation work required for the Proposal an ASS Management Plan is likely to be required.
	Clause 7.2 Earthworks	The Consent Authority is required to take into consideration potential impacts from earthworks relating to a development. These impacts and how they are to be mitigated would need to be documented in the SSD Application
	Clause 7.3 Flood Planning	The Flood Planning Map identifies the site as being below the Flood Planning Level. However, the site is above the mapped 1% AEP (Annual Exceedance

Local Planning Instruments and Controls		
		Probability) flood event. The Proposal will require a flood assessment as part of the SSD Application.
	7.9 Air space operations	The site is located within the Airport Height Limitations map. All development would need to be below 48.06 m AHD (Australian Height Datum) or the development would be referred to the relevant Commonwealth body for concurrence.
	7.10 Development in areas subject to aircraft noise	The site is not affected by the Australian Noise Exposure mapping.
	7.11 Essential Services	All essential services are available to the site. The need for augmentation of any of these facilities will need to be determined during the concept design phase.
	7.12 Design excellence	The objective of this clause is to ensure that the development exhibits design excellence that contributes to the natural, cultural, visual and built character values of Coffs Harbour. It requires the consent authority to have consideration to certain matters when considering whether the development exhibits design excellence.
	7.13 Central business district	The objectives of this clause are: ▪ to maintain the primacy of the Coffs Harbour CBD, being the land identified as "CBD" on the Central Business District Map, as the principal business, office and retail hub of the city centre and to ensure that development does not conflict with the hierarchy of commercial centres; and ▪ to strengthen Coffs Harbour's position as an eminent regional centre by creating employment opportunities for tourism, commerce, education, health care, culture and the arts. The clause requires that development consent must not be granted to development on any land unless the consent authority has considered whether the development maintains the primacy of the CBD as the principal business, office and retail hub of the Coffs Harbour City. It is considered that the Proposal will enhance the primacy of the Coffs Harbour CBD as the principal business, office, retail and cultural hub of the city.

4.2 Coffs Harbour Development Control Plan 2015

The Coffs Harbour Development Control Plan (DCP) 2015 supports the provisions of LEP 2013 and provides a set of development objectives and provisions for development within the Coffs Harbour Local Government Area (LGA). As stated in Clause 11 of the SRD SEPP, development control plans do not apply to SSD. This is further explained in the Department of Planning and Environment's Fact Sheet on State Significant Development (February 2012) which states that:

> *"DCPs do not apply to SSD. This is because development control plans are generally concerned with local or specific issues and do not provide appropriate planning controls for large, complex developments of importance to the State or region and are not a relevant matter for consideration in the assessment of SSD".*

The Proposal is therefore not subject to the requirements of DCP 2015. However, these can be often used as a guide or benchmark for assessment purposes.

4.3 Developer Contributions Plans

There are several developer contribution plans that apply to development within the Coffs Harbour LGA. Consultation with relevant Council staff will be required to determine how these plans will apply to the proposed development.

4.4 State Environmental Planning Policies

4.4.1 State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP)

The Coastal Management SEPP aims to promote an integrated and coordinated approach to land use planning in the coastal zone in a manner consistent with the objectives of the *Coastal Management Act 2016*, including the management objectives for each coastal management area, by:

- Managing development in the coastal zone and protecting the environmental assets of the coast.
- Establishing a framework for land use planning to guide decision-making in the coastal zone.
- Mapping the four coastal management areas that comprise the NSW coastal zone for the purpose of the definitions in the *Coastal Management Act 2016*.

The Coastal SEPP applies to the subject site as it is located in the coastal zone footprint, the coastal environmental area and the coastal use area. An assessment of the relevant development controls contained within the SEPP and how they relate to the Proposal will need to be provided as part of the Environmental Impact Statement (EIS) for the Proposal. It is not considered that it is a significant constraint to the development of the site.

4.4.2 State Environmental Planning Policy No. 55 – Remediation of Land

The object of this policy is to provide for a State-wide planning approach to the remediation of contaminated land. It aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment by:

- Specifying when consent is required, and when it is not required, for remediation work.
- Specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out remediation work in particular.
- Requiring that remediation work meets certain standards and notification requirements.

A report that assesses and quantifies any soil and groundwater contamination and demonstrates that the site is suitable for the proposed use will need to be prepared in accordance with SEPP 55.

The assessment must address all relevant Policies and Guidelines including, but not limited to, “Managing Land Contamination: Planning Guidelines - SEPP 55 Remediation of Land” (DUAP).

4.4.3 State Environmental Planning Policy (State & Regional Development) 2011

The relevant provisions of this SEPP are discussed in detail in **Section 3**. The Proposal is likely to be local development and determined by Coffs Harbour City Council.

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: SJW Date: 11/04/2019
Source of base data: DFS&I and CHCC

LEGEND

- Proposed Cultural and Civic Space boundary
- Cadastre
- B3 Commercial Core
- RE1 Public Recreation
- SP2 Infrastructure

0 30

Site Zoning

5. Strategic Planning Framework

5.1 North Coast Regional Plan 2036

North Coast Regional Plan 2036 (NCRP 2036) is the NSW Government's blueprint for land use planning priorities and decisions to 2036. It provides an overarching framework to guide subsequent and more detailed land use plans, development proposals and infrastructure funding decisions. While a series of priority actions are included, medium and longer-term actions will be identified to coincide with population growth and economic change. The Proposal is consistent with the following goals and Direction of NCRP 2036:

Goal 2: A thriving, interconnected economy

Direction 5: Strengthen communities of interest and cross-regional relationships

Direction 6: Develop successful centres of employment
Direction 7: Coordinate the growth of regional cities
Direction 8: Promote the growth of tourism

Goal 3: Vibrant and engaged communities

Direction 14: Provide great places to live and work

Direction 15: Develop healthy, safe, socially engaged and well-connected communities

Direction 16: Collaborate and partner with Aboriginal communities

Direction 17: Increase the economic self-determination of Aboriginal communities
Direction 18: Respect and protect the North Coast's Aboriginal heritage
Direction 19: Protect historic heritage
Direction 20: Maintain the region's distinctive built character

Direction 21: Coordinate local infrastructure delivery

5.2 Coffs Harbour Growth Management Strategy

Coffs Harbour City Council currently has a Local Growth Management Strategy (LGMS) which provides for a planned release of land within the Coffs Harbour LGA to 2031 and contains the following components:

- LGMS Urban Lands Component 2008
- LGMS Business Lands Component 2008
- LGMS Rural Res Lands Component 2009
- LGMS Industrial Lands Component 2009
- LGMS Business Lands Hierarchy 2011.

This Strategy is currently being revised and updated to achieve the community's aspirations for Coffs Harbour as it grows into a regional city by supporting effective and integrated planning across the LGA to 2036.

The Proposal seeks to provide improved cultural and civic services to the existing and future population of the Coffs Harbour LGA and is considered to be consistent with the various components of the LGMS. This will be further expanded upon in the EIS prepared for the SSDA.

5.3 Precinct Analysis – Gordon Street Library and Gallery

This precinct analysis has been prepared by Coffs Harbour City Council as part of detailed research and concept planning requested by the Council in December 2015, for the colocation of a new library/ gallery and other complementary facilities within the Coffs Harbour CBD. The need for expanded facilities for both the Harry Bailey Memorial Library and Coffs Harbour Regional Gallery within the CBD has been identified in a number of Council's Strategic Plans and through various community engagement events.

In April 2016 Council established a Library and Gallery Planning Advisory Group and a Council project team with the aim of facilitating research and concept planning for the colocation of new library and gallery facilities within the Coffs Harbour CBD. In June 2016, the Advisory Group and project team recommended the subject site as being the most suitable for further concept planning and detailed research. The Council subsequently resolved to endorse the site for a new library/ gallery and requested staff to undertake a precinct analysis that includes activation opportunities and pedestrian access to and surrounding the subject site; and to investigate feasibility of other uses of the site including Council office accommodation.

This precinct analysis has been prepared in response to the June 2016 Council resolution and provides a future vision for the site and surrounding areas to facilitate a central cultural hub precinct comprising civic cultural facilities for the region. The precinct analysis also comprises a recommendation for further feasibility analysis for potential complementary uses to the library/ gallery development.

The conclusions and key findings of the precinct analysis include:

- The proposed library/ gallery site is central to key sites and localities in the Coffs Harbour LGA;
- The site has strong vehicular connections to the wider city via the Pacific Highway, Harbour Drive and Hogbin Drive, however its connectivity with the CBD suffers from poor pedestrian and cycle amenity;
- There is significant opportunity to enhance complementary civic and cultural land uses on the site and within the precinct;
- Desired building heights of about eight storeys (28 m) for the site and adjoining land provide an opportunity for taller development and would support the colocation of complementary uses such as entertainment facilities, performing art space, public administration buildings and mixed use development;
- Desired building heights of about twelve storeys (40 m) adjoining public green space provides an opportunity for inner city mixed use development (office/ living) in walking distance to the proposed library/ gallery site;
- The site has been identified within a desired 'cultural hub' precinct due to its close proximity to the City Heart; existing complementary civic services in the locality; proximity to large expanses of public green space; strong pedestrian and vehicular connectivity; and proximity to desired city living growth, all of which provide an ideal setting for cultural and civic facilities;
- Most of the built form surrounding the library/ gallery site is somewhat dated comprising one to three storey civic buildings constructed in the early 80's to early 90's;
- Some urban renewal has begun in the locality of the proposed library/ gallery site;

- Two buildings within the immediate vicinity of the proposed library/ gallery site are of heritage significance (one within the subject site);
- The site is within a five-minute walk of most of the City Heart precinct and key car parks. The laneway connection (Riding Lane) from the site to the City Heart is car dominated with limited pedestrian amenity. At night, closed arcades in Coffs Central limit pedestrian connection between the site and the City Heart;
- Roundabouts inhibit pedestrian and bike movement through the street network. The highway and Gordon Street also act as barriers to pedestrian movement across the CBD due to their wide carriageways and awkward pedestrian crossings;
- The Castle Street car park next to the site provides more than half the off-street short-term spaces in the CBD and a large portion of the long-term parking. Providing midblock access through the site and adjoining blocks will greatly improve pedestrian connection to future long-term parking sites;
- Gordon and Coff Streets are used as a local traffic bypass of the City Heart;
- Awkward street crossings at the northern end of Gordon and Castle Streets inhibit connectivity between the City Heart and the Coffs Creek walkways/ cycle paths;
- The site is bound primarily by dead frontages and restrictive passive frontages;
- Existing street trees are unbalanced and unevenly distributed along the streets surrounding the proposed library/ gallery site;
- A strong unifying element is provided by the repetitive punctuated use of Eucalypts within close proximity to the site;
- The significant fig tree located within the centre of Riding Lane provides visual amenity throughout the entire lane and creates a focal point of interest and intrigue when looking from both north and south down the lane; and
- The site benefits from elevated views of forest vegetation along Coffs Creek to the north and east.

The design of the Coffs Harbour Cultural and Civic Space will need to consider and utilise the information contained in the Precinct Analysis.

5.4 Coffs Harbour CBD Master Plan 2031

The Master Plan builds on the work of three related documents:

- Our Living City Settlement Strategy
- City Centre Vision
- Working Group Vision and draft LEP/ DCP 2012.

While the previous documents focus on a range of issues, the CBD Master Plan 2031 focuses solely on the City Centre study area and the priority strategies and projects to improve it. These works will largely be funded by a proposed Special Rate for the City Centre as well as other funding mechanisms.

The report supports the Vision and provides an overview of the City Centre Principles and Objectives before focusing on the specific strategies and projects to realise the Vision and to create a prosperous City Centre by 2031.

The principles to guide the future development of the City Centre contained within the Master Plan are:

- The City Centre stands united as one retail, business, cultural and entertainment precinct with preferred development to occur as close to the City Square as possible.

- Having a strong core in the City Centre is a prerequisite to that strength flowing to its outer boundaries.
- The primary qualities of safety, cleanliness and convenience must be achieved before placemaking endeavours can be fully realised.
- Development will be encouraged which is best practice and of a high quality modern standard that will lay the foundation for decades to come.
- For all stakeholders to work cohesively and passionately together to deliver greater results.
- Ensure the economic benefits of the Special Rate Levy, are, in the long-term, passed onto landowners through higher property values, to businesses through higher incomes and the community through better facilities and employment.
- To increase the capacity of the City Centre to foster economic growth and to meet the demographic needs of Coffs Harbour which is characterised by a high population growth rate and an aging population.
- To provide short-term stimulus measures to revitalise the City Centre, reduce the number of vacant shopfronts and increase retail sales.
- To work with private landowners and prospective investors to create economic opportunities through compelling development incentives.
- The Coffs Harbour City Centre Master Plan 2031 will be a living document that delivers short-term activation strategies and lays the groundwork for longer term dreams.

The Coffs Harbour CBD Master Plan identifies the subject site (among others) as a potential site for an Entertainment Centre. It also contains a number of strategies that relate to the Proposal such as pedestrian linkages, road network upgrades and modifications etc.

6. Early Community Engagement

6.1 Community Planning and Engagement

The need for enhanced cultural precincts and infrastructure was identified through the community consultation from 2016 for the development of the MyCoffs Community Strategic Plan. Up to 3000 people, including local residents, businesses and workers participated in the various phases of the engagement strategy. MyCoffs represents the community hopes and aspirations, along with public input into prioritising our community objectives.

A community objective under the theme of '*Community Wellbeing – A vibrant inclusive place*' is that:

We enrich cultural life through art, learning and cultural endeavour' (A1.4).

Relating to this objective, the community has identified that they value the contribution of arts, heritage and culture to our wellbeing, economy and in creating liveable and vibrant communities. They also have told us that they recognise the need for enhanced cultural precincts, venues and public art within our region.

6.2 Cultural Planning and Consultation

To explore the objectives in MyCoffs Community Strategic Plan, a further process of community engagement was undertaken in 2016. This enabled the community to input detailed information to form the Creative Coffs - Cultural Strategic Plan 2017-2022.

The preparation of Creative Coffs involved the gathering and analysis of extensive community and stakeholder views, evidence and information including a series of individual interviews, focus group discussions, a public meeting and an online survey panel for members and the public.

Along with the broader community, specific stakeholder groups were targeted including:

- Arts Groups;
- Business and tourism operators;
- Visual artists;
- Aboriginal community;
- Health and community services providers;
- Culturally and linguistically diverse (CALD) community;
- Arts and cultural organisations; and
- Young people.

The preparation of the cultural strategic plan also included development of a Cultural Reference Group, formed of eight community members from diverse and creative backgrounds and chaired by the Mayor. This group served as an advisory group throughout the development of the plan and supported the Council to develop the strategy along with an action plan based on the community views and input.

6.3 Cultural Infrastructure

In relation to facilities and cultural infrastructure the consultee's feedback identified a number of strengths in the current facilities in the region including the Jetty Theatre, festivals and markets. However, most consultees felt that there is a need for further investment in facilities and infrastructure, including improved coordination and communication between existing facilities.

Consultees were generally supportive of the development of a new arts and cultural facility, but stressed the importance of this facility being a central hub for creativity that is both functional and accessible. Therefore, the proposed new Cultural and Civic Space has functionality and accessibility built into the design principles of inclusiveness, being welcome and accessible to all, and different strokes, being a rich blend of spaces that can serve multiple functions.

The lack of arts venues/ facilities generally, was the most frequently mentioned weakness noted by a large portion of respondents. In 75 additional comments on this question, respondents indicated a broad desire for improving performing arts facilities, and for multi-purpose cultural facilities.

6.4 Precinct Planning

The creation of a Cultural Hub/ Precinct received strong endorsement from respondents, along with better arts and cultural amenities and the need for an upgraded or new Art Gallery. Our community has told us that quality community and cultural facilities, precincts and spaces make essential contributions to our region and lifestyle. These areas have been included for areas of action in relation to the Creative Coffs – Cultural Strategic Plan 2017- 2022.

To support further investigation of the need for community infrastructure in relation to place making and precinct planning, a Precinct Analysis Gordon Street Library and Gallery was undertaken in 2017. This precinct analysis considers the community feedback in relation to pedestrian amenity, accessibility, transport and other key features important to the community. It also determines how they relate to the proposed site and its functionality along with the impact on the broader precinct.

6.5 Supporting Consultations and Planning

During the 2018 consultation period two other separate, but relevant, community consultations were also undertaken by Council being the City Centre Master Plan: Achieving the Objectives and the Library and Gallery Strategic Planning Online Surveys.

The City Centre Master Plan outlines a vision to inspire to create a place where economic, social and cultural pursuits fuse to enrich and enliven all who live, work and visit the City. The Plan identifies a number of projects and key strategic sites targeted to deliver new cultural, entertainment and civic buildings in the CBD.

Community consultation commenced around the needs and requirements for a new central library and gallery alongside the development of a new Cultural Strategic Plan. A Library and Gallery Planning Advisory Group (LGPAG) and Council project team formed as a community advisory group to Council with community members and Councillors meeting regularly to guide the project.

6.6 Community Engagement with Three Concept Designs

Further community engagement undertaken as part of the Cultural and Civic Space Concept Designs Process. This consultation took place from January - April 2018. Multiple opportunities were provided for the community and stakeholders to provide feedback on elements of each of the three concept designs they most liked. This information was used to indicate what features of a building would most matter to the community and how they relate to the new facility in terms of usage and requirements. Significant feedback gathered at this point was incorporated within the specifications and building desires provided to the architects in the current phase of schematic design.

A broad range of individuals across many sectors had the opportunity to input to the process. Representation included:

- Broad community and community groups
- Library, Museum and Gallery users, supporters, staff and volunteers
- Aboriginal Elders and organisations
- Advisory Committees including Access
- Cultural Reference and Multicultural
- Business, Tourism and Chambers of Commerce
- Year 11/12 school students
- Teachers and education providers
- Creative industries sector – multiple artforms and disciplines
- Council volunteers and staff.

The project and the opportunity to give feedback was promoted and captured via:

- Project information brochure
- Council newsletter articles
- Mayoral column
- Social media channels
- Magazine and newspaper editorials
- Display posters and digital screens
- Radio broadcasts
- Display stands
- Project videos
- Have Your Say project webpage
- Focus groups
- Information sessions and briefings
- Surveys – both hardcopy and online.

