ETHOS URBAN

29 September 2021

Our ref: 7200042
Council ref: DA/24/2021

Gladstone Regional Council
PO Box 29
Gladstone QLD 4680

Attention: Shaunte Farrington

Via shaunte.farrington@gladstone.qld.gov.au, info@gladstone.qld.gov.au.

Dear Shaunte,

RE: INFORMATION REQUEST & FUTHER ADVICE RESPONSE – LOT 1 & 5 HAMPTON DRIVE, BOYNE ISLAND QLD 4680 – LOT 1 RP619033 & LOT 5 RP620667

Reference is made to the Information Request ('IR') and Further Advice ('FA') received on 23 July 2021 and 16 July 2021 from Gladstone Regional Council ('Council'). This letter has been prepared by Ethos Urban on behalf of the Applicant, ZenDev, to provide a combined response to the IR and FA in accordance with section 13.2(a) of the *Development Assessment Rules*. For ease of reference, the following letter uses the same numbering as the IR and FA and the relevant items are shown in blue boxes.

In response to Council's IR and FA, the application has been modified (refer to Sections 1.0 and 2.0 of this letter) and *other relevant matters* (refer to Section 3.0 of this) have been provided to justify the development where Council considers there is non-compliance with the planning scheme.

The response to the IR is included in Section 4.0 of this letter and the response to the FA is included in Section 5.0.

The responses are supported by the following attachments:

- Attachment 1 – Updated DA Form 1
- Attachment 2 – Updated Architecture Plans
- Attachment 3 – Economic Overview
- Attachment 4 – Updated Landscape Plans
- Attachment 5 – Traffic Response
- Attachment 6 – Civil Response, Updated Engineering Report, Stormwater Management Plan and Plans
- Attachment 7 – Acoustic Response and Updated Acoustic Report
- Attachment 8 – Waste Management Plan
- Attachment 9 - Options Analysis Site Comparison

1.0 Overview of changes to the application

Pursuant to section 52(1) of the *Planning Act 2016* ('Planning Act') and section 25 of the *Development Assessment Rules* 1.3 ('DA Rules'), the primary change to the proposed development application is the consideration of the café and gym as defined uses rather than ancillary uses of the Aquatic Centre (see Section 2.0 for more details). Although it is considered that the overall development will operate in an integrated manner, with the café and gym supporting the Aquatic Centre as the significant use of the site, some aspects of the proposed café and gym may operate and function independently of the Aquatic Centre. It is not considered that the café and gym will operate as such as scale and intensity to create additional impacts, e.g. significant standalone traffic generation.

Other changes to the development application in direct response to the IR and FA are identified below:

- The gross floor area (GFA) of the Building 3 (Grandstand) has increased by 28m^2 and the overall site cover has increased by 0.1%.
- Updates to the Elevation Plans to identify Natural Ground Level and dimensions.
- Updates to the alignment of the internal north-south internal vehicle accessway (Easement A) to provide a bus set down zone and an additional western walkway extending from Wyndham Avenue to the northern carpark which results in an increase in the overall area of the easement by 277m^2.
- Amendments to the Wyndham Avenue site frontage to provide an indented bus bay and bus stop.
- Updates to the northern carpark and east-west internal vehicle accessway (Easement B) to provide additional garden beds and landscaping which results in a marginal reduction in the overall area of the easement by 6m2.
- Inclusion of Easement Cover Lot 2 to cover the pedestrian footpath from Wyndham Ave to the Turtle Way Bikeway to allow for public thoroughfare.
- Inclusion of street trees along the Wyndham Avenue frontage, as well as Arthur Street.
- Inclusion of a covered and enclosed refuse storage area at rear of the Building 3 (Grandstand).
- Amendments to the height of the waterslide tower from 10.7m to 12m.
- Provision of a Movement and Views Plans through the precinct to ensure sightlines to the river are maintained and pedestrian movement to the waterfront is supported.
- Provision of a Concept Masterplan to identify the proposed Aquatic Centre as Precinct 1 of the future 3 Precincts intended to be established to activate the riverfront site and create a mixed-use community hub.
- Additional perspectives added of future stages that combine with the Aquatic Centre provide mixed-use recreational and entertainment precinct.

2.0 Change to application

As identified in Section 1.0 of this letter, the majority of the changes to the development application are in response to the IR items raised by Council.

In response to Item 5 of the IR, the development application will be changed to include Indoor Sport and Recreation (Gym) and Food and Drink Outlet (Café) as defined land use to the Outdoor Sport and Recreation (Aquatic Centre).

Regardless of these uses now being defined land uses instead of ancillary uses, they will continue to support the primary operation of the Aquatic Centre, which is the first stage in the establishment of a broader mixed-use recreation and entertainment development within the Boyne Island Town Centre. A Food and Drink Outlet and Indoor Sport and Recreation are both uses that are contemplated in the Centre zone given that they are code assessable in Table 5.5.7 in Council's Planning Scheme. Refer to Section 4.0 of the letter and the response to IR Item 5 for more details.

As a result of the change, we request a revised Confirmation Notice from Council which identifies that the development application seeks approval for a Development Permit for the following:

- Development Permits for a Material Change of Use for an Outdoor Sport and Recreation (Aquatic Facility), Indoor Sport and Recreation (Gym) and Food and Drink Outlet (Café); and

- Development Permit for Reconfiguring a Lot for a Boundary Realignment and Access Easements.

In accordance with section 52(3) of the Planning Act, *"if the change is a minor change, the change does not affect the development assessment process".* In accordance with section 26.1 of the DA Rules, *"for a change that is not a minor change, the development assessment process does not stop if the assessment manager is satisfied the change…(b) is in response to an information request for the application".*

The majority of the changes are consistent with the criteria of a 'minor change' and 'not substantially different development' criteria contained in the *Planning Act 2016* and Schedule 1 of the DA Rules. The inclusion of the new defined uses of Indoor Sport and Recreation (Gym) and Food and Drink Outlet (Café) are not minor, but this change has been made directly in response to Council's IR item 5.

In response to the change, an updated DA Form 1 has been provided in **Attachment 1**.

Based on section 4.3.1(a) of Council's current Fees and Charges Schedule 2021/2022, proposed changes under section 52 of the Planning Act requires an additional development assessment fee of $4,503, which includes the following fees:

- $2,469 for a code assessable Food and Drink Outlet; and
- $2,034 for Indoor Sport and Recreation that is less than 250m^2.

It is requested that Council confirm these fees prior to issuing a fee quote for the change.

3.0 Other relevant matters

Pursuant to Section 45 (5) of the Planning Act, impact assessable development involves an assessment that:

(a) must be carried out –

(i) against the assessment benchmarks in a categorising instrument for the development; and

(ii) having regard to any matters prescribed by regulation for this subparagraph; and

(b) may be carried out against, or having regard to, any other relevant matter, other than a person's personal circumstances, financial or otherwise.

In the circumstance that Council considers that the development results in a non-compliance with the planning scheme (e.g. IR items 1 and 2), the following matters are relevant to the assessment of the development application, including the changes made to the application as part of the IR response:

1. Community need;
2. Economic opportunity;
3. Relevance of Assessment Benchmarks; and
4. Circumstances not anticipated by the planning scheme.