The following is a summary of the community involvement in the consultation for the Concept Design Process:

- 223 attended 23 separate focus groups and stakeholder meetings
- 236 completed the concept design survey
- 2900 instances of online engagements via the Have Your Say project portal
- 475 completed the library and gallery strategic planning surveys
- 831 survey comments/ feedback received
- 1421 key phrases of feedback from focus groups and written feedback analysed.

6.7 Schematic Design Stages

Community engagement was taken place during November 2018 - February 2019. This round of community engagement for the schematic design undertaken with community groups including the migrant population, indigenous, youth, homeless, early education, family history and the access committee have been consulted with for input into the design specifications for the building.

BVN Architects will be informing the broader community as they work on the schematic design with the bulk of engagement occurring in May/ June 2019.

Static display boards will be available in the Council's Customer Service, Libraries and the Museum for people to see the schematic design displays. The project team will also undertake a number of interactive sessions in local shopping centres to show the community the designs and enable them to interact and ask questions. The Cultural and Civic Space project page is the key online point of project information for the community, showing the draft schematic design (once released), videos, key documents, project history and pathways to send feedback at any time about the project. An extensive online information campaign will be circulated by electronic newsletter to over 7000-registered email addresses during May 2019 to ensure that the community has a chance to view the draft design of the new building.

Schematic design briefing sessions will be provided to the key community groups previously liaised with and new sessions will be open to the previous round of arts and cultural sector consultees who provided information in the concept design period. Briefing sessions are also being organised with the Friends of the Gallery members group and the local Business Chamber.

Significant efforts are being made to enable the community to walk the journey into development of the new building, along with an extensive series targeting the staff and volunteers of Council.

7. Preliminary Environmental Assessment

A preliminary environmental assessment of the project is provided below.

7.1 Biodiversity

The site contains ornamentally planted vegetation in a landscaped and urban setting. Construction of the new Cultural and Civic Space would accordingly have minimal impact on biodiversity. The site is not mapped as Koala habitat or defined as high conservation value land. It is mandatory that a Biodiversity Development Assessment Report (BDAR) is prepared for SSD applications under the *Biodiversity Conservation Act 2016* unless a waiver is given by the Department of Planning and Environment and the NSW Office of Environment and Heritage. Given the limited biodiversity value on the site, an application for a Waiver from preparing a BDAR has been prepared and is attached as **Appendix B**.

7.2 Arboricultural Assessment

The site adjoins a large fig tree (located in the Council car park to the west of the site) which overhangs the site. A preliminary arborist assessment has been prepared to determine the potential impact of the Proposal on this tree (refer **Appendix C**). The conclusion of the assessment indicated that while the proposed works are likely to have an impact on the tree, the extent of the impact can be readily managed without unduly impacting on the proposed works. Managed well, the proposed works have the potential to result in an improvement in the tree's health and longevity. Other vegetation on the site consists of landscape and ornamental plantings which are considered to have low retention on values.

7.3 Visual Amenity

The new Cultural and Civic Space would be a very prominent new building in the Coffs Harbour CBD and would be visually prominent from various areas within the public domain. A visual impact assessment prepared in accordance with relevant guidelines would be required to be prepared as part of the SSD Application.

7.4 Flooding

The Flood Planning Map identifies the site as being below the Flood Planning Level. However, the site is above the mapped 1% AEP (Annual Exceedance Probability) flood event. The Proposal will require a flood assessment as part of the SSD Application to ensure:

- The building has an appropriate minimum floor level that is consistent with the NSW Floodplain development manual;
- Basement car parking and services are protected from inundation in a range of flood events; and
- The development has minimal flood impact on adjoining properties and flow paths.

7.5 Traffic and Parking

Access to the subject site is currently via Gordon Street and Riding Land. Access for the Proposal is to be via Gordon Street. A transport and accessibility impact assessment will need to be prepared for the Proposal and will need to provide:

- impact of the Proposal on the local traffic network
- car and motorbike parking and bicycle storage and end of trip facility requirements
- adequacy of public transport, pedestrian and bicycle networks and infrastructure to meet the likely future demand of the proposed development
- details of any upgrading or road improvement works required to accommodate the proposed development
- the proposed access arrangements, including car and bus pick-up/ drop-off facilities, and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and bicycle networks, including pedestrian crossings and refuges and speed control devices and zones
- service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times)
- construction traffic impacts
- an assessment against relevant guidelines and controls.

7.6 Stormwater

The project would result in an increase in impervious surface therefore potentially increasing stormwater run-off. Capture, detention, treatment and disposal of stormwater will need to be assessed and designed in accordance with Council's Development Specification Design 0074 Stormwater Derange (Design). An assessment of the impacts on surface and ground water sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian land, and groundwater dependent ecosystems would need to be prepared. Mitigation measures proposed to reduce and mitigate any impacts would also need to be included in the assessment.

The assessment would also need to:

- Detail drainage associated with the Proposal, including stormwater and drainage infrastructure
- Detail measures to minimise operational water quality impacts on surface waters and groundwater.

7.7 Aboriginal Heritage and Non-Aboriginal Heritage

7.7.1 Aboriginal Heritage

A site inspection and meeting on Thursday, 21 March 2019 with Dr Morgan Disspain from Niche Environment and Heritage, Uncle Mark Flanders, Coffs Harbour and District Local Aboriginal Land Council and Simon Waterworth, GeoLINK. Matters discussed included the Proposal, the site and the surrounding locality and their Aboriginal Cultural Significance.

Two “flags” that are likely to trigger a full archaeological assessment including consultation with Aboriginal Groups and interested parties were identified. These are:

- Proximity to the Coffs Creek (within 200 m) which is known to have been used by Aboriginal People in the past
- Proximity to a known Aboriginal Camp (near Fitzroy Oval).

As such, Dr Disspain has concluded that a full Aboriginal Cultural Heritage Assessment (ACHA) is carried out for the Proposal. Niche have therefore been engaged to undertake an ACHA.

7.7.2 Non-Aboriginal Heritage

Although there are no listed items of Local Heritage on the subject site, an assessment of the local heritage significance of the existing buildings will be undertaken by a suitably qualified heritage practitioner to assess the history of the site, the current buildings situated on the site and any potential impacts on non-aboriginal cultural heritage.

7.8 Noise and vibration

The proposed development will adjoin largely commercial land uses. An acoustic and vibration assessment should be prepared by a suitably qualified and experienced practitioner to identify and provide a quantitative assessment of the main noise and vibration generating sources during construction and operation and outline measures to minimise and mitigate the potential noise impacts on surrounding occupiers of land.

7.9 Soils

7.9.1 Acid Sulfate Soils (ASS)

The site is located within land mapped as Class 4 acid sulfate soils. Given the likely amount of excavation work required for the Proposal, an ASS Management Plan is likely to be required.

7.9.2 Land Contamination

A full history of the site is not yet known. A report that assesses and quantifies any soil and groundwater contamination and demonstrates that the site is suitable for the proposed use will need to be prepared in accordance with SEPP 55. The assessment must address all relevant policies and guidelines including, but not limited to, “*Managing Land Contamination: Planning Guidelines - SEPP 55 Remediation of Land*” (DUAP).

7.9.3 Erosion, Sediment and Dust Controls

The proposed development will involve earthworks and soil disturbance. An Erosion, Sediment and Dust Control Plan should be prepared to demonstrate how erosion, sedimentation and dust impacts will be addressed throughout the construction phase.

7.10 Hazardous Materials

The Proposal will require the demolition of the existing buildings. These buildings could potentially contain hazardous substances such as asbestos and lead paint. Therefore, a hazardous materials survey should be prepared and lodged with the development application for the Proposal.

7.11 Waste

A Waste Management Plan will be required to identify, quantify and classify the likely waste streams to be generated during construction and operation, and describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.

8. Conclusion

On the basis that the Proposal meets the criteria identified in Schedule 1 Clause 13 of the State and Regional Development State Environmental Planning Policy, having a capital investment value of approximately $76.5 million, Coffs Harbour City Council formally request that the Department of Planning and Environment issue the Secretary's Environmental Assessment Requirements for the State Significant Development.

References

MYCOFFS Community Strategic Plan. Available: https://www.coffsharbour.nsw.gov.au/Your-Council/Contact-Us/Documents/Corporate%20Planning%20and%20Reporting/MyCoffs%20Community%20Strategic%20Plan.pdf

Creative Coffs – Community Strategic Plan 2017-2022. Available: https://www.coffsharbour.nsw.gov.au/Community-and-Recreation/Art-Culture-Events/Documents/ATT%202%20Creative%20Coffs%20-%20Cultural%20Strategic%20Plan%202017-2022%20V3%20CWSN%20130217.pdf

Precinct Analysis – Gordon Street Library & Gallery. Available: https://haveyoursay.coffsharbour.nsw.gov.au/27837/documents/62780

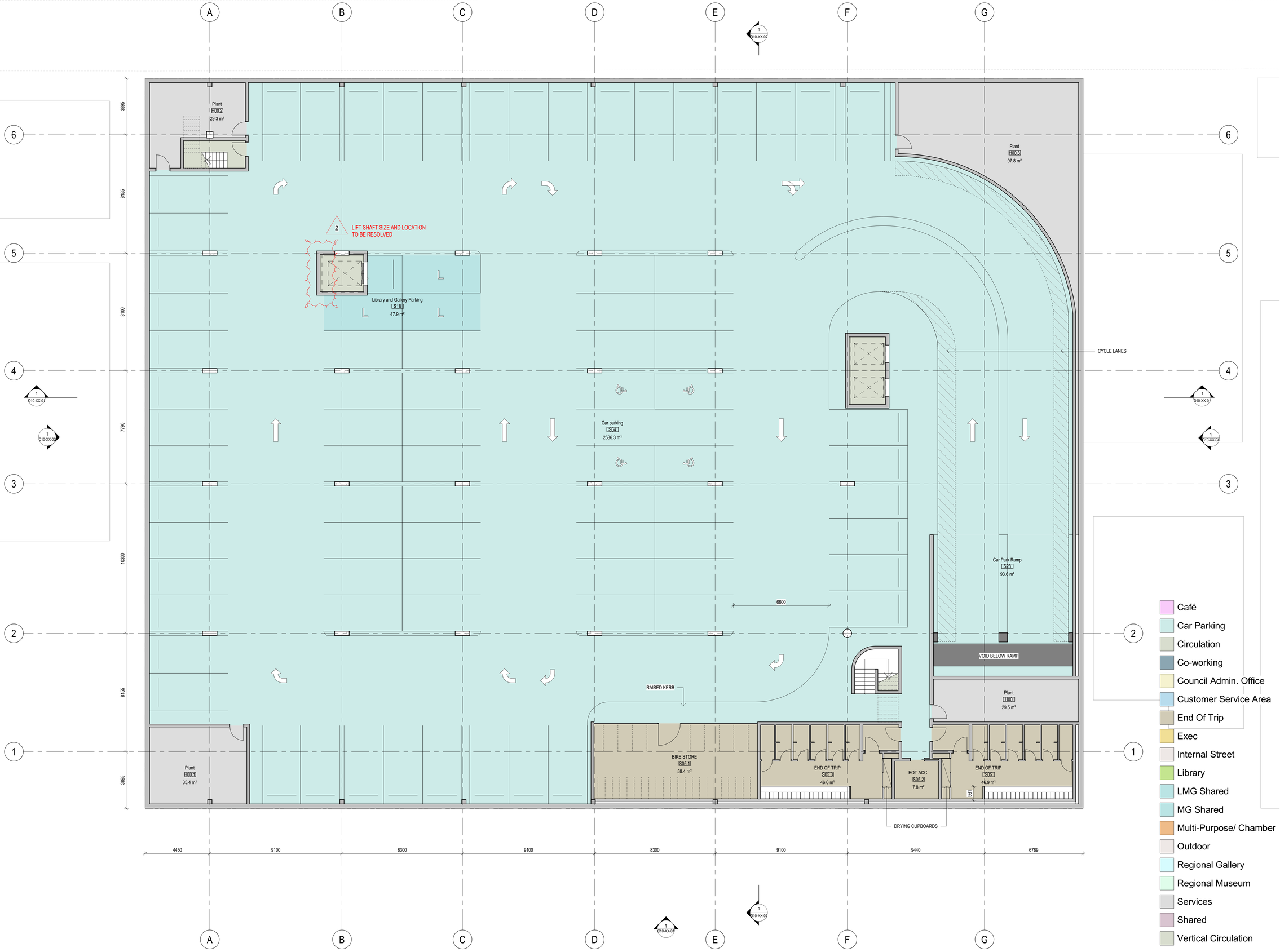
Review of Community Engagement 2018. Available: https://haveyoursay.coffsharbour.nsw.gov.au/27837/documents/79697

Cultural and Civic Space Project page https://haveyoursay.coffsharbour.nsw.gov.au/cultural-and-civic-space

Copyright and Usage

Appendix A

Concept Plans



BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3856 KEVIN O'BRIEN.

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	02/04/19	PRELIMINARY SCHEMATIC
2	11/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288

SERVICES ENGINEER
LCI
TEL +61 2 9257 0570

LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900

PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000

CLIENT
COFFS HARBOUR CITY COUNCIL

PROJECT
ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW

BVN PROJECT NUMBER
1812003.000

DRAWING KEY

TRUE NORTH PROJECT NORTH

GRAPHIC SCALE
0 2000 5000

SCALE
1 : 100@B1 DO NOT SCALE

STATUS
PRELIMINARY SCHEMATIC DESIGN

DRAWING
BASEMENT LEVEL FLOOR PLAN

AR-B10-B1-00 | ISSUE 2

C:\REVIT_LOCAL\2019\AR_1812003.000_CHCCS_BUILDING_2019_tim.crawshaw@bvn.com.au.rvt 11/04/2019 11:02:16 AM

BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3856 KEVIN O'BRIEN.

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	02/04/19	PRELIMINARY SCHEMATIC
2	11/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288

SERVICES ENGINEER
LCI
TEL +61 2 9257 0570

LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900

PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000

CLIENT
COFFS HARBOUR CITY COUNCIL

PROJECT
ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW

BVN PROJECT NUMBER
1812003.000

DRAWING KEY

TRUE NORTH | PROJECT NORTH

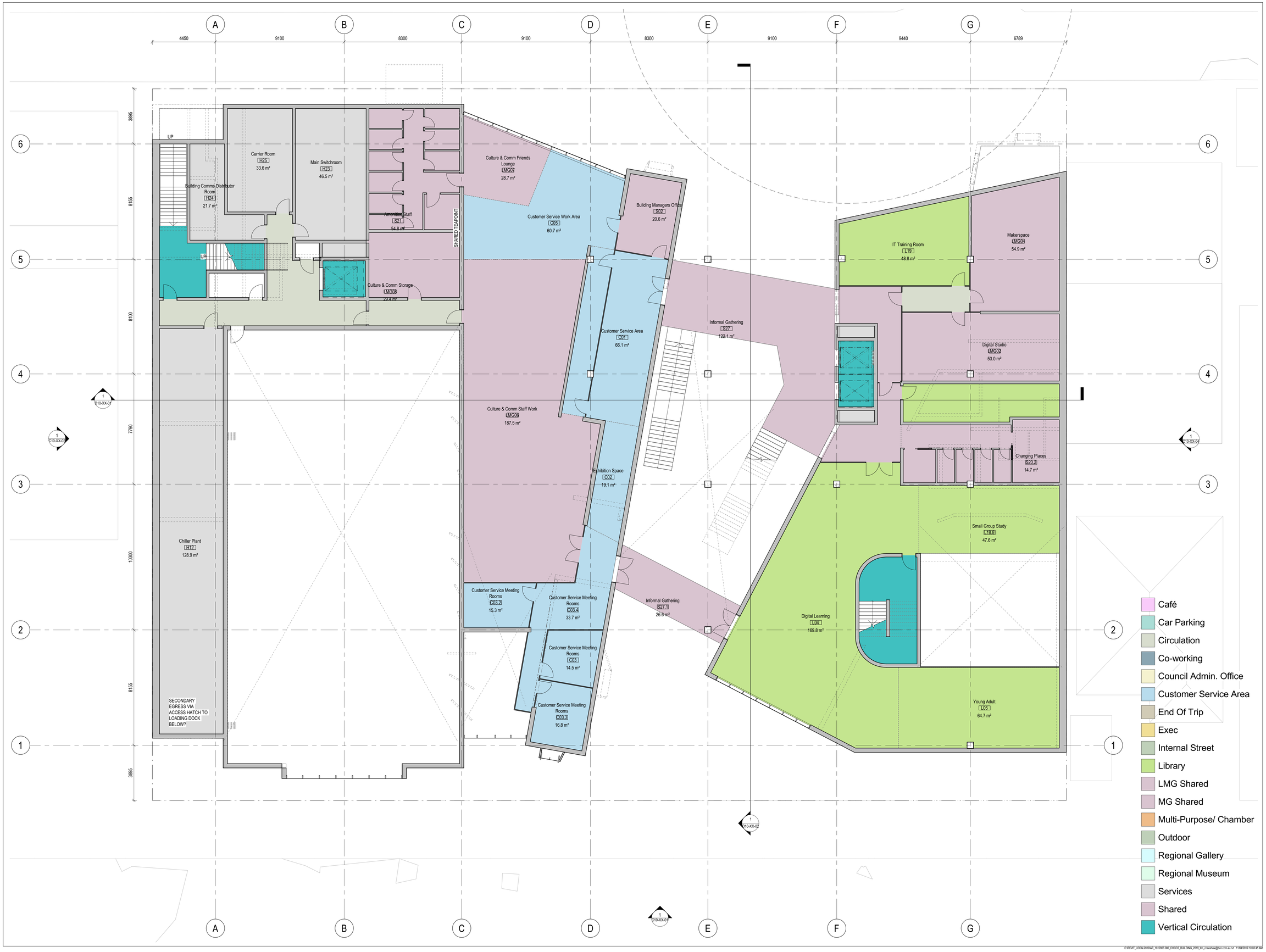
GRAPHIC SCALE
0 2000 5000

SCALE
1 : 100@B1 DO NOT SCALE

STATUS
PRELIMINARY SCHEMATIC DESIGN

DRAWING
GROUND LEVEL FLOOR PLAN

AR-B10-00-00 | ISSUE 2



BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3866 KEVIN O'BRIEN

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	02/04/19	PRELIMINARY SCHEMATIC
2	11/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288
SERVICES ENGINEER
LCI
TEL +61 2 9257 0570
LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900
PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000
CLIENT

COFFS HARBOUR CITY COUNCIL
PROJECT

ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW

BVN PROJECT NUMBER
1812003.000
DRAWING KEY

TRUE NORTH PROJECT NORTH
GRAPHIC SCALE
0 2000 5000
SCALE
1 : 100@B1 DO NOT SCALE
STATUS
PRELIMINARY SCHEMATIC DESIGN
DRAWING

LEVEL 01 FLOOR PLAN
AR-B10-01-00 ISSUE 2

BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3856 KEVIN O'BRIEN

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	02/04/19	PRELIMINARY SCHEMATIC
2	11/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288

SERVICES ENGINEER
LCI
TEL +61 2 9257 0570

LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900

PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000

CLIENT
COFFS HARBOUR CITY COUNCIL

PROJECT
ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW

BVN PROJECT NUMBER
1812003.000

DRAWING KEY

TRUE NORTH PROJECT NORTH

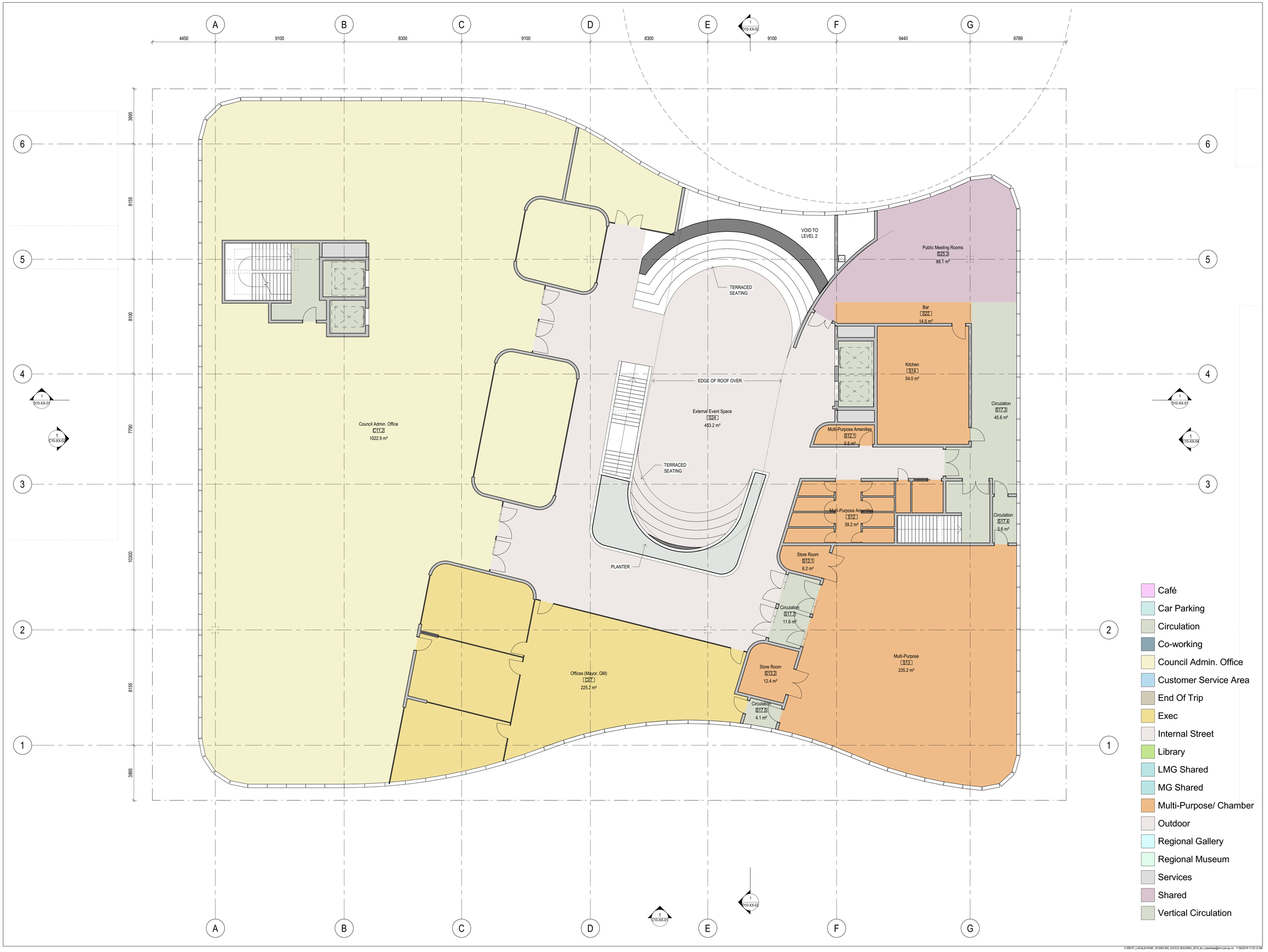
GRAPHIC SCALE
0 2000 5000

SCALE
1 : 100@B1 DO NOT SCALE

STATUS
PRELIMINARY SCHEMATIC DESIGN

DRAWING
LEVEL 02 FLOOR PLAN

AR-B10-02-00 ISSUE 2



BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3856 KEVIN O'BRIEN.

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	02/04/19	PRELIMINARY SCHEMATIC
2	11/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288
SERVICES ENGINEER
LCI
TEL +61 2 9257 0570
LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900
PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000
CLIENT

COFFS HARBOUR CITY COUNCIL
PROJECT

ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW

BVN PROJECT NUMBER
1812003.000
DRAWING KEY

TRUE NORTH PROJECT NORTH

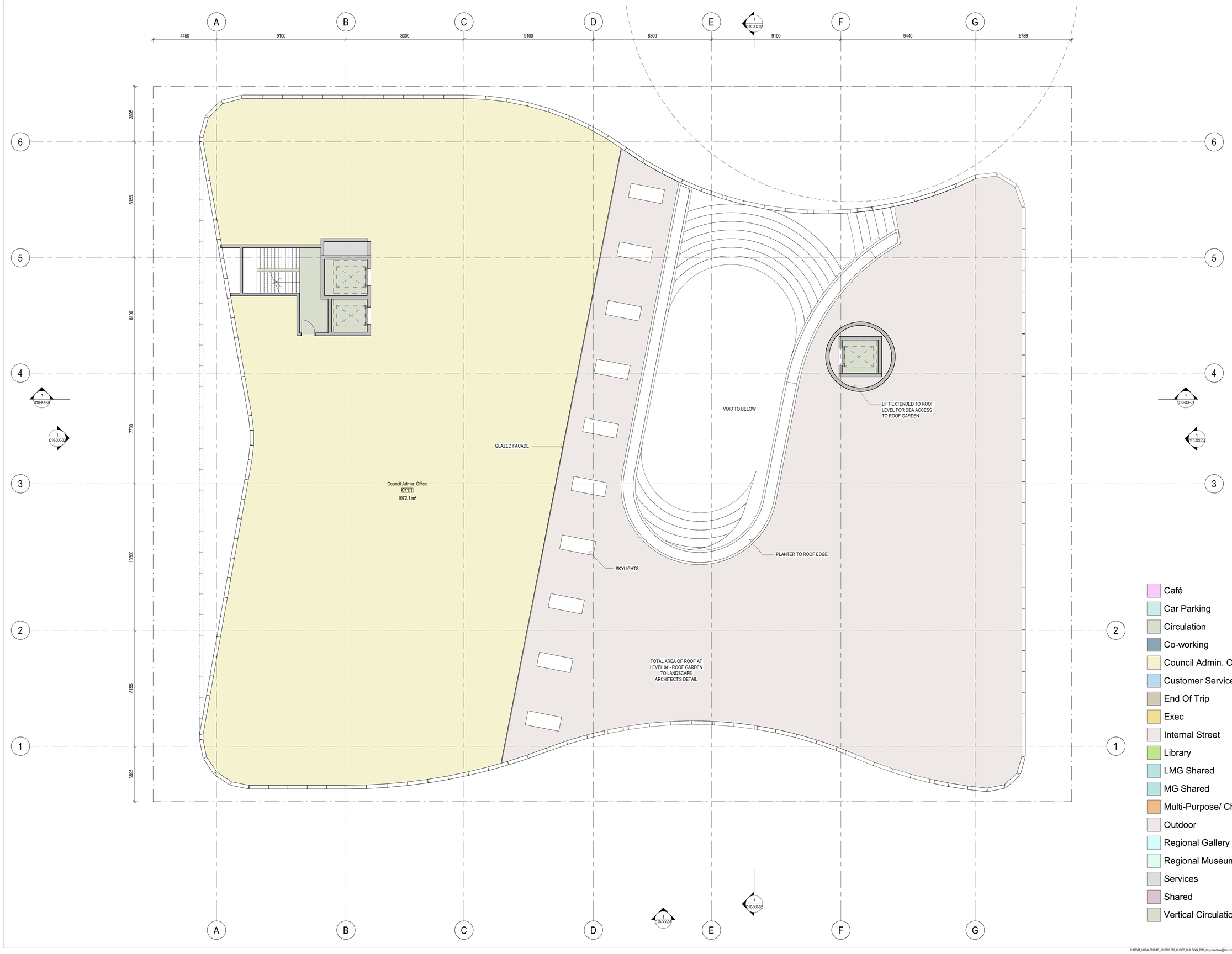
GRAPHIC SCALE
0 2000 5000
SCALE
1 : 100@B1 DO NOT SCALE
STATUS

PRELIMINARY SCHEMATIC DESIGN
DRAWING

LEVEL 03 FLOOR PLAN

AR-B10-03-00 ISSUE 2

C:\REVIT_LOCAL2019\AR_1812003.000_CHCCS_BUILDING_2019_bm_crawshaw@bvn.com.au.rvt 11/04/2019 11:03:12 AM



BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3856 KEVIN O'BRIEN.

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	02/04/19	PRELIMINARY SCHEMATIC
2	11/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288
SERVICES ENGINEER
LCI
TEL +61 2 9257 0570
LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900
PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000
CLIENT

COFFS HARBOUR CITY COUNCIL
PROJECT

ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW
BVN PROJECT NUMBER

1812003.000
DRAWING KEY

TRUE NORTH PROJECT NORTH

GRAPHIC SCALE
0 2000 5000
SCALE

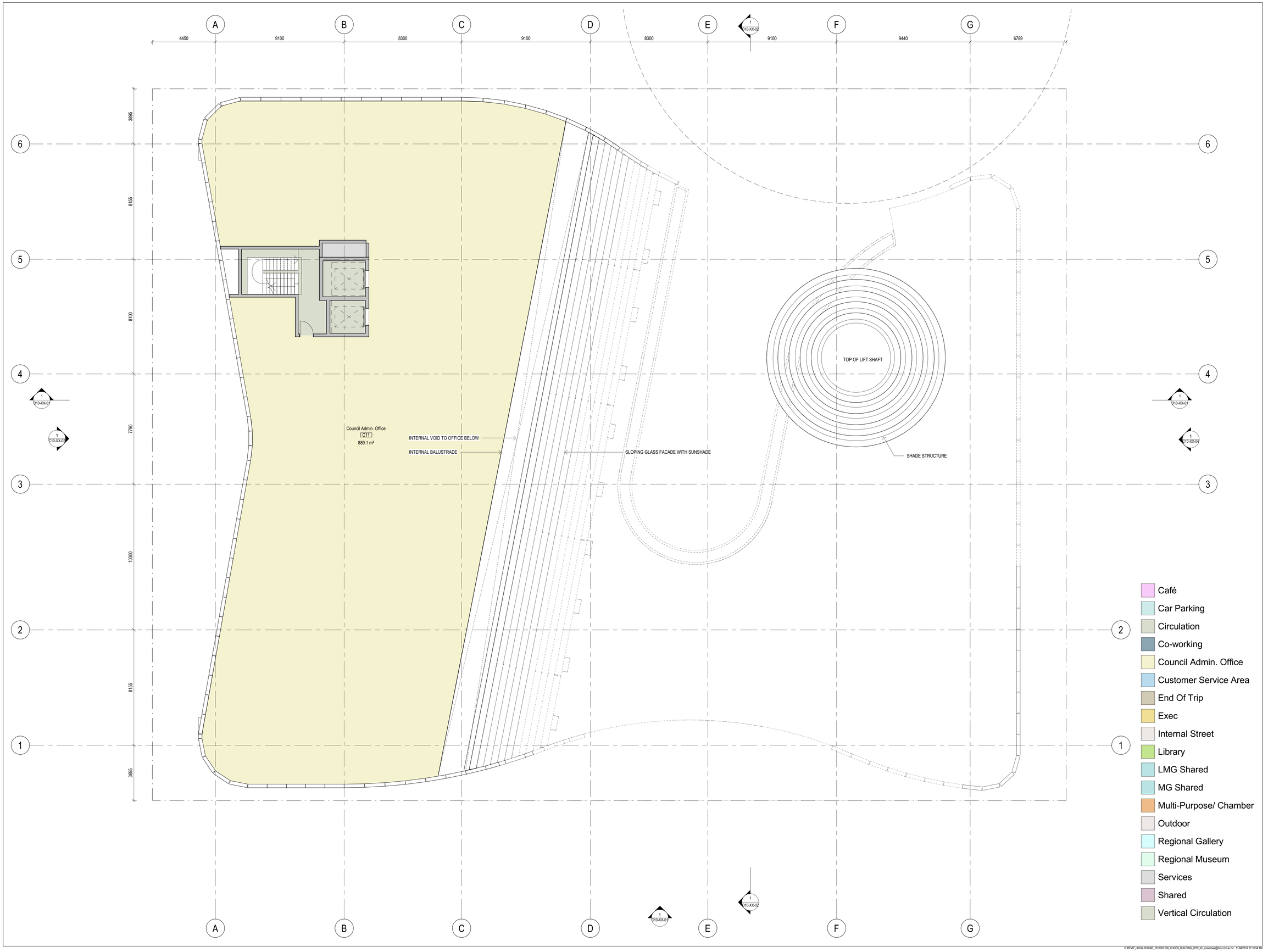
1 : 100@B1 DO NOT SCALE
STATUS

PRELIMINARY SCHEMATIC DESIGN
DRAWING

LEVEL 04 FLOOR PLAN

AR-B10-04-00 ISSUE 2

C:\REVIT_LOCAL\2019\AR_1812003.000_CHCCS_BUILDING_2019_bm_crawshaw@bvn.com.au.rvt 11/04/2019 11:07:46 AM



BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3856 KEVIN O'BRIEN.

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	02/04/19	PRELIMINARY SCHEMATIC
2	11/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288

SERVICES ENGINEER
LCI
TEL +61 2 9257 0570

LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900

PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000

CLIENT
COFFS HARBOUR CITY COUNCIL

PROJECT
ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW

BVN PROJECT NUMBER
1812003.000

DRAWING KEY

TRUE NORTH PROJECT NORTH

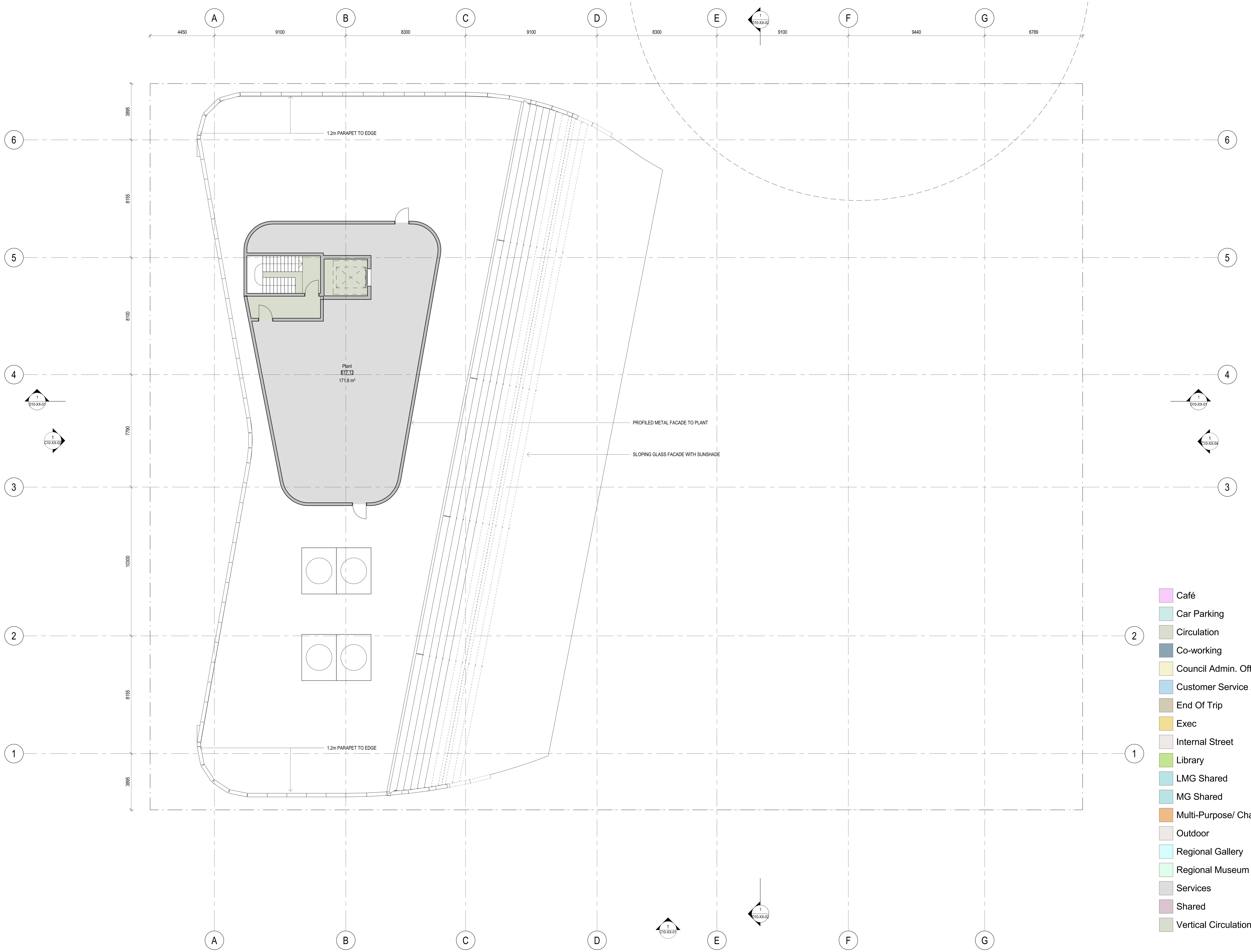
GRAPHIC SCALE
0 2000 5000

SCALE
1 : 100@B1 DO NOT SCALE

STATUS
PRELIMINARY SCHEMATIC DESIGN

DRAWING
LEVEL 05 FLOOR PLAN

AR-B10-05-00 ISSUE 2



- Café
- Car Parking
- Circulation
- Co-working
- Council Admin. Office
- Customer Service Area
- End Of Trip
- Exec
- Internal Street
- Library
- LMG Shared
- MG Shared
- Multi-Purpose/ Chamber
- Outdoor
- Regional Gallery
- Regional Museum
- Services
- Shared
- Vertical Circulation

BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3866 KEVIN O'BRIEN

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

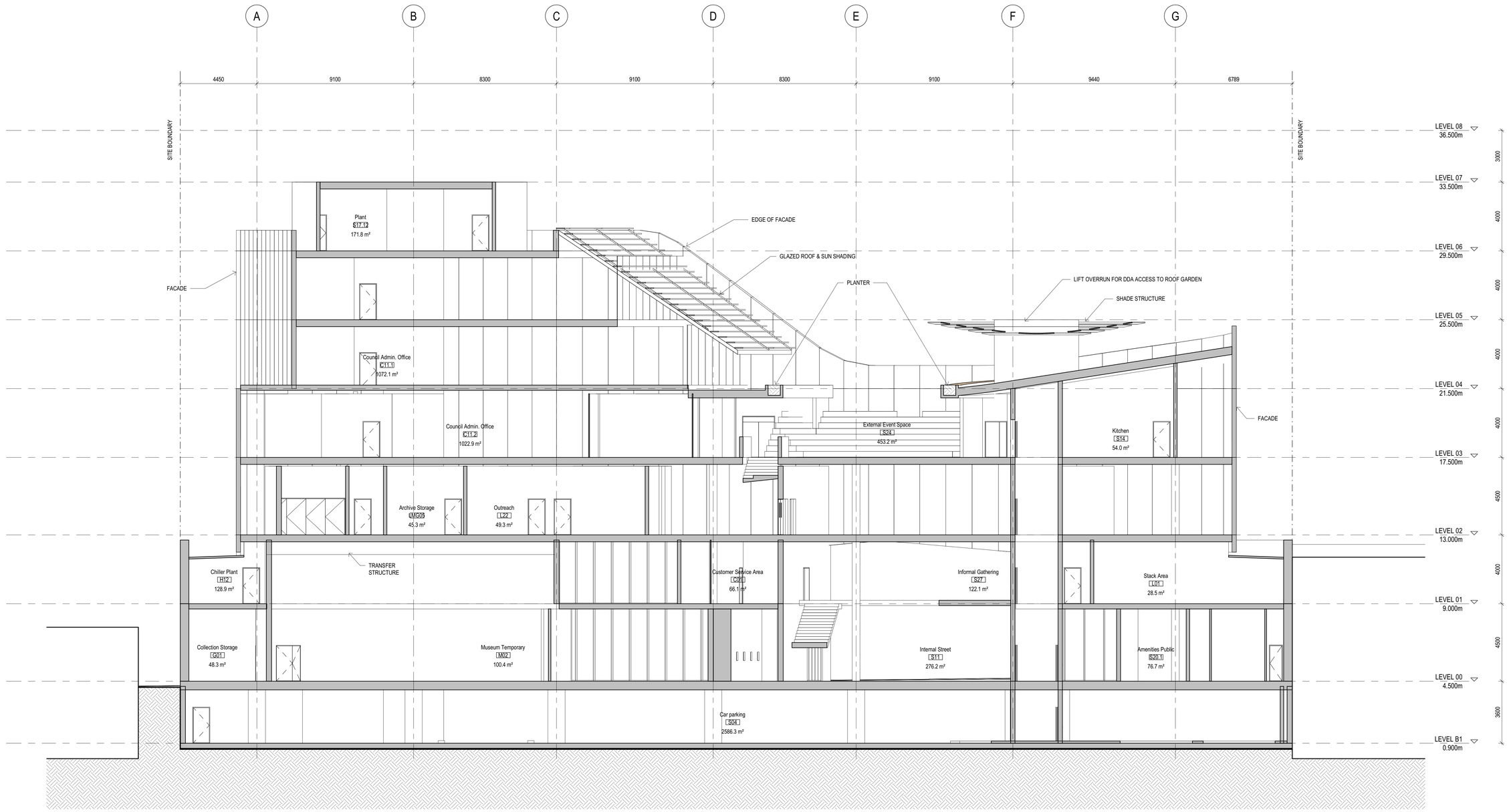
NOTE
CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	02/04/19	PRELIMINARY SCHEMATIC
2	11/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288
SERVICES ENGINEER
LCI
TEL +61 2 9257 0570
LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900
PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000
CLIENT
COFFS HARBOUR CITY COUNCIL
PROJECT
ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW
BVN PROJECT NUMBER
1812003.000
DRAWING KEY

TRUE NORTH PROJECT NORTH
GRAPHIC SCALE
0 2000 5000
SCALE
1 : 100@B1 DO NOT SCALE
STATUS
PRELIMINARY SCHEMATIC DESIGN
DRAWING
LEVEL 06 FLOOR PLAN
ISSUE
AR-B10-06-00 2

C:\REVIT_LOCAL2019\AR_1812003.000_CHCCS_BUILDING_2019_tim_crawshaw@bvn.com.au.rvt 11/04/2019 11:12:03 AM



BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3956 KEVIN O'BRIEN.

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	02/04/19	PRELIMINARY SCHEMATIC
2	11/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288

SERVICES ENGINEER
LCI
TEL +61 2 9257 0570

LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900

PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000

CLIENT
COFFS HARBOUR CITY COUNCIL

PROJECT
ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW

BVN PROJECT NUMBER
1812003.000

DRAWING KEY

TRUE NORTH PROJECT NORTH

GRAPHIC SCALE
0 2000 5000

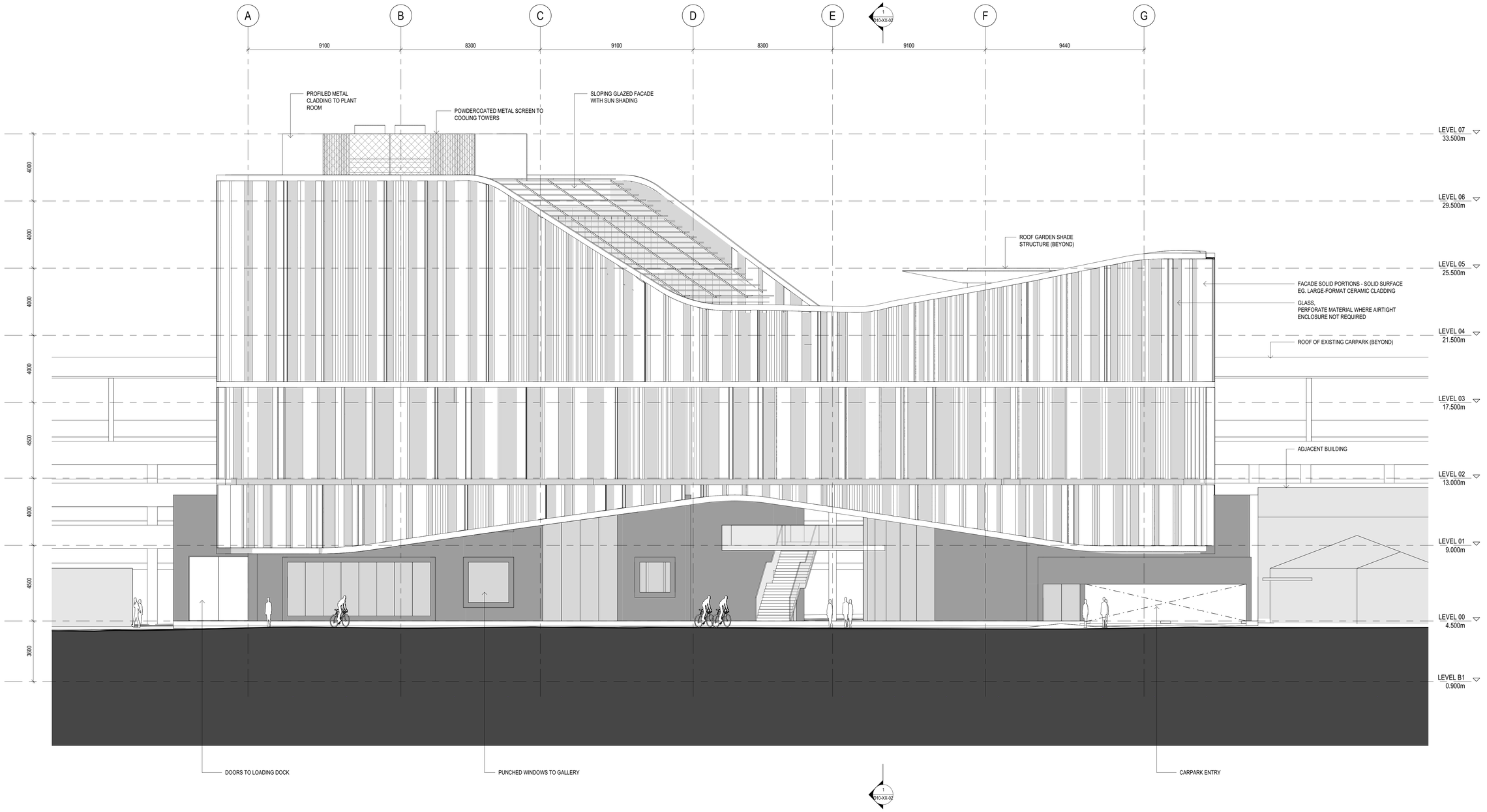
SCALE
1 : 100@B1 DO NOT SCALE

STATUS
PRELIMINARY SCHEMATIC DESIGN

DRAWING
SECTION N-S

AR-D10-XX-01 ISSUE 2

C:\REVIT_LOCAL2019\AR_1812003.000_CHCCS_BUILDING_2019_bm_crawshaw@bvn.com.au.rvt 11/04/2019 11:12:40 AM



BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3956 KEVIN O'BRIEN

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	12/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288

SERVICES ENGINEER
LCI
TEL +61 2 9257 0570

LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900

PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000

CLIENT
COFFS HARBOUR CITY COUNCIL

PROJECT
ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW

BVN PROJECT NUMBER
1812003.000

DRAWING KEY

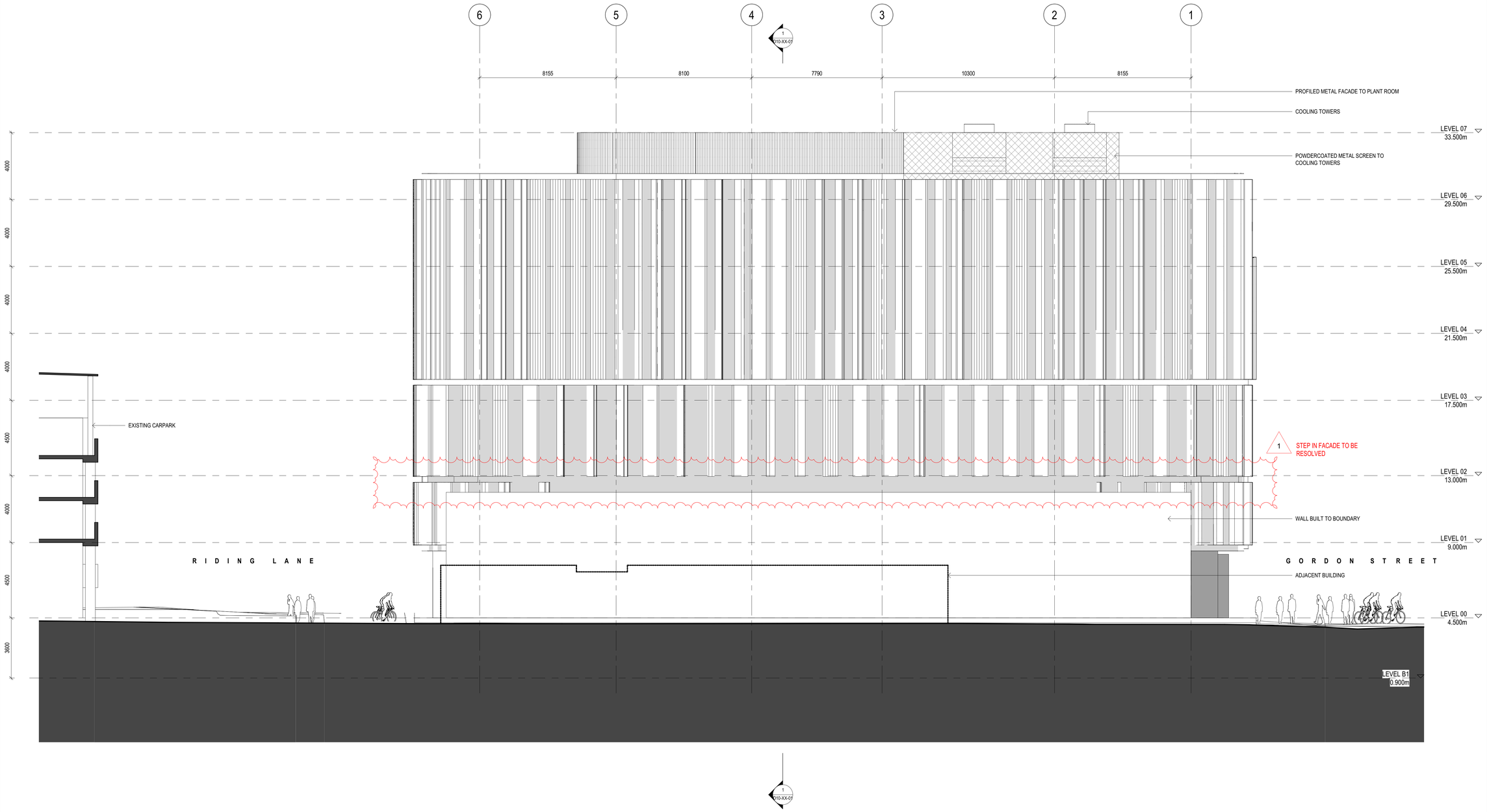
GRAPHIC SCALE
0 2000 5000

SCALE
1 : 100@B1 DO NOT SCALE

STATUS
PRELIMINARY SCHEMATIC DESIGN

DRAWING
GORDON ST ELEVATION

AR-C10-XX-01 | ISSUE 1



BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3956 KEVIN O'BRIEN.

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE
CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	12/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288
SERVICES ENGINEER
LCI
TEL +61 2 9257 0570
LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900
PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000
CLIENT

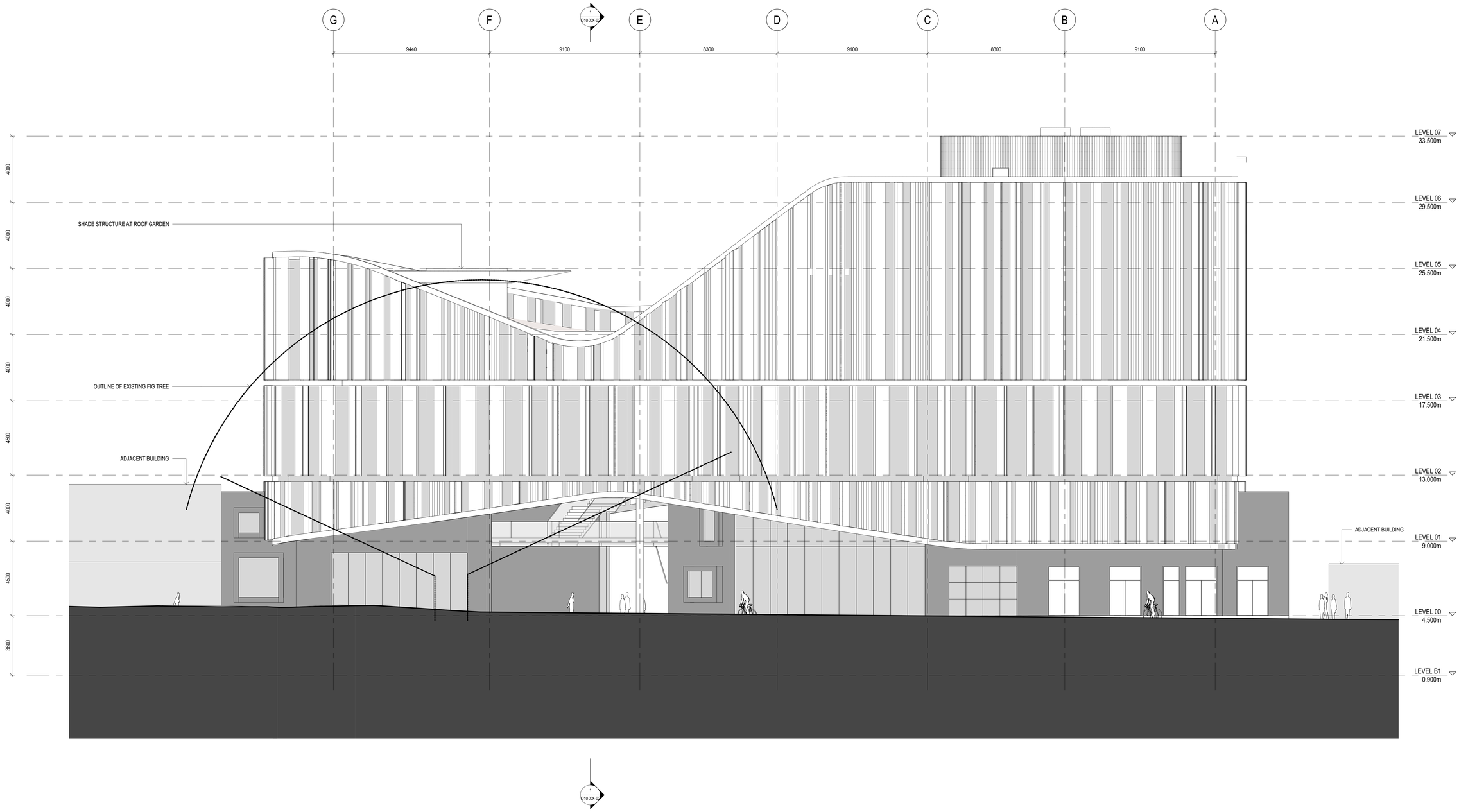
COFFS HARBOUR CITY COUNCIL
PROJECT

ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW
BVN PROJECT NUMBER
1812003.000
DRAWING KEY

GRAPHIC SCALE
0 2000 5000
SCALE
1 : 100@B1 DO NOT SCALE
STATUS

PRELIMINARY SCHEMATIC DESIGN
DRAWING

SOUTH ELEVATION
AR-C10-XX-02 | ISSUE 1



BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3956 KEVIN O'BRIEN.