These matters are further discussed in the following sections.

3.1 Community need

In 2018-2019 Council undertook a Feasibility Study and Community Engagement regarding the desire for an Aquatic Centre to be established within the Boyne Island and Tannum Sands area. An overwhelming 95% of respondents identified they would like to see the development of the Aquatic Centre.

As part of ZenDev's proposed Aquatic Centre project at the corner of Wyndham Avenue and Centenary Drive, significant engagement has occurred to date with the local community and business, see table 1, with additional community engagement planned to occur during the statutory public notification period. The development has received overwhelming support for an Aquatic Centre to be established on-site. A detailed summary of the community engagement activities and results will be provided at conclusion of the public notification period.

Table 1. Community engagement undertaken to date

Type	No. of engagements	Reached
Radio interview ABC Capricornia	**5**	**3,000 (estimate)**
Media Release – November 2020 Circulated by The Courier Mail, The Toowoomba Chronicle, Townsville Bulletin, Gladstone Observer, Queensland Times, Daily Mercury	**0**	**30,000 (estimate)**
Media Release – May 2021 Circulated by The Courier Mail, The Toowoomba Chronicle, Townsville Bulletin, Gladstone Observer, Queensland Times, Daily Mercury	**0**	**50,000 (estimate)**
Website	**500**	**4,950**
Social media	**8,025**	**38,574**
Other	**190**	**590**
Deputation	100	500
Email Enquiry	10	10
Phone Enquiry	30	30
Meetings	50	50
Total	**8,720**	**127,114**

The proposed Aquatic Centre will provide outdoor sport and recreation activities to meet the needs of the Boyne Island community. Delivery of the Aquatic Centre is the first step in the development of a mixed-use precinct which will enhance the Town Centre's role, strengthening its viability by diversifying the centre's offering.

The proposed Aquatic Centre will be located in a strategic location on the corner of main access routes Centenary Drive and Wyndham Avenue, between the Boyne Island Town Centre and Boyne River. The site is well-located and accessible by public transport, cycling and pedestrian networks. Furthermore, the site is vacant and flat, and is not subject to adverse hazards, e.g. bushfire or flood. The proposed application intends to develop a long-standing underutilized riverfront site and provide a facility that complements the existing uses within the Town Centre. The development will support the delivery of a mixed-use Town Centre that is a social and economic focal point for the community.

3.2 Economic opportunity

The establishment of the Aquatic Centre, and additional stages of the Masterplan, will have a flow-on economic opportunities that will benefit the existing Town Centre. Economic benefits generated by the proposal can be divided into two categories, benefits derived from the construction period and the ongoing operation of the Subject Site.

Approximately $67 million in direct investment will be generated from the construction of the proposal, this investment is estimated to support 510 (direct and indirect) full-time equivalent (FTE) jobs over the construction period. Ongoing operations at the Subject Site are estimated to generate $16 million in total output and $5 million in value added year. Approximately 240 (direct and indirect) FTE jobs are anticipated to be supported by the operations.

The proposal is expected to generate significant visitation, attracting approximately 700,000 visits to the Subject Site a year. These visitors will generate expenditure in the order of $7 million a year, some of which will support Boyne Island business beyond the Subject Site, including the Boyne Island Town Centre.

The proposal will generate significant economic benefits and activity for the Boyne Island and broader Gladstone economies. An important factor facilitating these benefits are the potential synergies associated with co-location of complementary uses at the Subject Site and the Boyne Island Town Centre, which could include but are not limited to:

- Parents dropping kids off at the aquatic centre may then visit the Boyne Island Town Centre or boat club restaurant.

- Businesses in the Boyne Island Town Centre will benefit from the exposure generated by the development.
- Synergies between the aquatic centre, future hotel and boat club could see additional bookings for the hotel on the basis of having access to a pool and river locality, and in turn increase patronage of the Aquatic Centre.
- Likewise, synergies between the future hotel and boat club will exist as well.

Mixed-use centres are broadly recognised as having positive outcomes, servicing a range of needs of the local community. Increased foot traffic from non-retail uses helps to support retail businesses, build critical mass, facilitate trip chaining, and improve overall amenity.

Currently, the Boyne Island Town Centre provides limited non-retail uses and the development would introduce a range of non-retail uses not currently provided. Apart from local convenience shopping, the Boyne Island Town Centre provides limited other facilities or services.

The proposed development will enhance the role of the Boyne Island Town Centre, increase the range of amenity available to the community, and provide additional support to businesses in the Town Centre; which in turn will support development of a more diverse retail offering.

The economic opportunity of the proposed Aquatic Centre at this location, subsequent stages of the masterplan and flow-on economic benefits to the existing Boyne Island Town Centre are further discussed in the response to IR Item 1 Part C and the Economic Overview in **Attachment 3**.

3.3 Relevance of Assessment Benchmarks

The planning scheme commenced on 3 July 2017 and is now four years old. The concept diagram of the Town Centre does not reflect the existing approval which varies the effect of the (then) *Calliope Shire Planning Scheme 2007* in accordance with the Boyne Tannum Precinct Code preliminary approval document ('PAD) (DA/20701/2008). The PAD seeks to establish predominately residential uses supported by a variety of health, retail and entertainment activities. Despite being approved in 2010 there has been no progression of the development and the site continues to remain vacant.

With limited local population growth and development activity occurring in the Boyne Island area in recent years, uncertainty exist as to the feasibility and whether the subject site will be developed for 'traditional centre uses' in the future. This is further evidenced by the fact no development activity has occurred on-site since the development application was issued and current planning scheme provisions took effect. On this basis, it is considered that the current assessment benchmarks, including the Strategic Framework Boyne Island Town Centre Concept Plan, are not reflective of the market conditions and may not be in the best long term interest of the Boyne Island Town Centre.

The Aquatic Centre will strengthen the centre by diversifying the suite of land uses and delivering on a demonstrated community need. The potential adverse economic impacts to the existing centre of developing the subject site with traditional retail uses in accordance with the planning scheme, is further discussed in the response to IR Item 1 Part A and the Economic Overview in **Attachment 3**.

3.4 Circumstances not anticipated by the planning scheme

When the planning scheme was drafted in 2017 it did not anticipate the global pandemic. Since this time there has been many economic and social changes following the global pandemic. COVID-19 has had a major impact on the Queensland economy, in particular Regional Queensland's tourism industry. Movement restriction over the course of 2020 and 2021 resulted in many tourism businesses being impacted. The resurgence of domestic travel as a result of international border restrictions means that Boyne Island and Tannum Sands are well placed to leverage this domestic tourism.

The proposed development will enhance the area's appeal and attract additional visitation. The Aquatic Centre will not only respond to local community need but also provide economic benefit by stimulating visitor spending in the area and broader region.

Refer to the Economic Overview in **Attachment 3** for more details.

4.0 Response to Information Request items

The following section provides a response to each of the items raised in the IR.

Item 1:

The subject site is acknowledged with the Strategic Framework as the Boyne Island Centre development and is located within the Centre Zone.

(A) The strategic intent considered the site in a more traditional development sense by encouraging retail, community services and some residential components to create a true mixed use centre.

(B) Furthermore, it is acknowledged that Gladstone Regional Council have a major project underway to provide a Boyne Tannum Aquatic Centre within this locality on an alternative site.