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE
CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	12/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288
SERVICES ENGINEER
LCI
TEL +61 2 9257 0570
LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900
PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000
CLIENT

COFFS HARBOUR CITY COUNCIL
PROJECT

ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW

BVN PROJECT NUMBER
1812003.000
DRAWING KEY

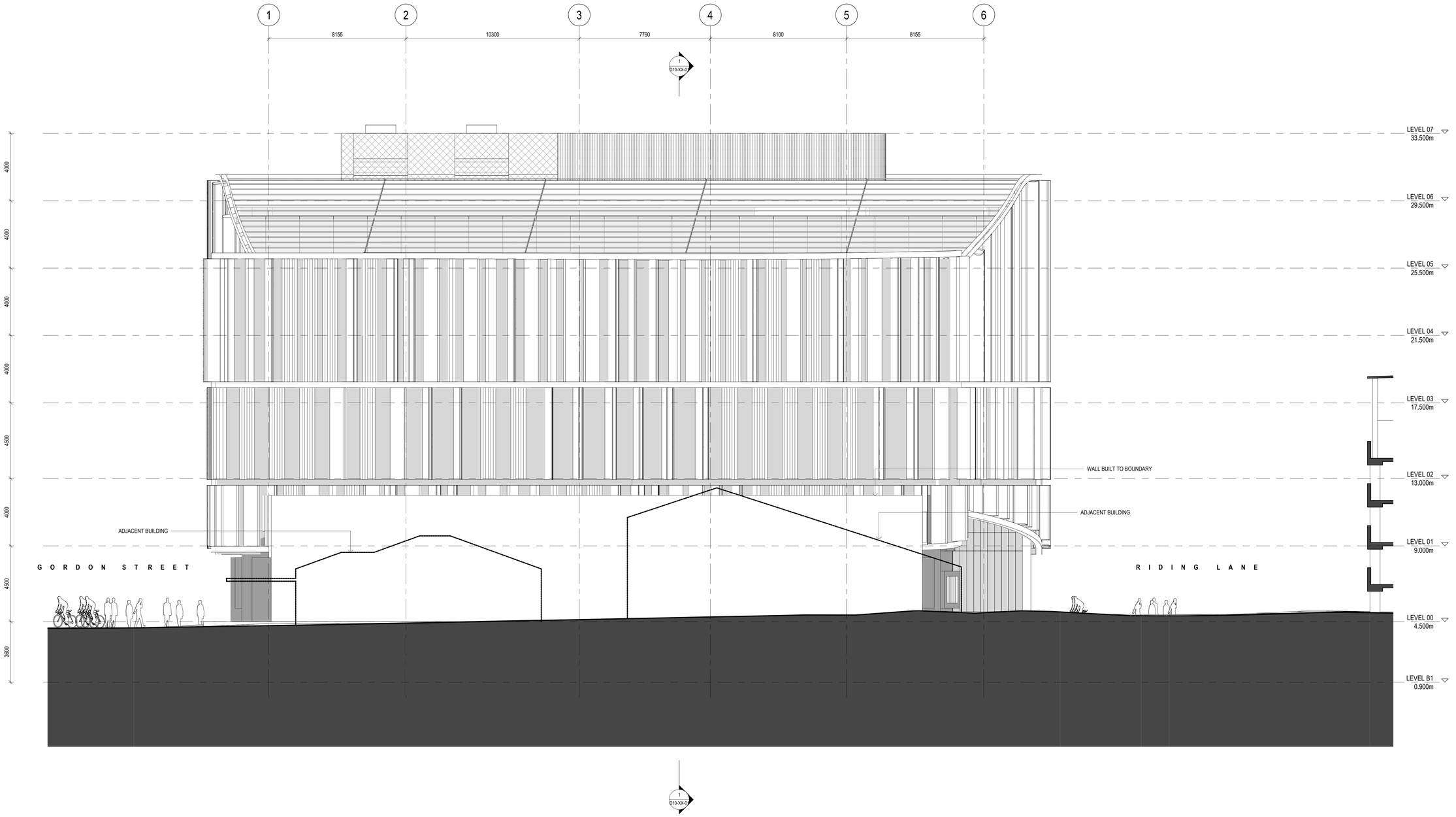
GRAPHIC SCALE
0 2000 5000
SCALE
1 : 100@B1 DO NOT SCALE
STATUS

PRELIMINARY SCHEMATIC DESIGN
DRAWING

RIDING LANE ELEVATION

AR-C10-XX-03 | ISSUE 1

C:\REVIT_LOCAL\2019\AR_1812003.000_CHCCS_BUILDING_2019_tim_crawshaw@bvn.com.au.rvt 12/04/2019 10:59:14 AM



BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3956 KEVIN O'BRIEN

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	12/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288

SERVICES ENGINEER
LCI
TEL +61 2 9257 0570

LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900

PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000

CLIENT
COFFS HARBOUR CITY COUNCIL

PROJECT
ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW

BVN PROJECT NUMBER
1812003.000

DRAWING KEY

TRUE NORTH PROJECT NORTH

GRAPHIC SCALE
0 2000 5000

SCALE
1 : 100@B1 DO NOT SCALE

STATUS
PRELIMINARY SCHEMATIC DESIGN

DRAWING
NORTH ELEVATION

AR-C10-XX-04 | ISSUE 1

Appendix B

BDAR Waiver Request

ABN 79 896 839 729
ACN 101 084 557

Return address:
PO Box 119
LENNOX HEAD
NSW 2478

LENNOX HEAD
T 02 6687 7666
F 02 6687 7782

COFFS HARBOUR
T 02 6651 7666

ARMIDALE
T 02 6772 0454

LISMORE
T 02 6621 6677

www.geolink.net.au

11 April 2019
Ref No: 3277-1017

The Secretary
Department of Planning and Environment
320 Pitt Street
SYDNEY NSW 2000

Attention: Rodger Roppolo

Dear Sir

Coffs Harbour Cultural and Civic Space – Request for waiver: Biodiversity Development Assessment Report (BDAR)

The proposed Coffs Harbour Cultural and Civic Space (CHC&CS) will include a Regional Gallery, Central Library, Regional Museum, multi-purpose meeting rooms, co-working space, shop, café, function space (including use as Council Chambers), customer service area, Council staff office accommodation and underground car parking.

The CHC&CS is a State Significant Development (SSD) and has an estimated Capital Investment Value of $76.5 million and comprises cultural, recreation and tourist facilities in accordance with Clause 14 of Schedule 1 of the State Regional Development State Environmental Planning Policy. As a SSD, the project is subject to biodiversity assessment requirements under the *Biodiversity Conservation Act 2016* (BC Act).

The BC Act requires that a SSD application must be accompanied by a BDAR unless the Secretary of the Department of Planning and Environment and the Chief Executive of the Office of Environment and Heritage determine that the proposed development is not likely to have any significant impact on biodiversity values. This determination is referred to here as a BDAR waiver.

The purpose of this letter is to request a BDAR waiver on the grounds that the proposed project is unlikely to have any significant impact on biodiversity values. The reason for this is that the site of the proposal occurs within highly disturbed urbanised land located within the centre of Coffs Harbour and does not contain any significant resources for threatened species or communities.

A detailed justification for the waiver is provide at **Attachment A**, which has been completed in accordance with *the Fact Sheet - Biodiversity development assessment report waiver determinations for SSD and SSI applications* (NSW Planning and Environment, November 2018).

We trust this information is satisfactory. Please contact the undersigned on (02) 6687 7666 if you require any further information.

Yours sincerely
GeoLINK

Ian Colvin
Senior Ecologist
Biodiversity Accredited Assessor (BAAS18055)

Attach: Attachment A - BDAR Waiver Request Information

Attachment A - BDAR Waiver Request Information

The following information addresses the information requirements set out in Tables 1 and 2 of the *Biodiversity development assessment report waiver determinations for SSD and SSI applications* Fact Sheet below.

Table 1. BDAR waiver request Information requirements

Information required	Response
General/admin	▪ Proponent: Coffs Harbour City Council ▪ Project ID: Coffs Harbour Cultural and Civic Space (PDA-621) ▪ Qualifications: This Table (and Table 2) have been prepared by senior ecologist Ian Colvin - Biodiversity Accredited Assessor (BAAS18055), with >15 years' experience as an ecological consultant
Site details	▪ Street Address: 23 – 31 Gordon Street Coffs Harbour. ▪ Formal property description: Lot 20 DP758258, Lot B DP346105 and Lot 123 DP 749233. ▪ Site description: flat land with various buildings and carparking areas. Vegetation is limited to ornamental planted shrubs and small tress within several small landscape areas. A mature ornamental fig (*Ficus microcarpa* var. *hillii*) occurs within Riding Lane adjacent to Lot 123 and overhangs the site. ▪ Location map: refer to **Illustration 1**. ▪ Site map: refer to **Illustration 2**.
Proposed development	▪ Project description: The CHC&CS will include a Regional Gallery, Central Library, Regional Museum, multi-purpose meeting rooms, co-working space, shop, café, function space (including use as Council Chambers), customer service area, Council staff office accommodation and car parking. ▪ Site Plan: refer to **Figure 1**.
Impacts on biodiversity values	▪ Refer to **Table 2** (below). ▪ It is noted that the project will require the removal of all existing vegetation from the site.

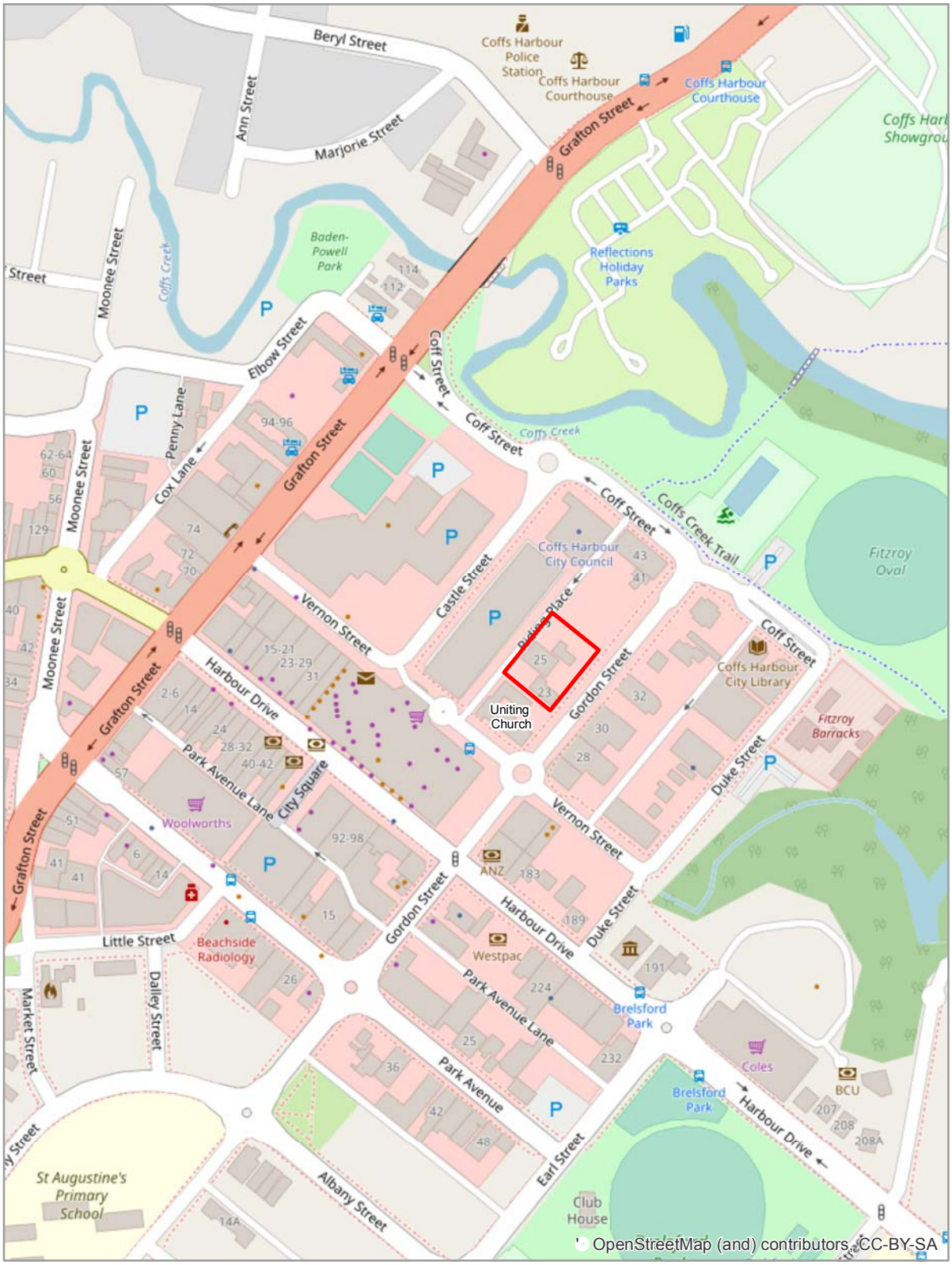
Table 2. Impacts of the proposed development on biodiversity values

Biodiversity value	Relevant	Comment
Vegetation abundance - 1.4(b) BC Regulation	✓	Vegetation at the site is limited to orientally planted landscape trees and gardens within an urban/commercial context. Tree/ shrub species are limited to isolated feature trees of Common Lilly Pilly (*Acmena smithii*) and Tulipwood (*Harpullia pendula*) with ornamental Hibiscus (*Hibiscus* sp.) in garden beds. Garden beds comprise non-native ornamentals such as Chinese Star Jasmine (*Trachelospermum jasminoides*) and Crucifix Orchid (*Epidendrum* sp.). Grassland in the northern portion of the site comprises a mown lawn dominated by introduced grasses such as Bahia Grass (*Paspalum notatum*) and Buffalo (*Stenotaphrum secundatum*). No naturally occurring native vegetation occurs. Ongoing management of the site (mowing, weed control) ensures that the site has no potential for native vegetation regeneration over time. The project will require the removal of all existing vegetation from the site. The ornamental fig at the rear of the site will be retained in-situ. An arborist assessment of the proposal (Hartley 2019) concluded that the proposal would result in the loss of roots that are currently growing within the building footprint and that a number of branches would need to be pruned. The report considered that the extent of impacts could be readily managed. Hill's Fig is not native to NSW. Retention of the limited native vegetation at the site is not possible due to construction requirements for the project.
Vegetation integrity 1.5(2)(a) BC Act	✓	The site comprises planted landscaping trees and mown lawn within a highly modified environment. Isolated trees do not form a consolidated community and no structural complexity is present.

Biodiversity value	Relevant	Comment
Habitat suitability *1.5(2)(b) BC Act*	✓	Habitat for threatened species or communities is absent from the site. This is due to the lack of native vegetation and significant modification of the site. Comment is made with regard to the following habitats of threatened species or ecological communities: i. *karst, caves, crevices, cliffs and other geological features of significance:* These features are absent from the site. ii. *rocks*: Absent from the site (with the exception of gravel in the carpark). iii. *human made structures*: The four buildings at the site are well maintained and do not provide entry holes are design features which provide significant features for threatened fauna (e.g. refuge or roost habitat). iv. *non-native vegetation*: ornamental landscape species occur infrequently and have no value for threatened species habitat. The proposal will not substantially change the existing situation at the site in terms of noise, human presence, traffic volumes or light such that any adverse impacts to flora or fauna would occur.
Threatened species abundance *1.4(a) BC Regulation*		No habitat for threatened species or communities occurs. The proposal will not substantially change the existing situation at the site in terms of noise, human presence, traffic volumes or light such that any adverse impacts to flora or fauna would occur. Pruning works on the adjacent ornamental fig would be completed during daylight hours and would have no potential to impact foraging flying-foxes (including the Grey-headed Flying-fox). Pruning works are unlikely to significantly reduce the availability of resources for flying-foxes in the locality.
Habitat connectivity *1.4(c) BC Regulation*	n/a	The site has no connectivity to any adjacent habitats. The proposal would not have any impacts on fauna dispersal nor would it establish any barriers to fauna movement or migration.
Threatened species movement *1.4(d) BC Regulation*	n/a	Refer above.
Flight path integrity *1.4(e) BC Regulation*	n/a	Due to the lack of biodiversity features at the site, and the absence of any significant resources, there is unlikely to be any disruption to fauna flight paths. The risk of window strike or fauna collision is unlikely to differ from the current situation.
Water sustainability *1.4(f) BC Regulation*	n/a	No water bodies occur. Surface water generated by the proposal would be directed into existing stormwater systems.