(C) Provide further justification on how the proposed Aquatic Centre complements the centre vision and does not undermine the potential of the Boyne Island Centre development. The Applicant may consider providing additional technical reports such as an Economic and Community Needs Assessment to further support the proposed use, and/or site analysis regarding the location/zoning.

Response to Item 1:

Item 1 of Council's information request relates to three parts:

A. Strategic intent of the Boyne Island Centre;

B. Alternative Council project for Boyne Tannum Aquatic Centre; and

C. Need for Aquatic Centre within the Boyne Island Centre.

Response to Part A – Strategic intent of the Boyne Island Centre:

The concept diagram of the Boyne Island Centre in Section 3.6.1 of the Strategic Framework represents a high level conceptual illustration of how the aspirations of the planning scheme may be met, however, there may be other development outcomes different to the structure plan that still achieve the intent of the planning scheme to strengthen the economic viability and create a community focal point within the Boyne Island Centre.

It is noted that the concept diagram has been included within the planning scheme for some time but has not eventuated in a development outcome. The current version of the planning scheme identifying the concept of the Boyne Island Centre commenced on 3 July 2017. Accordingly, it could be argued that the Structure Plan does not adequately reflect the current market and has been overtaken by events, including the global pandemic. The Preliminary Approval DA/20701/2008 approved by Council on 1 November 2010 reflects some of the outcomes of the Boyne Island Centre diagram but has not been developed, indicating the approval isn't feasible in the current market conditions. Please also refer to Section 3.3 of this letter.

The concept diagram's location in the Strategic Framework reinforces its intent as a strategic and aspirational plan and should not be referenced as a prescriptive spatial requirement. Given that it is included in the Strategic Framework there is flexibility in the strategic vision for the site and how this is delivered as a development outcome.

Despite the proposed development not aligning exactly with the strategic vision / concept plan for the site as identified in the strategic framework, the proposed Aquatic Centre and Masterplan (refer to **Attachment 2**) does achieve:

- enhancement of the existing centre;
- pedestrian access and views from Wyndham Ave to the Turtle Way Bikeway;
- activation of the river edge; and
- a mix of uses.

The proposed Aquatic Centre is only proposed over a portion of the subject site, approximately one third. A conceptual Masterplan has been developed by Kearney Architecture for information purposes only (**Attachment 2**). This Masterplan illustrates how the proposed Aquatic Centre will complement potential future retail, residential and community uses to create a true mixed use centre. The completed development intends to deliver the following:

- Precinct 1 – Health and Wellbeing Precinct (proposed Aquatic Centre, café and gym);
- Precinct 2 – River Activation Precinct, with the preferred use being a Club (Boat Club and Marina) and other potential uses including Bar, Club (other), Community Use, Food and Drink Outlet, Function Facility, Market, Shop; and
- Precinct 3 – Lifestyle Precinct, with the preferred use being Short-term Accommodation (Hotel), Food and Drink Outlet, Bar and Function Facility, and other potential issues including Multiple Dwellings, Residential Care Facility and Retirement Facility.

Refer to **Figure 1**.

Figure 1. Masterplan precincts

The proposed application intends to develop a site that has been vacant for over a decade and is relatively unconstrained by hazards, including flooding and bushfire. It will activate the riverfront and provide a suite of uses to promote community health and wellbeing and additional uses that will support recreation and tourism as part of the future Precinct 2 and 3 stages. Additionally, improved vehicle, pedestrian and cyclist access will be provided within the site, and to the river and adjoining centre. Refer to **Figures 2** and **3**.

Figure 2. Masterplan Perspective - Boat Club upper level overlooking the Boyne River looking south demonstrating activation of the river edge

Figure 3. Masterplan Perspective - Elevated Site View From Boyne River Looking West Towards Wyndham Avenue

Response to Part B – Alternative Council project for Boyne Tannum Aquatic Centre:

The development of an Aquatic Centre has been identified as a strategic priority by Council. We understand that Council has allocated funds in progressive budgets from 2018 to undertake a feasibility study, community engagement, preparation of a preliminary masterplan and is currently in the process of developing concept plans for the 20 Dunn Street (Coronation Drive), Tannum Sands site. However, at this time a development application for the project has not been lodged and funding for construction of the project has not been secured.

The proposed Aquatic Centre included in this application is currently being assessed by Council and will be shovel ready once a development permit has been issued and the tenant confirmed. Construction is expected to be completed by late 2023. The project will meet immediate community needs, including health and wellbeing outcomes, and will enhance the local tourism offering to support economic recovery following the global pandemic.

As identified in the response to Part A, the site proposed for the Aquatic Centre is strategically positioned to activate an underutilised riverfront site and diversify the land uses offered in the existing Town Centre. ZenDev have prepared an Options Analysis Site Comparison (**Attachment 9**) of the 20 Dunn Street, Tannum Sands site and the site subject of this development application. It is clear from this comparison that the subject site contains several desirable characteristics:

- not subject to hazards (i.e. bushfire);
- not subject to biodiversity values (i.e. regulated vegetation);
- has good access to active and public transport infrastructure;
- is located within a Centre locality where the Aquatic Centre is more likely to result in spill over economic benefits to existing businesses;
- is well serviced by the necessary urban infrastructure; and
- has a shared boundary with a small number of sensitive receivers.

Response to Part C – Need for aquatic centre within the Boyne Island Centre:

A letter has been prepared by Ethos Urban's Economics Team to demonstrate the expected economic benefits of the project (**Attachment 3**). This letter highlights the economic benefits and opportunities associated with co-locating the proposal with the Boyne Island Town Centre, including the following:

- The construction and operation of the proposal will provide employment and support local industries.
- The proposal, and potential future precincts, will enhance the local tourism offering, providing opportunities to attract new visitors and support local events.
- The Aquatic Centre will enhance the role of the centre by increasing the 'place experience' for the community and provide additional support to businesses which will, in turn, support a more diverse retail offering.

Delivery of the mixed-use precinct incorporating some non-traditional retail centre components adjacent to the Boyne Island Town Centre will enhance the Town Centre's role, strengthening its viability by diversifying the centre's offering, and is in-line with national activity centre trends.

As identified within Section 3.1 and table 1 above, ZenDev has received overwhelming community support for establishing an Aquatic Centre on-site as part of an overall concept masterplan. A detailed summary of the community engagement activities and results will be provided at conclusion of the public notification period.

Item 2:

The expansion of the Boyne Island Centre development in the Strategic Framework also acknowledged the need to reinforce and promote the riverside location via linkages (both for access and view) connecting Wyndham Avenue with the Turtle Way walkway and also activate the area of the site adjoining the walkway through community infrastructure such as a park or similar measures. The current combined development application does not illustrate nor highlight this Strategic Framework consideration of providing both access and visual linkages. Please provide revised material addressing this strategic vision for the subject site.

Response to Item 2:

The updated Architecture Plans (**Attachment 2**) provides a site analysis assessment (e.g. movement, views, activation) of the proposed Aquatic Centre and conceptual Masterplan. These plans identify the following:

- The development will strengthen the existing Boyne Island Centre.
- Opportunities for a mixture of retail, residential, recreation, community and entertainment activities.
- A pedestrian connection is provided through the site from Wyndham Avenue to Turtle Way Bikeway and Boyne River.
- The development will reinforce and activate the river edge.
- Opportunity for additional green space adjoining the river.
- Views north through the site to the river are provided from the Wyndham Avenue access point and from the internal roundabout, and new view corridors occurring up and down the river from the development

Figure 4 provides a view and access analysis of the proposed Stage 1 Aquatic Centre development. **Figure 5** provides a similar analysis of the concept masterplan, which also identifies access through, along and around the site, the presence of view corridors through the site and along the river, and the activation of the river edge. Where the proposed Aquatic Centre is approved and future stages of the masterplan proceed, elements within the 'Precinct 2 – River Activation Precinct' that include additional green space, community club, dining and entertainment along the Turtle Way Bikeway will reinforce, promote and activate the river edge to create a vibrant community focal point.

Figure 4. Aquatic center view and accessibility analysis

Figure 5. Masterplan view, accessibility and activation analysis

Item 3:

Within the Planning Report and supporting Noise Impact Assessment, the material stated the subject sites were not adjoining residential zoned land. Upon review of the Planning Scheme mapping, in conjunction with the 1.3.4 of the Planning Scheme, the subject site adjoins residential zoned land to the north and east.

As such, it is requested that both supporting documents are revised to appropriately address the Centre Zone Code criteria in relation to setbacks and acoustic fencing.

Response to Item 3:

Table 1 of the Acoustic Report (**Attachment 7**) identifies sensitive receivers which includes residential land uses on the north and south of Arthur Street. The entry building (Building 1) is setback a minimum of 22m from the common boundary and 4.5m from Arthur Street. The carparking area is setback 1.25m to 2.97m from the common boundary and the interface is improved with a landscaped buffer.

A minimum 1.8m high solid acoustic barrier will be installed along the common boundary of the site and residential receivers to the north of the site, in accordance with the recommendations of Acoustic Report (Section 5.3). The acoustic barrier will mitigate any amenity issues on nearby residences that may occur from the site access and carparking areas located near the common boundary. The provision of the acoustic fence demonstrates compliance with PO22 and AO22.2 of the Centre zone code.

Item 4:

The proposal seeks to operate between 4am and 8:30pm, however as stated in several documents, specific noise generation cannot be assumed until the detailed design stage. Council has concerns on how the proposed development will adequately address the Centre Zone's requirements on protecting adjoining residential amenity, in particular noise generation from the site.

Furthermore, the common material is silent on what activities would occur in the early morning and late evening sessions, where and what type of plant equipment will be provided for the Aquatic Centre, and other patron generated noise and background music.

Please provide further commentary and supporting evidence that the expected noise generated from the subject site will not adversely impact the adjoining residential land.

Response to Item 4:

JHA has provided a response to Item 4 of Council's IR in **Attachment 7**. This response includes updates to the Acoustic Report to include:

- Preliminary noise assessment of the mechanical plant locations – Section 5.1.

  Two plant rooms have been identified which are located beneath Building 3 (Grandstand) and on the northern exterior of the indoor swimming pool building (Building 1). Based on the above assessment, noise emissions from mechanical plant locations will not impact the amenity of the surrounding noise sensitive receivers if the noise emissions from the swimming pool plant are limited to 71dB(A) at 1 metre from the plant boundary. Noise design controls may need to be that the cumulative noise levels from plant to the nearest noise sensitive receivers meets the noise level criteria.

- Preliminary noise assessment of the indoor swimming pool and indoor gymnasium – Section 5.3 and 5.4.

  Noise emissions from the indoor gymnasium and indoor swimming pool are expected to comply with the night-time noise level criteria if a typical building façade design is proposed with a minimum thickness of 10.38mm for the façade glazing. Acoustic design of the façade, other external building elements and ventilation openings will need to be considered throughout the design stages in order to meet the noise level criteria in the nearest noise sensitive receivers.

- A description of the proposed early morning activities – Section 5.5.

The proposal seeks to operate between 4.00am and 8.30pm however, activities occurring prior to 7am will be managed to limit noise impacts on nearby residential receivers. See Section 5.5 of the Acoustic Report (**Attachment 7**) for details.

Item 5:

With reference to the proposed plans, the Applicant has included buildings for Café and Gym uses onsite. Provide further justification on how these uses will operate ancillary to the Outdoor Sport and Recreation Use (Aquatic Centre).

Response to Item 5:

As identified in Section 2.0, in response to Item 5 of the IR, the development application will be changed to include the Indoor Sport and Recreation (Gym) and Food and Drink Outlet (Café) as a defined land uses to the Outdoor Sport and Recreation (Aquatic Centre). This change has been made in accordance with section 52(3) of the Planning Act and section 26.1 of the DA Rules.

Regardless of the uses now being defined land uses rather than ancillary uses, they will remain subordinated to the primary use of the site as an Aquatic Centre based on the below justification:

- The intent of the gym and café is to support users of the Aquatic Centre to provide a diverse health and wellbeing precinct. It is unlikely that people would visit the site solely to use the gym and café.
- A Food and Drink Outlet (café) and Indoor Sport and Recreation (gym) are both uses that are contemplated in the Centre zone given that they are code assessable in Table 5.5.7 in Council's Planning Scheme.
- The gym and café are small-scale and only comprise 25% (130m^2) of the total GFA for Building 1.
- The hours of operation for the gym and cafe may will not differ from the Aquatic Centre.
- Access to the gym and café is managed through the reception to the Aquatic Centre.

Item 6:

Council requests the Applicant to amend the proposed plans to detail all building/structure heights from natural ground level and all setbacks to boundaries.

Response to Item 6:

Kearny Architecture has updated the Architecture Plans (**Attachment 2**) in response to Item 6 to identify building heights from natural ground level on all Elevation Plans and setbacks of buildings from the site boundaries on the Detailed Site Plan. **Table 1** below summarises the height and setbacks of all buildings.

Table 2. Summary of building heights and setbacks

Building	Height	Setback
Building 1	3.63m	21m to eastern frontage, 4.5m to northern frontage
Building 2	3.36m	22m to eastern frontage, 3.8m to southern frontage
Building 3	4.7m	16m to western frontage, 1.6m to southern frontage
Water Slide Tower	12m	3.1m to western frontage

Item 7:

The Applicant has stated that the proposed Aquatic Centre will construct 50 vehicle parking spaces, 20 bicycles spaces and relocate the external public bus stop along Wyndham Avenue. This is further referenced in the supporting Traffic Impact Assessment and Engineering and Stormwater Assessment Reports.

Upon review of the Planning Scheme's vehicle parking rates policy, an Outdoor Sport and Recreation is calculated by 1 space per 20m^2 GFA, or 1 space per 5 spectators able to be seated; or 4 spaces per court or lane. The proposed grandstand has not provided maximum capacity number; therefore, the assumed surplus of parking spaces may be incorrect.

Furthermore, the Traffic Impact Assessment report does not address taxi ranks, loading bays, internal bus parking (i.e. coordinated bus drop off) internal to the site.

As such, Council requests the Applicant revise the material to address expected patron usage at any one time (including a scenario for events), and provide further justification regarding taxi, loading and bus bays internal to the site.