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: SJW Date: 09/04/2019
Source of base data: OpenStreetMap



LEGEND

Proposed Cultural and Civic Space boundary

0 100

Location Map

Drawn by: AB Checked by: RE Reviewed by: SJW Date: 09/04/2019

Information shown is for illustrative purposes only

Source of base data: DFS&I and CHCC

LEGEND

- Proposed Cultural and Civic Space boundary
- Cadastre
- Overhanging Ornamental Fig

0 10

Site Map

FIGURE 1: SITE PLAN

BVN

QLD ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
1595 MARK GRIMMER
2709 BRIAN DONOVAN
3856 KEVIN O'BRIEN

Telephone +61 7 3852 2525
Facsimile +61 7 3852 2544
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	02/04/19	PRELIMINARY SCHEMATIC

STRUCTURAL ENGINEER
TTW
TEL +61 2 9439 7288
SERVICES ENGINEER
LCI
TEL +61 2 9257 0570
LANDSCAPE ARCHITECT
URBIS
TEL +61 2 8233 9900
PROJECT MANAGER
TURNER & TOWNSEND THINC
TEL +6 2 8245 0000
CLIENT

COFFS HARBOUR CITY COUNCIL
PROJECT

ALL WELCOME
GORDON STREET
COFFS HARBOUR, NSW

BVN PROJECT NUMBER
1812003
DRAWING KEY

TRUE NORTH PROJECT NORTH

GRAPHIC SCALE
0 10000 25000

SCALE
1 : 500@B1 DO NOT SCALE

STATUS
PRELIMINARY SCHEMATIC DESIGN
DRAWING

LOCATION PLAN

	ISSUE
AR-A10-XX-01	1

C:\REVIT_LOCAL\2019\BR_1812003.000_CHCCS_BUILDING_2019_KFIELD.rvt 2/04/2019 6:35:37 PM

Appendix C

Preliminary Arborist Assessment

Arborist Network

Connecting people and trees™

Preliminary Tree Assessment report

Site Address: Gordon St and Riding Lane

Coffs Harbour NSW

Prepared For: Ken Welham
Coffs Harbour City Council
2 Castle Street
COFFS HARBOUR NSW 2450

Prepared On: 29th January 2019

Report Number: CD2008

Prepared By: **Mark Hartley**
Senior Consulting Arborist- AQF Level 8
Grad Cert Arboriculture (1st Class Honours)
Dip Hort (Arboriculture) with Distinction
Dip Arboriculture, Dip Horticulture
LMAA; LMISA; LMIPS
ISA Certified Arborist WC-0624 (since 1990)
Registered Consulting Arborist™ #0005
ISA Tree Risk Assessment Qualified
Registered QTRA user (No. 807)
Member - Society of Risk Analysis Australia & NZ

Prepared on behalf: **The Arborist Network**
58 South Creek Road
Shanes Park NSW 2747
Phone (+612) 9835 1234
Email: *reports@arboristnetwork.com.au*

Table of Contents

Copyright Release

Executive summary

The client is proposing a major redevelopment to the east of a large tree that is of high value to the community. The community has expressed the view that the tree should be retained and kept healthy. The tree is a comparatively mature Hill's Weeping Fig growing in an opening between a concrete driveway, parking bays and access way, and a one-way lane.

The works involve the construction of a new building that will have basement parking and will vary between 3 and 5 storeys above ground. Construction will occur closer than the Indicative Tree Protection Zone suggested by the Australian Standard AS4970 – 2009 *Protection of tree of development sites.* This places a burden on this report to demonstrate that the tree will remain viable. This report achieves this outcome by considering the proposed works against similar projects and against the even greater impact associated with transplanting trees of this size and species.

While the proposed works are likely to have an impact on the tree, the extent of the impact can be readily managed without unduly impacting on the proposed works. Managed well, the proposed works have the potential to result in an improvement in the trees health and longevity.

Brief

The author has been asked to:

- visit the site,
- assess existing site conditions,
- assess the current health of the tree,
- undertake a Preliminary Tree Assessment,
- assess and discuss the impact of the proposed development on the tree,
- provide some generalised guidelines and input to assist the design team.

Information Provided

The client has advised that:

- the proposed development to the east of the tree involves three to five stories above ground and several levels of basement parking
- the long-term retention of the tree in a healthy and structurally sound condition is an essential outcome of the proposed works.

Plan Name	Drawn By	Date
Detail Survey	Blairlanskey Surveys	January 2018

Method

A site inspection was carried out on the 11th January 2019 and the site related observations contained in this report arise from the inspection on that date. This report follows the basic process outlined in the Australian Standard AS4970-2007 *Protection of trees on development sites* (the Standard) for undertaking a Preliminary Tree Assessment.

The tree was inspected from the ground and involved inspection of the external features only. A **V**isual **T**ree **A**ssessment (**VTA**)[1,2] was performed. The inspection did not include any invasive, diagnostic or laboratory testing.

The identification of the tree was made on broad the features visible from the ground at the time of inspection. It was not based upon a full taxonomical identification or comparison against a herbarium specimen.

[1] **VTA** – Visual Tree Assessment, as referenced below, is a systematic inspection of a tree for indicators of structural defects that may pose a risk due to failure. The first stage of this assessment is made from ground level and no aerial inspection is undertaken unless there are visual indicators to suggest that this is merited. Details of the visual indicators are contained in *The Body Language of Trees* by Mattheck & Breloer (1994). The use of a Visual Tree Assessment is widely used and standardised approach. Invasive and other diagnostic fault detection procedures will generally only be recommended when visual indicators of potential concern are observed.

[2] **Mattheck, C & Breloer, H** 1994 *Field guide for visual tree assessment (VTA),* Arboriculture Journal 18:1-23

Observations

The tree is a comparatively mature and healthy Hill's Weeping Fig (*Ficus microcarpa* var. 'Hillii".) or commonly referred to as a Hill's Fig. It has a relatively upright multi-stemmed form with several included junctions[3] typical of this species.

The tree has a trunk diameter of approximately 1.8 metres and has a canopy spread of approximately 30 metres. The canopy was full although one small portion of the upper canopy being somewhat sparse. There were numerous short areal roots throughout the tree. The surface roots diminished in number and size the further they got from the buttress.

The tree is in an opening approximately 5.5 metres wide east to west and proximately 6 metres north to south. There is what appears to be a concrete pit to the south of the tree. The trunk is close to the north eastern corner of the opening and the roots and buttress of the tree has displaced the adjacent kerb.

The site is relatively flat. There is a parking station to the east and a large portion of the area under the canopy of the tree is hardstand.

While no soil tests were available, the surface soil appeared to be a sandy loam. The results of eSpade tests in the area suggest that the soils are strongly profiled and tend to be a silty clay loam over progressively coarser material.

[3] An included junction (also called an incision, or included branch, or bark inclusion) is usually formed when the angle between the stem and a branch or between two stems is acute (usually less than 25^{O}). This acute angle can result in the bark being pinched between the two parts causing the localised death of the tissue. This means that there is a loss of connectivity when compared with the ideal junction.

Where an inclusion results in insufficient strength a healthy tree will compensate for this by producing extra tissue at the side of the join. This adaptive growth by the tree usually results in an attachment that is more than adequate in normal weather conditions. However, it is more likely to be the weakest point and thus fail during severe loading (usually inclement weather). Trees that are severely loaded and that don't have inclusions will usually have parts fail further away from the junction.

Discussion

The importance of trees to local community groups and the particular importance of this tree means that this report needs to provide information for a number of different audiences. It needs to assure the Council and the community that the tree can be retained and how that can be achieved. It must also inform the client and the design team about the basic principles and concepts that need to be considered in the design process. This also means that the report must contain both informative or educational content as well as prescriptive content.

General matters

The species well distributed throughout the Asia Pacific tropical regions. The variety is native to tropical Queensland and its identity was first published in 1891[4] suggesting that the variety was discovered in the late 1800's. Coffs Harbour is well out of the range of this variety.

Fig trees are fertilised by wasps. Most species of figs having their own unique pollinating species. Hill's Fig is pollinated by *Eupristina verticillata.* This wasp is only just reaching the Brisbane region. As a result, it is almost certain that this specimen has been planted.

Given the soil type and climactic conditions of the area, the history of the species and comparing the tree with other trees of the same species I would estimate the tree to be at least 70 years old and no older than 140 years.

The proposed basement works will result in the loss of roots that are currently growing within the building footprint. In addition, the construction of the above ground portion means that a number of branches need to be pruned to provide clearance between the building and the

This species of tree is very tolerant of construction activities and this often leads to this species being transplanted[5] when it is in the way of development.

There seems to be some uncertainty about the soil type that may be present near the tree. This uncertainty will be resolved by a geotechnical report. If this hasn't already been performed it may be appropriate to consider obtaining a chemical analysis of the soil at the same time.

Tree protection and the standard

The Australian Standard AS4970 – 2009 *Protection of trees on development sites* (the Standard) is commonly used to provide guidance on tree protection on sites such as this. It must be understood that this standard is largely informative in its nature and not normative. This means that much of the standard is not intended to be prescriptive but rather to provide guidance.

The standard suggests an Indicative Tree Protection Zone (TPZ) with a radius of 12 times the Diameter at Breast Height (DBH) of the tree. Furthermore, it allows for an incursion of 10% of the area provided that the same area lost by the encroachment can be provided contiguously

[4] **Bailey FM** 1891 Botany Contributions to the Queensland Flora. *Botany Bulletin.* Department of Agriculture, Queensland

[5] https://www.youtube.com/watch?v=886fm8ihgDU

to the TPZ. If this can be achieved and the TPZ enclosed as outlined in the standard, then an Arboricultural Impact Assessment is not required.

In short, the standard suggests that if a setback between the works and the tree can be kept to twelve times DBH (and only a minor incursion is required), then no further arboricultural input is required other than enclosing this area.

Fortunately, the standard makes clear in section 3.3.4 that major encroachments are permissible. In this situation, it is the role of the project arborist to "demonstrate the tree will remain viable," and this is where an arborist's skills, knowledge, and experience is required.

It should be noted that, for a good reason, 3.3.4 accepts a possible encroachment into the "*indicative Structural Root Zone*" (SRZ). There are many arborists, for example, who have seen significant damage occur within the SRZ of a tree and have seen the tree flourishing decades later.

To assist the reader a few supporting images of significant encroachments have been included as Appendix 2. While it could be argued that these are exceptions to the rule this is not the case. This report does not suggest that trees are generally tolerant of complete abuse and neglect. Rather, it suggests that trees are living organisms, like humans, that can deal with significant trauma and survive provided they receive appropriate care.

Perhaps the best example of tree trauma and survival is bonsai. Here both roots and canopy are hacked, the stems are injured, and decay promoted, and the soil volume is severely limited. In spite of this, the net effect is that the life expectancy of the bonsaied tree is often better than its non-bonsaied counterpart.

AS4970 and the Structural Root Zone

Amongst other things, the standard provides an algorithm to determine the SRZ. The SRZ algorithm is based on a data set of trees that failed and does not consider the trees that did not fail. It does not consider the support of any remaining roots outside the SRZ. Likewise, it does not consider the impact of root morphology or the distribution of roots.

The function of the indicative SRZ provided in the Standard is to alert the assessor to the possibility that the works may be impacting on roots that provide structural support. It is important to note that the standard does not prohibit works occurring within the SRZ. In fact, 3.3.4 of the standard states "*If the proposed encroachment is… inside the SRZ … the project arborist must demonstrate that the tree(s) would remain viable*". The standard continues in 3.3.6 to state, "*There are many factors that affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture).*"

The particular algorithm provided in the Standard is based on an unpublished field study with an unknown method (Mattheck 1994, p 95 & 187)[6]. The data produced by the field study used to derive the algorithm involved trees that failed (Mattheck 1994, pp 83, 84) but we remain uninformed about the conditions under which failure occurred or what other factors may have contributed to the failures.

[6] **Mattheck, C. Breloer, H** 1994, *The body language of trees: a handbook for failure analysis*, Her Majesty Safety Office, London

It has been suggested by numerous authors that cutting three times trunk diameter from the base of a tree will seldom have any long-term impact on a tree. In saying this, it is assumed that a modicum of aftercare will be provided to assist the tree.

Smiley (2008[7], 2017[8]) and others have taken a more methodical approach which has involved progressively cutting root plates and looking for changes in the forces required to adjust the angle of the stem.

It is interesting to note that unlike Mattheck, Smiley found that trees with different root morphologies were affected differently by the same extent of root cutting. Most importantly, Smiley (2017) demonstrated that cutting in a straight line three times trunk diameter from a tree had little effect on tree stability regardless of root morphology. However, depending on the root morphology, cutting in a straight line as close as one times trunk diameter had little effect on trees with a more vertical root system.

From an anatomical perspective, roots that are constantly providing structural support for a tree must be located closest to the trunk. To provide support, these roots have a higher percentage of lignified tissue. At the same time because they are closest to the trunk, they also have the highest volume of water-conducting tissue (vessels).

For structural roots to perform the above functions, and for the support system to grow over time, means that these roots need to rapidly increase in taper as they get closer to the trunk. This gives rise to the term Zone of Rapid Taper (ZRT). Wilson (1964)[9] states that the ZRT is usually within two metres of the trunk of a large tree.

Horizontal roots can usually be cut up to the zone of rapid taper (Hamilton 1989)[10]. Hamilton advises that caution should be exercised when cutting large sinker roots close to the tree. However, based on Smiley (2017), excavation is not likely to cause a structural issue for most trees if it occurs as close as two to three times trunk diameter away from the tree, provided that the excavation is limited to one side only.

Hamilton summarises the situation as follows:

Severe root pruning of landscape trees does not adversely affect the value of the tree to the general public. Growth reduction and unacceptable appearance from root severance can be of a relatively short duration if the tree has strong vigour and vitality. Trees re-establish their root-shoot balance by enhancing root generation at the expense of shoot growth. With the development of new roots, water imbalances in the tree improve and photosynthesis and shoot growth rates increase

[7] **Smiley ET**, 2008 *Root Pruning and Stability of Young Willow Oak* Arboriculture & Urban Forestry 2008. 34(2):123–128.

[8] **Smiley ET**, 2017 *Root and stem cutting and its impact on tree stability* Proceedings of Arboriculture Australia May 2017 Canberra

[9] **Wilson B**, 1964 *Structure and growth of woody roots of Acer rubrum L*. Harvard Forest Paper 11 Harvard University Petersham, MA

[10] **Hamilton WD,** 1989 Significance of Root Severance on Performance of Established Trees, Arboricultural Journal, 13:3, 249-257

Management of the impact for the long term

The loss of roots and some area of infiltration will have an impact on the tree. Ideally this impact should be compensated for as a part of the design process. The easiest and most obvious compensation is to capture some of the stormwater from the new structure and to uses this to provide supplementary irrigation for the tree.

An equally desirable goal in the design process would be to increase the infiltration around this tree. This can be done, for example, by moving the curb further from the tree, or deleting one or more car parking space or a driveway or by altering the finished surface under the canopy of the tree.

Caution needs to be exercised when looking at the use of porous surface. While many of these systems function appropriately, they often require considerable excavation and, in this instance, excavation may damage roots. On the other hand, systems that can be installed on the existing grade may not be suitable for commercial applications. In addition, care needs to be exercised when removing existing surfaces to prevent damage to any roots that may be just below the surface.

There is the potential for an included stem to fail at some stage in the future. Although this unlikely it would to some extent detract from the tree. The likelihood of this occurring can be significantly reduced by encouraging the development of prop roots (something like that which has occurred naturally at Sawtell). This process would require an increase in the open area around the tree.

Opening some of the area to the north of the tree and moving the kerb another metre from the tree would be ideal. However, whilst desirable this is not essential.

Maintaining a 10 -15 cm mulch over any exposed soil under the tree is also an important part of this process for many reasons.

- Mulch increases moisture penetration into the soil and reduces moisture loss from the soil associated with evaporation.

- As mulch breaks down to microparticles it helps to form organic clays that have a very high water-holding capacity even greater than that of mineral clays.

- As mulch breaks down it releases essential solutes into the soil. Every solute required by a tree can be found in a chipped tree.

- Microorganisms that are involved in breaking down the mulch provide a part of a tree's natural defence system. Bigger organisms also help cultivate the soil and improve the soils infiltration rate

Ideally, fresh arborist chip should be used as the mulch. This would normally need to be replenished every 6 -12 months. Some form of retention system will need to be installed to retain the mulch. Flexible systems such as treated pine or coir logs have their advantages as these are not readily damaged by the roots. However, a more rigid system is possible but will require suitable engineering.

Pressure from roots

In order to appropriated design around a tree it is important to take into consideration the pressure exerted by tree roots. Macleod and Cram (1996) state that tree roots exert a pressure in the order of 800 – 900 kPa[11] [12], dependant on species. They also provide calculations that demonstrate that roots can readily lift light structures such as driveways and pathways. Roberts, Jackson & Smith (2006)[13] state that root tree are incapable of penetrating through soil compacted to 2.5 mg/m^3.

This means that any structure can be designed to be root-proof although this may add considerably to the cost of construction. In some instances, it is also likely to require the use of alternate materials and innovative design.

Most critical is the basement wall closest to the tree and the new hard surface that have roots beneath them. The basement wall is vulnerable because tree roots can exert a pressure significantly greater than that applied by soil alone.

When it comes to pavements the issue relates to the surface being comparatively light and easily lifted. Fortunately, in the case of this tree most of the roots appear to be at such a depth below ground that they are not affecting the overlying pavement. This morphology is likely to be the result of the sandy soils that do not readily facilitate lateral movement of water.

There is, however, a mass of roots around the tree in the area that is open. This has resulted in some damage to the adjacent kerb and roots may have contributed to the movement of the concrete slab adjacent to the tree. The proposed works may allow for this to be repaired and relocated perhaps 50 to 100 cm further away from the tree.

Gutters

As a result of Work Health and Safety requirements, the cleaning of gutters on a multistorey building is becoming more problematic. The tree will shed leaves that will fall onto the building so consideration should be given to installing a gutter system that will not be significantly impacted by leaves. This could include installing one or more of the following:

- a quality leaf screening system
- Tornado Rain Heads' to increase the flow and reduce blockages, and
- installing one or more syphon-based diverters such as Gutter Pumper®, and
- installing overflow spouts that allow for the discharge of water in the event of a blockage taking place.

[11] The turgid pressure applied by most cells, either plant or animal, is within the same order of magnitude. If the force in the opposite direction is too great the cell will rupture or be unable to divide. As a result, there are upper end limits on the mass that can be lifted by roots.

[12] MacLeod R D. and Cram W J., 1996. Forces Exerted by Tree Roots, Arboriculture Research Information Note, 134/96/EXT

[13] Roberts J., Jackson N. and Smith M., 2006, Tree Roots in the Built Environment, The Stationary Office, Norwich

Understanding roots

All roots start as '**pioneer roots'**, pushing their way through the soil in order to take advantage of newly available soil moisture and solutes that are in the zone that they have entered (hence the term pioneer). Cell division at the tip of the root and cell elongation behind this tip creates the pressure to push the roots. This '**zone of elongation**' is typically a few millimetres to less than 100 mm in length.

Cell elongation uses water, and the presence or readily available water, solutes (soluble nutrients), and soil temperature (generally around 16 ^{O}C for most temperate trees) stimulates root growth. Whilst elongating cells can absorb some water, at best they only take up sufficient to meet the water needs associated with cell elongation.

Once the roots have fully elongated single-celled hairs develop on the surface of the root and these roots with '**root hairs**' to form '**absorbing roots.**'

'Absorbing roots' are responsible for the uptake of nearly all the water and the majority of solutes used by the tree. They are highly ephemeral, often lasting only a few weeks. However, in association with beneficial fungi, they can last a year or more.

Where trees are already growing well, we can typically assume that soluble nutrients are present at satisfactory levels. Likewise, we can assume that the soil surface temperature often exceeds 16 degrees Celsius most of the year and that at depth, the soil temperature does not vary significantly throughout the year. The biggest limiting factor, therefore, is usually the ready availability of water.

A percentage of these pioneer/absorbing root structures survive the various environmental stresses and within a few weeks or so they become woody.

'**Woody roots**' are effectively underground branches. These roots can be a little under a millimetre in diameter and can grow to be hundreds of millimetres in diameter over time. Their bark prevents them from drying out, but as a result, they are restricted from being able to absorb water and solutes from the soil to any great extent.

Whilst many young woody roots die as a result of disease, environmental damage or competition; they have the potential to be long-lived, sometimes lasting for hundreds of years. Woody roots act as the connection between the absorbing roots and the rest of the tree

'Structural roots' make up only a small portion of the woody roots. These roots provide physical support for the tree. They grow directly from the trunk (first-order lateral roots) or are roots that branch close to the trunk. These roots provide support in compression and tension. They have a greater content of lignified cells and, as a result, tend to be much thicker to allow for strength, as well as transport.

In response to the forces of compression and/or tension, these structural roots develop an asymmetric shape rather than the normal circular shape. As the roots grow further from the trunk, they get rapidly thinner (zone of rapid taper) and more circular in shape.

In fast draining sandy soil on this site, the root system is likely to have a large number of sinker roots and rapid rood division. Roots are likely to extend downwards until bedrock rock or a permanent water table is reached.

Damage to roots

Damage to larger roots inside the zone of rapid taper is extremely undesirable and, in most circumstances, should be avoided. These are woody roots, and therefore excavation is more significant in its impact than careful constructing over the top of these roots.

Depending on the amount of root division, the cutting of a woody root with a diameter of 25mm could conceivably result in the death of many millions of root hairs. This loss of absorbing roots has a direct impact on a tree's ability to absorb water and solutes. In addition, it can impact on hormone production, resulting in reduced growth above ground until the root/foliage ratio is restored to its ideal levels.

The loss of roots can result in wilting or thinning of the foliage, the loss of foliage and death of smaller branchlets and sometimes the death of specific larger branches. The ready availability of soil moisture is important in minimising this impact.

Not only do higher soil moisture levels, reduce the energy expended to absorb water, it also stimulates new root development. The faster that sufficient new roots are developed, the less the impact on normal function

Roots are often close to the surface, and therefore construction activity can indirectly impact on the health of roots through direct damage or soil compaction. Even regular pedestrian activity has an effect on the roots close to the surface. In addition, altering of levels by adding fill has the potential to alter the movement of water into the soil and in some circumstances, can cause the soil to become anoxic, in turn causing the death of the roots and potentially the death of the tree.

By far the easiest and most efficient way of limiting construction damage to trees is to establish and enclose a Root Protection Area (RPA) using a rigid fence. The function of this fence is to protect the tree, and the roots in particular, by eliminating or restricting all construction activity in this area.

Methods of Tree Protection

It is important that we understand the processes and methods of tree protection. For that reason, a number of images have been included in Appendix 5 along with the information in this section to assist in ensuring that appropriate implementation of tree protection.

Protect the roots

As already explained the purpose of establishing a Tree Protection Zone is more than concerned with protecting the trunk of the tree. A Tree Protection Zone's primary function is the protection of the roots of the tree.

The most appropriate method of protecting a tree is to establish an exclusion zone using some form of rigid temporary fence (a Tree Protection Zone or TPZ). Whilst it may seem easier to use a flexible fabric barrier fence, these products tend to fail over time and are easily pushed out of the way or damaged. In comparison, damaging a rigid fence requires more of a hit can damage machinery and involves the cost of repair or replacement of the damaged fence.

Sometimes, however, it may become necessary to work within or to gain access through a Tree Protection Zone. To do this, we need to develop a method to stop soil compaction and prevent direct physical damage to roots. A simple action such as walking on the same spot half a dozen times or more can lead to soil compaction. Pushing a full wheelbarrow will cause compaction in the first instance. It does not take long for that damage to accumulate and harm the roots of a tree.

There are a number of ways to protect roots against compaction and physical damage. We can divide these into two simple groups:

- Systems that share the load, and
- Systems that are fully load bearing.

Load-sharing surfaces are temporary and usually lightweight systems. Load-sharing surfaces sometimes can be as simple as mulch beneath plywood or planks or the use of scaffolding, to heavier duty systems such as the use of plastic or metal road plates or even rail decking. Photographs in Appendix 4 show that these can be enough to protect a delicate egg from breaking.

Fully load-bearing structures include finished structures such as the slab of a building, a driveway or a pathway. Obviously, each of these has a limit to the weight that it can bear and if this is exceeded the structure and things beneath it can be damaged. Load bearing systems can also include scaffolding and temporary bridging structures.

Protect the trunk

In most instances, enclosing of the Tree Protection Zone ensures that the trunk of a tree cannot be damaged. Sometimes, however, work needs to take place within the Tree Protection Zone and, as a result, there is a risk of impact to the trunk. Damage to the trunk is extremely undesirable. Where it is possible to treat the wound treatment is time critical and is very expensive. When treatment is not possible or is ineffective, a trunk injury can lead to long-term structural and physiological problems.

Where possible operating machinery or performing activities that may result in an impact to the trunk of the tree should be avoided. Where this is not possible, it is important to protect the trunk. Strapping pieces of timber to the trunk of the tree has been the traditional method for achieving this task.

Conservation of Momentum (as demonstrated by Newton's cradle) tells us that this force is basically transferred through the pieces of timber to the trunk of the tree often providing little to no protection and in some circumstances actually resulting in increased damage.

In response to the failure of timber to absorb impact, hessian or carpet underlay was used and whilst these improved the situation the timber still lacked the ability to absorb any of the energy. The use of fabric wraps also carried new problems; in particular, they often held moisture, and this moist material was in constant contact with the trunk.

A more appropriate system needs a hard, but flexible outer surface bonded to a soft impact absorbing material that has a low water holding capacity. This system is better at absorbing the energy of an impact similar to a bicycle helmet. Just as with a bicycle helmet, if the impact damages the protection system it needs to be repaired or replaced, and at the same time, the trunk of the tree needs inspecting.

Lastly, prevention is the best process. When machinery is operating in close proximity to the trunk using an observer can greatly reduce the likelihood of impact. To be effective, the observer should maintain direct visual contact with the tree and the machine and should have direct audio contact with the operator. (Two-way earmuff systems are useful for this task).

Protection of the canopy

The canopy of the tree is often the part of the tree that is least harmed in the construction process. Even so, there are two ways that the construction process can harm the canopy. The first is by direct impact between equipment and the branches of the tree, and the second is from incorrect or excessive tree pruning.

Avoiding impact between machinery and branches simply requires care. When machinery needs to operate near branches, an independent observer should be used. The observer should maintain direct visual contact with the machine and the branches of the tree and should have direct audio contact with the operator.

All pruning cuts should be made as illustrated in the Australian Standard AS 4373-2007 “Pruning of Amenity Trees.” Anyone who does not fully understand this standard or who has not had the proper training to perform pruning should not attempt this work. The project arborist may instruct site personnel to make temporary cuts for later rectification by an arborist. These instructions should be carefully followed.

Tree Protection Plan (Specifications)

Design Issues

#	Recommendation	Reason
1	Along the boundary line under the canopy of the tree use contiguous piling or similar.	To minimise drying of the soil around the remining roots.
2	Where possible increase the open space around the tree.	To allow for increased water infiltration and to allow for further growth of the tree.
3	Design for an irrigation system to provide additional moisture for the tree.	To compensate for root loss associated with the excavation of the basement.
4	Consider the design of the roof drainage to allow for the leaf drop.	To minimise blockages associated with leaf fall onto the roof.
5	All copies of the plans should include a copy of the Tree Protection Plan (drawing) and a note on each and every plan or drawing to "check the Tree Protection Plan (drawing)."	Tradespeople often read plans rather than written details. Including the Tree Protection Plan (drawing) in the plan set will help the awareness of all tradespeople.

Note: The following draft specifications will need to be added to, adjusted and finalised during the detailed design phase and incorporated into the construction management plan.

Pre-construction

6	Appoint a project arborist to oversee and certify all works in the Tree Protection Zones.	A project arborist is needed to supervise and oversee the care and protection of the trees.
7	Establish a 'tree protection' policy document for inclusion as a part of the site induction.	Ensuring all site personnel are aware of the tree protection requirements.
8	A copy of this Tree Protection Plan including the Tree Protection Plan (drawing) **must** be on site prior to any work commencing on the site AS 4970-2009 (5.2).	To ensure that documentation is present and available as a reference for all site personnel. **Note**: The Tree Protection Plan (drawing) can be found in Appendix 2..
9	Prior to commencing work on the site, establish a Tree Protection Zone around the trees using a 1.8-metre high rigid temporary fence.	Fences create "no-go" zones, show the importance of the trees and help prevent soil compaction and root damage.
10	Apply a 15 - 20 cm layer of arborist mulch over the surface of each Tree Protection Zone.	Mulch provides some protection to the roots and helps to manage soil moisture.
11	Attach signs to the Tree Protection Zone as detailed in section 5 of the Generic Tree Protection Guidelines attached as Appendix 4.	Signs help to remind people why the fence is there and what should not be happening in that zone.
12	Use TrunkGuard™ or a similar system of 100mm wide boards with thick polystyrene foam bonded to one side to protect the trunk.	To provide an additional level of protection for the trunk during adjacent demolition and construction works.
13	Correct and complete installation of Tree "Protection measures **are** to be certified by the project arborist" AS 4970-2009 (5.3.2).	This is to ensure the tree protection is correct and completed in accordance with the Tree Protection Plan.

Preparatory tree maintenance

14	Remove all larger weeds by hand – do not spray herbicides to control the weeds.	Weeds compete with the tree and herbicides can damage the tree's roots on contact.
15	Apply a 15 - 20 cm layer of arborist mulch over the surface of each Tree Protection Zone	Mulch provides some protection to the roots and helps to manage soil moisture.
16	Install a temporary automated irrigation system to the open area.	Increasing soil moisture will stimulate new roots.
17	An AQF Level 3 Arborist **must** perform any canopy pruning with all final cuts made in accordance with AS4373-2007. The arborist must **not** use climbing spikes.	To ensure the arborist makes correct cuts and that the tree is not unnecessarily damaged. It is preferable to use an AQF Level 5 arborist for this work.

During site works

18	Have the project arborist perform inspection not less than monthly and at the critical checkpoints listed below as per AS 4970-2009 (5.4.1)	To monitor tree health, to be present at critical checkpoints, and to ensure that the Tree Protection Plan is being followed.
19	If an inspection reveals a breach of the Tree Protection Plan, the project arborist **must** specify any remedial works and the timeframe in which these works must be completed.	To ensure that all problems are appropriately rectified and that any remedial works required are carried out in a timely manner.
20	If at any stage an inspection reveals the Tree Protection Plan (Specifications) has not been complied with, site inspections **must** be carried out weekly thereafter.	This is to provide additional supervision to help avoid repeat problems and to ensure the correct and timely performance of remedial works.
21	Maintain natural ground level within the Tree Protection Zone. Do not trench, stockpile materials or change grades within this zone.	To prevent unnecessary or unauthorised damage to the trunk, roots, and branches of the tree
22	Maintain the Tree Protection Zone until construction work is completed.	To provide protection for the duration of the works that impact on the tree.
23	Machinery access is **not** permitted in the Tree Protection Zone to perform landscaping works	To avoid damage caused by machinery as a part of landscaping activities.
24	An observer **must** be present during excavation or the demolition of any structure within 3 metres of any part of the tree	This reduces the likelihood of accidental impact to the tree. **Note:** Using the project arborist is strongly recommended.
25	Cleanly cut any root that, is greater than 20mm in diameter, and that need to be cut or removed	This is to avoid tearing of roots and helps improve new root generation.
26	Where roots are cut as a part of item 25 the cut end should be kept moist using a root oasis, temporary hoarding. or a root curtain.	This is to ensure that cut roots do not dry out and stimulates new root generation.
27	Provide notification to the Site Arborist, the Council, and the Certifier not less than 7 days before removing the Tree Protection Fences.	This allows a check to be undertaken to determine if the remaining works are likely to adversely impact on the trees.

Critical checkpoints

28	Have the project arborist present at the following checkpoints: • During demolition of the existing structures within 3 metres of any part of the tree • During the removal of any hard surface under the canopy of the tree[14] • During the installation of piling along the boundary under the canopy of the tree • Prior to forming any cap beam under the tree • Prior to erecting and decommissioning any scaffolding under the canopy of the tree. • Prior to cutting any root greater than 10 cm in diameter Note: These can form part of the periodic inspections specified in item 18

Load sharing and load-bearing surfaces

29	Any load sharing surface for pedestrian and light machinery access **must** be comprised of plastic road plate on top of a 10 – 15 cm mulch layer.	To allow for suitable load sharing. **Note:** 19 mm may be used where only pedestrian access is required.
30	Use a geotextile fabric below the mulch to allow for the later removal of the mulch, in areas where turf will be laid.	To allow mulch to be removed by hand and to limit root growth into the overlying mulch.
31	Remove all much by hand starting from closest to the tree and moving outwards.	To minimise the impact on roots as a result of the removal of the load sharing surface.
32	A load bearing surface shall be constructed using Megadecking, Durabase mats, JLA bogmat. or continuous dragline.	This is to ensure that the surface is sufficiently robust to share the load of heavy equipment.
33	Where the surface levels below a Temporary Load Bearing Surface needs to be adjusted this shall be achieved using sand or other suitable material applied to the surface.	This is to ensure that excavation does not take place in order to install a Temporary Load Bearing Surface.
34	Once a road or parking bay has been completed it shall be deemed to be a Load Bearing Surface.	This means that these finished surfaces can be used as an alternative.
Note: If concerns exist that the works will damage the finished surface the same work will almost certainly damage the tree roots, and a temporary surface must be used		

[14] The canopy of the tree shall be taken to mean the canopy of the tree before any pruning works take place.

Post Construction

35	At practical completion, the project arborist **should** "assess tree condition and provide certification" that the tree protection works have been in accordance with the Tree Protection Plan.	This is to provide a completion to the document trail for the certifier and or the certifying authority.
36	"Certification **should** include a statement on the condition of the retained trees, details of the deviations from the approved tree protection measures and their impacts on [the] trees" and provide specifications for any remedial or rectification work required.	This is to comply with AS 4970-2009 (5.5.2). It provides a documented record of the final condition of the tree. It audits and certifies the correction of any problems.
37	Have the project arborist inspect quarterly and report (for whichever is greater) for: • 12 months after completion of works, or • 12 months after achieving stable growth.	To ensure the long-term recovery of the tree is certain.

Should you require any further information, do not hesitate to call our office for assistance.

Mark Hartley
Senior Consulting Arborist- AQF Level 8
Grad Cert Arboriculture (1st Class Honours)
Dip Hort (Arboriculture) with Distinction
Dip Arboriculture, Dip Horticulture
LMAA; LMISA; LMIPS
ISA Certified Arborist WC-0624 (since 1990)
Registered Consulting Arborist™ #0005
ISA Tree Risk Assessment Qualified
Registered QTRA user (No. 807)
Member - Society of Risk Analysis Australia & New Zealand

Appendix 1: Site images

Image 1: Looking to the north and showing the extent of canopy overhang.

Image 2: Roots affecting the kerb.

Image 3: Looking at the tree from the north.

Image 4: What appears to be a concrete pit or old slab to the south of the tree.