Response to Item 7:

Bitzios has provided a response to Item 7 of Council's IR and has updated the Traffic Impact Assessment (**Attachment 5**).

Item 8:

The proposed Landscaping Plan has not included landscaping dimensions, shade trees per 6 parking spaces, nor street trees along Wyndham Avenue. Please submit a revised plan addressing the Landscaping Code requirements.

Response to Item 8:

AGLA has updated the Landscape Plan (**Attachment 4**) in response to Item 8 to include the following:

- The areas of all landscaped areas, which includes 800m^2 of turfed areas and 2,006m^2 of planted areas.
- Nine (9) shade trees have been added within carpark.
- Six (6) shade street trees have been added along Wyndham Avenue.

The provision of shade trees within the carpark and along the site frontage will improve the streetscape amenity and pedestrian comfort whilst contributing to the visual quality of the broader centre.

Item 9:

Provide a Waste Management Plan in accordance with the Development Design Code to ensure appropriate locations and servicing is conducted onsite. Council has concerns that an inadequate Waste Management Plan may result in adverse odor impacts on the adjoining residential zoned land.

Response to Item 9:

In response to Item 9 of Council's IR, a Waste Management Plan ('WMP') has been prepared by MRA Environmental (**Attachment 8**). The WMP ensues the waste generation, storage and collection activities for the operational phase of the development are generally in accordance with Council's Development Design Code and the Waste Management Planning Scheme Policy.

5.0 Response to Further Advice items

The following section provides a response to each of the items raised in the FA.

Item 1:

Provide a Sewerage Master Plan:

(a) Including sewerage demand calculations (and diurnal pattern) and demonstrate that the proposed development will be serviced by appropriate sewerage infrastructure in accordance with Acceptable Outcome 2.1 of the Development Design Code.
(b) Details of the sewerage impacts of pool operational/maintenance measures to avoid exceedance of design demands.

Response to Item 1:

vT Consulting Engineers has provided a response to the Items in Council's FA and has updated the Engineering Report and Stormwater Management Plan (**Attachment 6**).

Item 2:

Provide an amended version of the Engineering Report & Stormwater Management Plan that demonstrates compliance with the Queensland Urban Drainage Manual requirements for stormwater quantity including:

(a) Demonstrating non-worsening between pre- and post- developed states at the discharge point on Arthur Street.

Response to Item 2:

vT Consulting Engineers has provided a response to the Items in Council's FA and has updated the Engineering Report and Stormwater Management Plan (**Attachment 6**).

Item 3:

Provide an amended version of the Engineering Report and Stormwater Management Plan that demonstrates compliance with the State Planning Policy 2017 requirements for stormwater quality including:

(a) Specification of the proposed stormwater quality improvement devices; b. Outputs from a MUSIC model that demonstrate that the reduction targets in Appendix B have been achieved.

Response to Item 3:

vT Consulting Engineers has provided a response to the Items in Council's FA and has updated the Engineering Report and Stormwater Management Plan (**Attachment 6**).

Item 4:

Provide an amended version of the Traffic Impact Assessment to show the impact of the full development, to allow for a cumulative assessment of the site/project to be undertaken.

Response to Item 4:

Bitzios Traffic Engineers has provided a response to the Items in Council's FA (**Attachment 5**).

Item 5:

Provide amended versions of the Traffic Impact Assessment and Engineering Services Report that show the proposed Wyndham Avenue access amended to be left in/left out only, due to the potential impacts on the existing shopping centre and its access by facilitating right turn movements out of the existing access as a result of shortening the existing concrete dividing median. It is noted that the provided Traffic Impact Assessment states that this is not expected to occur; however, this presents a sufficient safety concern to warrant the median remaining in its existing form as a physical prevention to right turn movements from the shopping centre.

Response to Item 5:

Bitzios Traffic Engineers has provided a response to the Items in Council's FA (**Attachment 5**).

Item 6:

Demonstrate that a service vehicle can safely enter and exit the development site using the Arthur Street access when vehicles are parked on Arthur Street and another vehicle is using the access. It is noted that the currently provided swept paths suggest that this may not be able to occur with the current proposal.

Response to Item 6:

Bitzios Traffic Engineers has provided a response to the Items in Council's FA (**Attachment 5**).

Item 7:

Provide a Water Master Plan (including modelling):

(a) clarifying the alignment of the new proposed water main and the location of connection to GRC's water network. Appendix H Engineering Report and Stormwater Management Plan (vT Consulting Engineers 2021) proposes a new service connection to GRC's existing main on Wyndham Avenue; however, a new water main is proposed in the Planning Report (Ethos Urban 2021).
(b) including water demand calculations (including diurnal pattern) and demonstrate that the proposed development will be serviced by an adequate supply of potable water in accordance with Acceptable Outcome 1.1 of the Development Design Code

Response to Item 7:

vT Consulting Engineers has provided a response to the Items in Council's FA and has updated the Engineering Report and Stormwater Management Plan (**Attachment 6**).

6.0 Conclusion

The delivery of the Aquatic Centre is the first step in the development of a mixed-use recreation and entertainment complex which will enhance the Town Centre's role, strengthening its viability by diversifying the centre's offering.

The updated Architecture Plans illustrate that the proposed development has been altered to respond to Council's concerns whilst ensuring the development remains commercially viable. A response to each of Council's items has been provided with particular focus on IR Items 1 and 2 which relate to the economic and social need for the proposal and its relationship with the existing Town Centre. Although the proposal does not align exactly with the concept identified in the Strategy Framework, a balanced assessment must occur that considers the need for the development that will activate and underutilised riverfront centre zoned site and assist in the localities economic recovery following the global pandemic. The application has been changed as a direct response to Item 5 of the IR to ensure that the gym and café are assessed as defined land uses in partnership primary Outdoor Sport and Recreation Use.

In accordance with section 13.2 of the *Development Assessment Rules*, I wish to advise that we are providing all of the information requested. The applicant response period has ended, and we seek your urgent approval of this proposal.

If you have any questions regarding this matter, please do not hesitate to contact Ashley Everton.

Yours sincerely,

Prepared by:

……..

Lucy Bennett
Senior Urbanist
0403 932 027
lbennett@ethosurban.com

Approved by:

……..

Ashley Everton
Associate Director
0423 74 1892
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DA Form 1 – Development application details

Approved form (version 1.3 effective 28 September 2020) made under section 282 of the Planning Act 2016.

This form **must** be used to make a development application **involving code assessment or impact assessment**, except when applying for development involving only building work.

For a development application involving **building work only**, use *DA Form 2 – Building work details*.

For a development application involving **building work associated with any other type of assessable development (i.e. material change of use, operational work or reconfiguring a lot)**, use this form (*DA Form 1*) **and** parts 4 to 6 of *DA Form 2 – Building work details*.

Unless stated otherwise, all parts of this form **must** be completed in full and all required supporting information **must** accompany the development application.

One or more additional pages may be attached as a schedule to this development application if there is insufficient space on the form to include all the necessary information.

This form and any other form relevant to the development application must be used to make a development application relating to strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994*, and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008.* For the purpose of assessing a development application relating to strategic port land and Brisbane core port land, any reference to a planning scheme is taken to mean a land use plan for the strategic port land, Brisbane port land use plan for Brisbane core port land, or a land use plan for airport land.

Note: *All terms used in this form have the meaning given under the Planning Act 2016, the Planning Regulation 2017, or the Development Assessment Rules (DA Rules).*

PART 1 – APPLICANT DETAILS

1) Applicant details	
Applicant name(s) (*individual or company full name*)	ZenDev Pty Ltd c/- Ethos Urban
Contact name *(only applicable for companies)*	Lucy Bennett
Postal address *(P.O. Box or street address)*	Level 4, 215 Adelaide Street
Suburb	Brisbane City
State	QLD
Postcode	4000
Country	Australia
Contact number	0403 932 027
Email address *(non-mandatory)*	lbennett@ethosurban.com
Mobile number *(non-mandatory)*	
Fax number *(non-mandatory)*	
Applicant's reference number(s) *(if applicable)*	

2) Owner's consent
2.1) Is written consent of the owner required for this development application?
☒ Yes – the written consent of the owner(s) is attached to this development application ☐ No – proceed to 3)

PART 2 – LOCATION DETAILS

3) Location of the premises *(complete 3.1) or 3.2), and 3.3) as applicable)*

***Note**: Provide details below and attach a site plan for any or all premises part of the development application. For further information, see DA Forms Guide: Relevant plans.*

3.1) Street address and lot on plan

☒ Street address **AND** lot on plan (*all lots must be listed*), ***or***

☐ Street address **AND** lot on plan for an adjoining or adjacent property of the premises *(appropriate for development in water but adjoining or adjacent to land e.g. jetty, pontoon. All lots must be listed).*

	Unit No.	Street No.	Street Name and Type	Suburb
a)			Arthur Street	Boyne Island
	Postcode	Lot No.	Plan Type and Number *(e.g. RP, SP)*	Local Government Area(s)
	4680	5	RP620667	Gladstone
b)	Unit No.	Street No.	Street Name and Type	Suburb
			Centenary Drive	Boyne Island
	Postcode	Lot No.	Plan Type and Number *(e.g. RP, SP)*	Local Government Area(s)
	4680	1	RP619033	Gladstone

3.2) Coordinates of premises *(appropriate for development in remote areas, over part of a lot or in water not adjoining or adjacent to land e.g. channel dredging in Moreton Bay)*

***Note**: Place each set of coordinates in a separate row.*

☐ Coordinates of premises by longitude and latitude

Longitude(s)	Latitude(s)	Datum	Local Government Area(s) *(if applicable)*
		☐ WGS84 ☐ GDA94 ☐ Other:	

☐ Coordinates of premises by easting and northing

Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) *(if applicable)*
		☐ 54 ☐ 55 ☐ 56	☐ WGS84 ☐ GDA94 ☐ Other:	

3.3) Additional premises

☐ Additional premises are relevant to this development application and the details of these premises have been attached in a schedule to this development application

☒ Not required

4) Identify any of the following that apply to the premises and provide any relevant details

☒ In or adjacent to a water body or watercourse or in or above an aquifer

Name of water body, watercourse or aquifer: Boyne River

☐ On strategic port land under the *Transport Infrastructure Act 1994*

Lot on plan description of strategic port land:

Name of port authority for the lot:

☒ In a tidal area

Name of local government for the tidal area *(if applicable)*: Gladstone Regional Council

Name of port authority for tidal area *(if applicable)*:

☐ On airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*

Name of airport:

☐ Listed on the Environmental Management Register (EMR) under the *Environmental Protection Act 1994*	
EMR site identification:	
☐ Listed on the Contaminated Land Register (CLR) under the *Environmental Protection Act 1994*	
CLR site identification:	

5) Are there any existing easements over the premises?

Note: Easement uses vary throughout Queensland and are to be identified correctly and accurately. For further information on easements and how they may affect the proposed development, see DA Forms Guide.

☐ Yes – All easement locations, types and dimensions are included in plans submitted with this development application

☒ No

PART 3 – DEVELOPMENT DETAILS

Section 1 – Aspects of development

6.1) Provide details about the first development aspect

a) What is the type of development? *(tick only one box)*

☒ Material change of use ☐ Reconfiguring a lot ☐ Operational work ☐ Building work

b) What is the approval type? *(tick only one box)*

☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

☐ Code assessment ☒ Impact assessment *(requires public notification)*

d) Provide a brief description of the proposal *(e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots)*:

Material Change of Use for Outdoor Sport and Recreation (Aquatic Facility), Indoor Sport and Recreation (Gym), and Food and Drink Outlet (Café)

e) Relevant plans

***Note**: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms guide: Relevant plans.*

☒ Relevant plans of the proposed development are attached to the development application

6.2) Provide details about the second development aspect

a) What is the type of development? *(tick only one box)*

☐ Material change of use ☒ Reconfiguring a lot ☐ Operational work ☐ Building work

b) What is the approval type? *(tick only one box)*

☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

☒ Code assessment ☐ Impact assessment *(requires public notification)*

d) Provide a brief description of the proposal *(e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots)*:

Reconfiguring a Lot involving a Boundary Realignment and Access Easements

e) Relevant plans

***Note**: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms Guide: Relevant plans.*

☒ Relevant plans of the proposed development are attached to the development application

6.3) Additional aspects of development

☐ Additional aspects of development are relevant to this development application and the details for these aspects that would be required under Part 3 Section 1 of this form have been attached to this development application

☒ Not required

Section 2 – Further development details

7) Does the proposed development application involve any of the following?	
Material change of use	☒ Yes – complete division 1 if assessable against a local planning instrument
Reconfiguring a lot	☒ Yes – complete division 2
Operational work	☐ Yes – complete division 3
Building work	☐ Yes – complete *DA Form 2 – Building work details*

Division 1 – Material change of use

***Note**: This division is only required to be completed if any part of the development application involves a material change of use assessable against a local planning instrument.*

8.1) Describe the proposed material change of use			
Provide a general description of the proposed use	Provide the planning scheme definition *(include each definition in a new row)*	Number of dwelling units *(if applicable)*	Gross floor area (m^2) *(if applicable)*
Aquatic centre	Outdoor sport and recreation	N/A	748m^2
Gym	Indoor sport and recreation	N/A	100m^2
Café	Food and drink outlet	N/A	30m^2

8.2) Does the proposed use involve the use of existing buildings on the premises?
☐ Yes
☒ No

Division 2 – Reconfiguring a lot

***Note**: This division is only required to be completed if any part of the development application involves reconfiguring a lot.*

9.1) What is the total number of existing lots making up the premises?	
2	
9.2) What is the nature of the lot reconfiguration? *(tick all applicable boxes)*	
☐ Subdivision *(complete 10))*	☐ Dividing land into parts by agreement *(complete 11))*
☒ Boundary realignment *(complete 12))*	☒ Creating or changing an easement giving access to a lot from a constructed road *(complete 13))*

10) Subdivision				
10.1) For this development, how many lots are being created and what is the intended use of those lots:				
Intended use of lots created	Residential	Commercial	Industrial	Other, please specify:
Number of lots created				

10.2) Will the subdivision be staged?	
☐ Yes – provide additional details below ☐ No	
How many stages will the works include?	
What stage(s) will this development application apply to?	