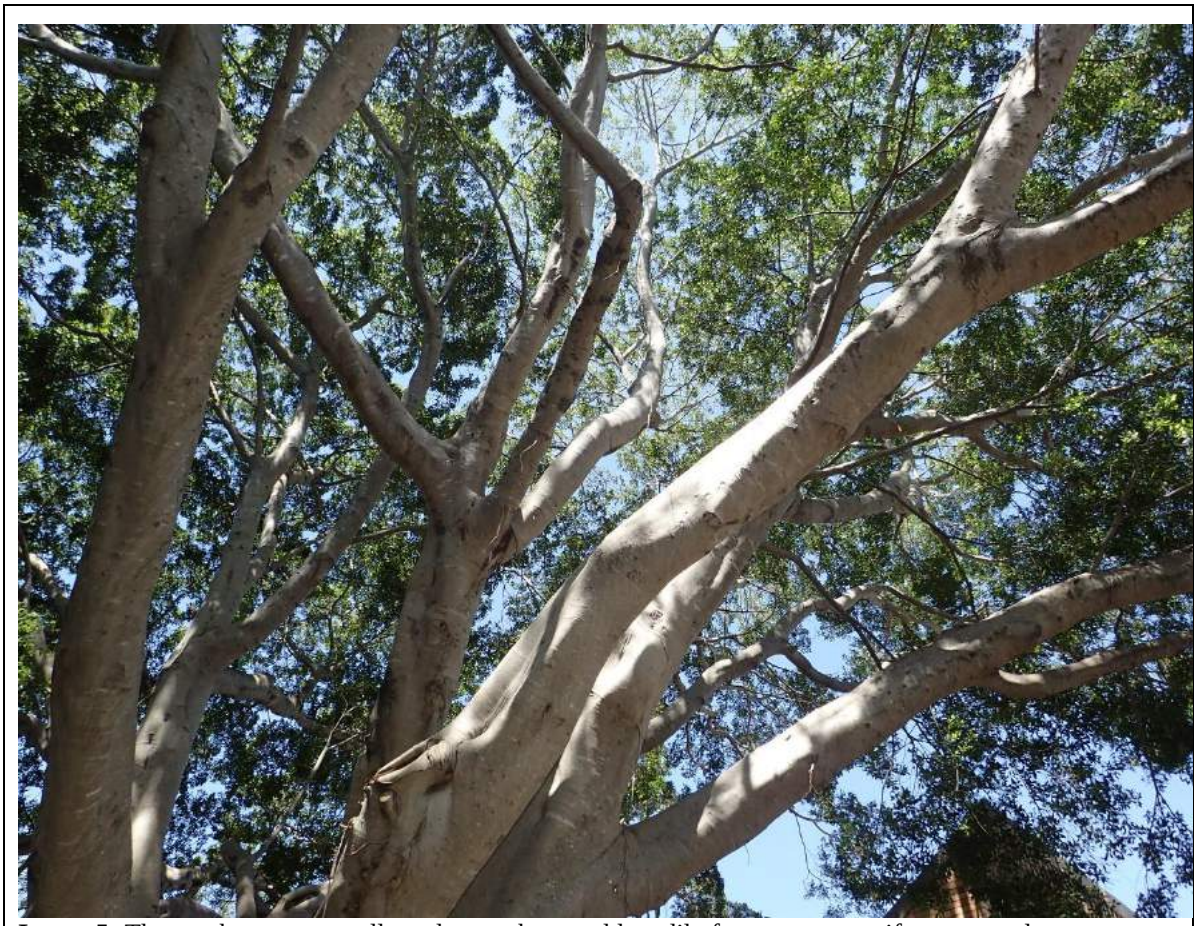


Image 5: The tree has many small areal roots that would readily form prop roots if encouraged.

Appendix 2: Supporting images

Figure 6: Substantial root cutting on a Camphor Laurel that occurred 6 or 7 years before (image 2011)

Figure 7: The tree set back a bit but has been slowly recovering (image 2011) tree last inspected 2015.

Figure 8: Stressed Moreton Bay fig, Susan Street Auburn with Brush Box in the foreground Sept 2008

Figure 9: 40% of the canopy was removed to make way for a multi-storey car park with two levels below ground (Image September 2008)

Figure 10: Two basement levels excavated 3 metres from the centre of the trunk. (Image June 2009) Note that there is a classroom to the rest and bitumen to the south and east

Figure 11: Note that there is a classroom to the rest and bitumen to the south and east (Image July 2009)

Figure 12: Not everything on the project was ideal – e.g. compaction, spoil and rubbish. (Image January 2010)

Figure 13: Nothing but irrigation and October 2013

Figure 14: Root morphology is heavily influenced by soil texture

Appendix 3: Determining the Tree Protection Area

A simple solution

Over the last two decades, there has been an increasing awareness of the need to protect appropriately and care for trees on development sites. There have been conferences, workshops as well as publications written on the subject. Most notably these include British Standard BS 5837: 2005, "Trees and Development" by Matheny N & Clark J and "Protection of Trees on Construction Site" by Hartley M. These publications all focus on minimising damage to the root system of the tree by establishing appropriate **T**ree **P**rotection **Z**ones **(TPZ).**

The British Standard provides Matheny and Clark as the source of the formula for calculating the radius of the tree protection zone. Interestingly Matheny and Clark site the British Standard as the source of the formula. Such a circular argument is of concern, particularly when the Matheny and Clark include many examples of their successful encroachment of their Tree Protection Zone in their text.

Matheny said, ***"It is not that common that we get that much space."*** and ***"With tolerant species, we can squeeze that down by half or two-thirds".*** (ISA Annual Conference 2007) Mathematically that suggests that the Tree Protection Zone could potentially contain as little as 12% of the root volume provided for using either formula.

Calculations and tables in the first two publications aimed at providing a Tree Protection Zone sufficiently large enough to ensure that the health of the tree is not adversely impacted and achieves this without the need for arboricultural input other than ensuring the maintenance of the protection zones. The British Standards or Trees and Development are ideal documents to be applied by anybody regardless of their understanding of plant physiology.

Matheny rightly states, **"*Because the tree is an individual the table is not enough. You need to consider all the factors*."** (ISA Annual Conference 2007) If we are to find benefit in the **TPZ** given in either the British Standard or Trees and Development, it is that this is a **TPZ** that can be determined by any person and without any arboricultural input since it is a simple formula. Anyone able to measure the trunk diameter and follow the formula can calculate the **TPZ**.

A suitably experienced consulting arborist is often able to support a smaller **TPZ** when combined with appropriate arboricultural care, and some provision is given in the British standard for this to take place. This makes no sense unless the formula for calculating the **TPZ** in the British Standard is prefaced with a note saying that this is the point at which arboricultural input is required. Regrettably the British standard does not say this, and as a result, it becomes overly prescriptive.

An arboricultural solution

Land and development costs along with the environmental impact of urban sprawl make it undesirably burdensome to sterilise vast areas of land to enclose an optimum **TPZ**. It is often far more cost effective to provide even the highest level of Arboricultural care possible to a tree to ensure that it thrives and prospers in the long term than to establish a **TPZ** that is unnecessarily large.

It makes logical sense to adopt a **M**inimum **T**ree **P**rotection **Z**one that is based on the size of a root plate required to transplant the same tree. Transplanting of large and even very old trees has been carried out with enough frequency and over such a long period that we have a good understanding how transplanted trees respond to root loss. A success rate of 97% can be expected when a transplant is properly undertaken with appropriate ongoing care.

Perhaps the 3% failure rate could be considered as unacceptable, but it is likely that a percentage of these would have died within a few years in any case. Matheny again points out ***"Transplanting is a far greater impact – if we are going to transplant it, we might as well keep it where it is and squeeze the protection zone."*** (ISA Annual Conference 2007) A transplanted tree will undoubtedly undergo a greater degree of stress than a tree that is retained with an identically sized root plate that is appropriately protected and cared for.

The site constraints, more often than not, are likely to benefit from a **TPZ** that is smaller than that specified by the British Standard and Trees and Development. Using a smaller **TPZ** means that there will be a requirement for appropriate levels of arboricultural care. This approach may give rise to the question "What is the minimum area required by the tree?" There is, unfortunately, no absolute answer to this question but there are some important benchmarks to be considered.

- The protection should be sufficient to allow the maintenance of the tree, with appropriate arboricultural input. In the past, this was called the **C**ritical **R**oot **Z**one **(CRZ)** and frequently relates to the size of the root plate that would be required to transplant the tree successfully. In most instances is an area with a radius of 5 times the trunk diameter. This document refers to this at the **M**inimum **T**ree **P**rotection **Z**one (**MTPZ).**

- Depending on the tree's response to root damage, it is possible to come even closer to the tree particularly when construction impact is going to be limited to one side or better still to one quadrant of the Critical Root Zone **and** the provision of an additional area around the remaining area of the root zone can be protected.

- The extent of any excavation should not result in the structural instability of the tree. A number of formula and test exist to determine the size of the **S**tructural **R**oot **Z**one (**SRZ**). There is however generally no need to consider the issue of structural stability if work is performed outside the **MTPZ**. In most circumstances, it is undesirable and often unwise to cut roots located in the Structural Root Zone.

There must be sufficient soil volume to allow the tree to grow to maturity with appropriate ongoing care. If the goal is to have little ongoing care, this will undoubtedly take a greater soil volume than a tree that will be extensively maintained (such as a tree growing in a rooftop planting).

The approach of AS 4970-2009

In August 2009, Standards Australia released AS4970-2009 Protection of Trees on Development Sites. In its preface, this document acknowledges its reliance on the British Standard and Matheny and Clark. This standard suggests an "***I**ndicative*" **TPZ** with a radius 12 times trunk diameter. As already discussed, there is no question that this will provide adequate protection of the tree in almost all conceivable situations. It achieves this by suggesting an **ITPZ** encloses and potentially sterilises an enormous area.

The standard does acknowledge that it may be possible to encroach on this **ITPZ** if the project arborist can demonstrate that the "*trees will remain viable*." As already stated, we can successfully transplant most trees in good health and vigour, so the use of a reduced sized **TPZ** when combined with appropriate care, has been demonstrated by several hundred years of successful tree transplanting. (Mathematically the standard sized root plate for a transplant has less than 20% of the root area of the **ITPZ** specified in the AS 4970-2009.)

Of equal concern is the impact of the insistence of a **TPZ** with a radius of 12 times trunk diameter may have on tree retention and urban sprawl. Where there is a conflict between development and tree retention, a decision will need to be made to refuse the development (potentially increasing urban sprawl) or to reduce the size of the **TPZ**.

If the development is acceptable, then we need to answer the question "should we be removing trees that cannot be given the **ITPZ** given in AS 4970-2009?" The answer should be "No!" whenever there is adequate potential for retention the tree with appropriate arboricultural input.

Given that the standard has some significant issues and seeks to be "informative," it is essential the standard is not viewed as prescriptive or normative. The standard does consider some important issues such as the timing of the work, the importance of preventative maintenance and ensuring appropriate monitoring of the trees. As far as practical this document forms an important part of that process.

There is no doubt that establishing and maintaining a **TPZ** around a tree is the most important thing that a developer can do to protect a tree. In the same manner, perhaps the most significant arboricultural input that can be provided is the management of soil moisture levels. The sooner soil moisture is managed the lower the impact on a tree. Ideally, management would start before any work starts on the development.

Appendix 4: Generic Tree

Protection Guidelines

1. Pre-Construction:

1.1. Prior to the commencement of construction, the consulting Arborist will issue a report outlining the following:

1.1.1. The trees that have been protected, the maintenance activities (if any) for each tree that have already been performed, that the protective fence or fences have been installed in accordance with the Arborist's Report.

1.1.2. A statement that the physical protection (items 7 and 8 of the POTOCS standards) of the trees has been performed, to the above standards or if not, any non-conformances and why. e.g. the fence around trees is incomplete because of boundary fences.

1.1.3. All trees to be removed are to be marked with a single white line around the trunk. No tree shall be so marked until council consent for its removal has been given.

1.1.4. Prior to removal one of the following will confirm the tree is to be removed by marking the tree with a single horizontal yellow or orange line. One of the following persons, Surveyor, Landscape Architect, Arborist, Project Manager, and Tree Preservation Officer, should do this.

2. Tree Protection Zones:

2.1. The trees are to be protected by a 1.8-metre high fence to be constructed within 500mm of any construction activity and to include as much of the Primary Root Zone as possible.

2.2. Where the Tree Protection Zone occurs impart on the adjacent property, the fence will stop at the boundary lines.

2.3. Provision will be made to these protection zones for pedestrian access only.

3. Maintenance activities:

Timing: Maintenance activities are to be at the commencement of the construction process by qualified Arborists and then as required during the construction period.

3.1. The following maintenance activities may be required for this site:

- Irrigation – by hand to comply with current specifications
- Soil Amelioration
- Mulching
- Crown cleaning in accordance with AS 4373-2007 *Pruning of Amenity Trees*,
- removal of trees by sectional felling and stump grinding.

3.2. Irrigation

3.2.1. Soil moisture during construction shall be maintained at not less than 60% of field capacity.

3.2.2. Irrigation is to be applied by hand. No construction activities are to take place within the Primary Root Zone until irrigation has been initiated and soil moisture reaches 70% of field capacity at a depth of 300mm.

3.2.3. On each visit, the consulting arborist shall check the soil moisture and manually check the irrigation system, when installed.

3.2.4. Soil moisture levels should be checked by physical touch or with a tensiometer.

3.3. Soil amelioration

3.3.1. An application of rooting hormones, humic acids, soil micro-flora and mycorrhizae may be applied by an arborist in accordance with the manufacturer's instructions.

3.3.2. Chemical fertilizers are to be used only after representative soil testing and based on the soil scientist's recommendations.

3.4. Mulching

3.4.1. The fenced area should be mulched with seed-free mulch to a depth of at least 50mm.

3.5. Weed Control

3.5.1. Weed control shall be by hand pulling, wiping or spraying with a glyphosate-based herbicide. Material likely to be root grafted to trees to be retained shall be removed manually.

3.5.2. Weed control shall not be performed by mechanical cultivation or by scraping or back burning.

3.6. Crown cleaning

3.6.1. Crown cleaning (AS4373-1996, Pruning of Amenity Trees) shall be performed in accordance with the standard, by an arborist and in compliance with the appropriate occupational health and safety regulations. All branches down to 50mm in size shall be inspected and appropriately treated.

3.6.2. Any concerns about health or safety that are observed by the arborist on the site will be reported in writing within 7 days to the superintendent/principal/client and/or head contractor.

3.6.3. The use of spurs on live trees and internodal cutting is strictly prohibited.

3.7. Tree Removal and Stump Grinding

3.7.1. Remove trees in a controlled or sectional felling to avoid any damage to the trees to be retained.

3.7.2. All shrubs, under-scrub and woody weeds that are to be removed shall be removed by hand as per 3.4 above.

3.7.3. No tree shall be removed unless it has been marked with a horizontal white and yellow/orange line around the trunk.

4. Fences:

4.1. The fencing of the Tree Protection zone as defined in section 8.0 of the POTOCS standards should be commenced prior to the commencement of ANY work, including demolition and land clearing by earth moving machinery but may be erected after tree maintenance activities.

4.2. The fence surrounding the Tree Protection Zone must be a rigid fence not less than 1.8m high.

5. Signs:

5.1. At least every 25 metres attached to all tree protection fence there shall be a sign, a minimum of 600mm x 600mm, bearing the following phrase in red letters on a white background at least 50mm in height:

"TREE PROTECTION ZONE - KEEP OUT"

5.2. On the same sign above or on a separate sign attached adjacent, in red lettering on a white background not less than 25mm in height is to be the following:

"PROHIBITED ACTIVITIES"

Followed by the list below in black letters not less than 15mm in height.

a) Entry of machinery or people.
b) Storage of building materials.
c) Parking of any kind.
d) Erection or placement of site facilities.
e) Removal or stockpiling of soil or site debris.
f) Disposal of liquid waste including paint and concrete wash.
g) Excavation or trenching of any kind (including irrigation or electrical connections).
h) Attaching any signs or any other objects to the tree.
i) Placing of waste disposal or skip bins.
j) Pruning and removal of branches, except by a qualified Arborist.

5.3. In letters, not less than 25mm in height on the above sign should be the name of the supervising Arborist or arboricultural company or other appropriate contact and a contact phone number.

6. Root Cutting

6.1. All roots greater than 50mm in diameter that need to be removed shall be cleanly cut and kept moist at all times and shall not be left exposed to the air for more than 10 to 15 minutes.

7. Maintenance Reports:

7.1. Weekly inspections and monthly reports should be made until the end of construction.

7.2. A consulting Arborist should be on site during any excavation work within the Critical Root Zone and will report on that work in the monthly report.

7.3. A site log shall be maintained and include the date of each inspection, the person who performed the inspection, the items inspected or tested, the maintenance activities performed, any repairs undertaken or required to be undertaken, and any substantial breaches or non-conformances.

7.4. The arborist performing the inspection should sign the entries in the logbook

7.5. The log shall be maintained on the site or alternatively copies of the log entries for the month shall be submitted each month with the monthly report.

7.6. All maintenance shall continue for the 3 months after completion of construction

8. Non-Conformance Reports:

8.1. The following are non-conformances that need to be managed when they occur.

8.1.1. The removal or relocation closer to the tree of all or part of any protective fence prior to landscaping.

8.1.2. The performing of any activity noted as prohibited on protection zone signage

8.1.3. The failure to maintain adequate soil moisture or the failure in the operation of the irrigation system.

8.1.4. Mechanical damage to the trunk, stems, branches, or retained roots.

8.1.5. The sudden and abnormal or premature shedding or decline of the tree.

8.2. **Substantial breaches and non-conformances**:

8.2.1. Any breach or non-conformance of the tree protection zone, by any party, shall be notified in writing within 2 working days of it being first observed.

8.2.2. Notification of any non-conformance should be made in writing to the site foreman, the consent authority, and any independent certifier.

Appendix 5:

Protection of Trees on Construction Sites

Establishing a Tree Protection Zone

Good Work	Poor Work
 **Photo 1:** The fence should be rigid and hard to move.	 **Photo 2:** This style of fence is too easily damaged and collapses when hit.
 **Photo 3:** The TPZ is mulched where appropriate and weed free.	 **Photo 4:** Put the fence where it should be! The TPZ is not for storage.
 **Photo 5:** The purpose of the fence is to isolate the tree from the works and to protect the roots.	 **Photo 6:** Woven fences seldom work particularly when space is limited.

Protecting the roots

Good Work	Poor Work
 **Photo 7:** Like an egg tree roots are delicate and easily damaged.	 **Photo 8:** A single movement of a truck can cause significant damage to the absorbing roots.
 **Photo 9:** The load-sharing surfaces should be designed to take the load that will travel over it.	 **Photo 10:** Without appropriate protection, the soil is compacted, and roots are broken and damaged.
 **Photo 11:** The goal is to ensure that there is minimal impact on the roots that are being protected.	 **Photo 12:** Keep equipment away from the tree by using appropriate tree protection.

Protecting the trunk

Good Work	Poor Work
 **Photo 13:** TrunkGuard is designed to absorb impact just like a bicycle helmet.	 **Photo 14:** Trunk damage is usually irreparable and frequently causes long-term problems!
 **Photo 15:** It is flexible for a better fit and is attached using screws to avoid even light impact.	 **Photo 16:** Even the installation of a poorly designed system can injure a tree!
 **Photo 17:** Able to withstand and absorb moderate construction impact - not that this should happen!	 **Photo 18:** This serves little purpose at all! It does not protect the roots or the trunk of the tree.