11) Dividing land into parts by agreement – how many parts are being created and what is the intended use of the parts?				
Intended use of parts created	Residential	Commercial	Industrial	Other, please specify:
Number of parts created				

12) Boundary realignment			
12.1) What are the current and proposed areas for each lot comprising the premises?			
Current lot		Proposed lot	
Lot on plan description	Area (m^2)	Lot on plan description	Area (m^2)
Lot 5 on RP620667	15,530m^2	Proposed Lot 1	11,216m^2
Lot 1 on RP619033	1,7890m^2	Proposed Lot 2	22,222m^2
12.2) What is the reason for the boundary realignment?			
Align the lot boundaries to better reflect the proposed Aquatic Centre development footprint			

13) What are the dimensions and nature of any existing easements being changed and/or any proposed easement? *(attach schedule if there are more than two easements)*				
Existing or proposed?	Width (m)	Length (m)	Purpose of the easement? *(e.g. pedestrian access)*	Identify the land/lot(s) benefitted by the easement
Proposed Easement A	4m to 16m	160m	Pedestrian and vehicle access (2,284m²)	Proposed Lot 2
Proposed Easement B	6.3m	85m	Pedestrian and vehicle access (521m^2)	Proposed Lot 1
Proposed Easement C	1.8m	160m	Pedestrian access (380m^2)	Proposed Lot 2

Division 3 – Operational work

***Note**: This division is only required to be completed if any part of the development application involves operational work.*

14.1) What is the nature of the operational work?		
☐ Road work	☐ Stormwater	☐ Water infrastructure
☐ Drainage work	☐ Earthworks	☐ Sewage infrastructure
☐ Landscaping	☐ Signage	☐ Clearing vegetation
☐ Other – please specify:		
14.2) Is the operational work necessary to facilitate the creation of new lots? *(e.g. subdivision)*		
☐ Yes – specify number of new lots:		
☐ No		
14.3) What is the monetary value of the proposed operational work? *(include GST, materials and labour)*		
$		

PART 4 – ASSESSMENT MANAGER DETAILS

15) Identify the assessment manager(s) who will be assessing this development application

16) Has the local government agreed to apply a superseded planning scheme for this development application?
☐ Yes – a copy of the decision notice is attached to this development application
☐ The local government is taken to have agreed to the superseded planning scheme request – relevant documents attached
☒ No

PART 5 – REFERRAL DETAILS

17) Does this development application include any aspects that have any referral requirements?
***Note**: A development application will require referral if prescribed by the* Planning Regulation 2017.

☐ No, there are no referral requirements relevant to any development aspects identified in this development application – proceed to Part 6

Matters requiring referral to the **Chief Executive of the *Planning Act 2016*:**

☐ Clearing native vegetation
☐ Contaminated land *(unexploded ordnance)*
☐ Environmentally relevant activities (ERA) *(only if the ERA has not been devolved to a local government)*
☐ Fisheries – aquaculture
☐ Fisheries – declared fish habitat area
☐ Fisheries – marine plants
☐ Fisheries – waterway barrier works
☐ Hazardous chemical facilities
☐ Heritage places – Queensland heritage place *(on or near a Queensland heritage place)*
☐ Infrastructure-related referrals – designated premises
☐ Infrastructure-related referrals – state transport infrastructure
☒ Infrastructure-related referrals – State transport corridor and future State transport corridor
☐ Infrastructure-related referrals – State-controlled transport tunnels and future state-controlled transport tunnels
☒ Infrastructure-related referrals – near a state-controlled road intersection
☐ Koala habitat in SEQ region – interfering with koala habitat in koala habitat areas outside koala priority areas
☐ Koala habitat in SEQ region – key resource areas
☐ Ports – Brisbane core port land – near a State transport corridor or future State transport corridor
☐ Ports – Brisbane core port land – environmentally relevant activity (ERA)
☐ Ports – Brisbane core port land – tidal works or work in a coastal management district
☐ Ports – Brisbane core port land – hazardous chemical facility
☐ Ports – Brisbane core port land – taking or interfering with water
☐ Ports – Brisbane core port land – referable dams
☐ Ports – Brisbane core port land – fisheries
☐ Ports – Land within Port of Brisbane's port limits *(below high-water mark)*
☐ SEQ development area
☐ SEQ regional landscape and rural production area or SEQ rural living area – tourist activity or sport and recreation activity
☐ SEQ regional landscape and rural production area or SEQ rural living area – community activity
☐ SEQ regional landscape and rural production area or SEQ rural living area – indoor recreation
☐ SEQ regional landscape and rural production area or SEQ rural living area – urban activity
☐ SEQ regional landscape and rural production area or SEQ rural living area – combined use
☐ Tidal works or works in a coastal management district
☒ Reconfiguring a lot in a coastal management district or for a canal
☐ Erosion prone area in a coastal management district
☐ Urban design
☐ Water-related development – taking or interfering with water
☐ Water-related development – removing quarry material *(from a watercourse or lake)*
☐ Water-related development – referable dams
☐ Water-related development –levees *(category 3 levees only)*
☐ Wetland protection area

Matters requiring referral to the **local government:**

☐ Airport land

☐ Environmentally relevant activities (ERA) (*only if the ERA has been devolved to local government)*
☐ Heritage places – Local heritage places

Matters requiring referral to the **Chief Executive of the distribution entity or transmission entity:**
☐ Infrastructure-related referrals – Electricity infrastructure

Matters requiring referral to:
- The **Chief Executive of the holder of the licence**, if not an individual
- The **holder of the licence**, if the holder of the licence is an individual

☐ Infrastructure-related referrals – Oil and gas infrastructure

Matters requiring referral to the **Brisbane City Council:**
☐ Ports – Brisbane core port land

Matters requiring referral to the **Minister responsible for administering the *Transport Infrastructure Act 1994*:**
☐ Ports – Brisbane core port land *(where inconsistent with the Brisbane port LUP for transport reasons)*
☐ Ports – Strategic port land

Matters requiring referral to the **relevant port operator**, if applicant is not port operator**:**
☐ Ports – Land within Port of Brisbane's port limits *(below high-water mark)*

Matters requiring referral to the **Chief Executive of the relevant port authority:**
☐ Ports – Land within limits of another port *(below high-water mark)*

Matters requiring referral to the **Gold Coast Waterways Authority:**
☐ Tidal works or work in a coastal management district *(in Gold Coast waters)*

Matters requiring referral to the **Queensland Fire and Emergency Service:**
☐ Tidal works or work in a coastal management district *(involving a marina (more than six vessel berths))*

18) Has any referral agency provided a referral response for this development application?

☐ Yes – referral response(s) received and listed below are attached to this development application
☒ No

Referral requirement	Referral agency	Date of referral response

Identify and describe any changes made to the proposed development application that was the subject of the referral response and this development application, or include details in a schedule to this development application *(if applicable)*.

PART 6 – INFORMATION REQUEST

19) Information request under Part 3 of the DA Rules

☒ I agree to receive an information request if determined necessary for this development application
☐ I do not agree to accept an information request for this development application

***Note**: By not agreeing to accept an information request I, the applicant, acknowledge:*

- *that this development application will be assessed and decided based on the information provided when making this development application and the assessment manager and any referral agencies relevant to the development application are not obligated under the DA Rules to accept any additional information provided by the applicant for the development application unless agreed to by the relevant parties*
- *Part 3 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules.*

Further advice about information requests is contained in the DA Forms Guide.

PART 7 – FURTHER DETAILS

20) Are there any associated development applications or current approvals? *(e.g. a preliminary approval)*

☐ Yes – provide details below or include details in a schedule to this development application
☒ No

List of approval/development application references	Reference number	Date	Assessment manager
☐ Approval ☐ Development application			
☐ Approval ☐ Development application			

21) Has the portable long service leave levy been paid? *(only applicable to development applications involving building work or operational work)*

☐ Yes – a copy of the receipted QLeave form is attached to this development application
☐ No – I, the applicant will provide evidence that the portable long service leave levy has been paid before the assessment manager decides the development application. I acknowledge that the assessment manager may give a development approval only if I provide evidence that the portable long service leave levy has been paid
☒ Not applicable *(e.g. building and construction work is less than $150,000 excluding GST)*

Amount paid	Date paid (dd/mm/yy)	QLeave levy number (A, B or E)
$		

22) Is this development application in response to a show cause notice or required as a result of an enforcement notice?

☐ Yes – show cause or enforcement notice is attached
☒ No

23) Further legislative requirements

Environmentally relevant activities

23.1) Is this development application also taken to be an application for an environmental authority for an **Environmentally Relevant Activity (ERA)** under section 115 of the *Environmental Protection Act 1994*?

☐ Yes – the required attachment (form ESR/2015/1791) for an application for an environmental authority accompanies this development application, and details are provided in the table below
☒ No

***Note**: Application for an environmental authority can be found by searching "ESR/2015/1791" as a search term at www.qld.gov.au. An ERA requires an environmental authority to operate. See www.business.qld.gov.au for further information.*

Proposed ERA number:		Proposed ERA threshold:	
Proposed ERA name:			

☐ Multiple ERAs are applicable to this development application and the details have been attached in a schedule to this development application.

Hazardous chemical facilities

23.2) Is this development application for a **hazardous chemical facility**?

☐ Yes – *Form 69: Notification of a facility exceeding 10% of schedule 15 threshold* is attached to this development application
☒ No

***Note**: See www.business.qld.gov.au for further information about hazardous chemical notifications.*

Clearing native vegetation

23.3) Does this development application involve **clearing native vegetation** that requires written confirmation that the chief executive of the *Vegetation Management Act 1999* is satisfied the clearing is for a relevant purpose under section 22A of the *Vegetation Management Act 1999*?

☐ Yes – this development application includes written confirmation from the chief executive of the *Vegetation Management Act 1999* (s22A determination)

☒ No

***Note**: 1. Where a development application for operational work or material change of use requires a s22A determination and this is not included, the development application is prohibited development.*

2. See https://www.qld.gov.au/environment/land/vegetation/applying for further information on how to obtain a s22A determination.

Environmental offsets

23.4) Is this development application taken to be a prescribed activity that may have a significant residual impact on a **prescribed environmental matter** under the *Environmental Offsets Act 2014*?

☐ Yes – I acknowledge that an environmental offset must be provided for any prescribed activity assessed as having a significant residual impact on a prescribed environmental matter

☒ No

***Note**: The environmental offset section of the Queensland Government's website can be accessed at www.qld.gov.au for further information on environmental offsets.*

Koala habitat in SEQ Region

23.5) Does this development application involve a material change of use, reconfiguring a lot or operational work which is assessable development under Schedule 10, Part 10 of the Planning Regulation 2017?

☐ Yes – the development application involves premises in the koala habitat area in the koala priority area

☐ Yes – the development application involves premises in the koala habitat area outside the koala priority area

☒ No

***Note**: If a koala habitat area determination has been obtained for this premises and is current over the land, it should be provided as part of this development application. See koala habitat area guidance materials at www.des.qld.gov.au for further information.*

Water resources

23.6) Does this development application involve **taking or interfering with underground water through an artesian or subartesian bore, taking or interfering with water in a watercourse, lake or spring, or taking overland flow water under the *Water Act 2000***?

☐ Yes – the relevant template is completed and attached to this development application and I acknowledge that a relevant authorisation or licence under the *Water Act 2000* may be required prior to commencing development

☒ No

***Note**: Contact the Department of Natural Resources, Mines and Energy at www.dnrme.qld.gov.au for further information.*

DA templates are available from https://planning.dsdmip.qld.gov.au/. If the development application involves:

- *Taking or interfering with underground water through an artesian or subartesian bore: complete DA Form 1 Template 1*
- *Taking or interfering with water in a watercourse, lake or spring: complete DA Form1 Template 2*
- *Taking overland flow water: complete DA Form 1 Template 3.*

Waterway barrier works

23.7) Does this application involve **waterway barrier works?**

☐ Yes – the relevant template is completed and attached to this development application

☒ No

DA templates are available from https://planning.dsdmip.qld.gov.au/. For a development application involving waterway barrier works, complete DA Form 1 Template 4.

Marine activities

23.8) Does this development application involve **aquaculture, works within a declared fish habitat area or removal, disturbance or destruction of marine plants?**

☐ Yes – an associated *resource* allocation authority is attached to this development application, if required under the *Fisheries Act 1994*

☒ No

***Note**: See guidance materials at www.daf.qld.gov.au for further information.*

Quarry materials from a watercourse or lake

23.9) Does this development application involve the **removal of quarry materials from a watercourse or lake** under the *Water Act 2000?*

☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
☒ No

***Note**: Contact the Department of Natural Resources, Mines and Energy at www.dnrme.qld.gov.au and www.business.qld.gov.au for further information.*

Quarry materials from land under tidal waters

23.10) Does this development application involve the **removal of quarry materials from land under tidal water** under the *Coastal Protection and Management Act 1995?*

☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
☒ No

***Note**: Contact the Department of Environment and Science at www.des.qld.gov.au for further information.*

Referable dams

23.11) Does this development application involve a **referable dam** required to be failure impact assessed under section 343 of the *Water Supply (Safety and Reliability) Act 2008* (the Water Supply Act)?

☐ Yes – the 'Notice Accepting a Failure Impact Assessment' from the chief executive administering the Water Supply Act is attached to this development application
☒ No

***Note**: See guidance materials at www.dnrme.qld.gov.au for further information.*

Tidal work or development within a coastal management district

23.12) Does this development application involve **tidal work or development in a coastal management district**?

☒ Yes – the following is included with this development application:
- ☐ Evidence the proposal meets the code for assessable development that is prescribed tidal work *(only required if application involves prescribed tidal work)*
- ☒ A certificate of title

☐ No

***Note**: See guidance materials at www.des.qld.gov.au for further information.*

Queensland and local heritage places

23.13) Does this development application propose development on or adjoining a place entered in the **Queensland heritage register** or on a place entered in a local government's **Local Heritage Register**?

☐ Yes – details of the heritage place are provided in the table below
☒ No

***Note**: See guidance materials at www.des.qld.gov.au for information requirements regarding development of Queensland heritage places.*

Name of the heritage place:		Place ID:	

Brothels

23.14) Does this development application involve a **material change of use for a brothel**?

☐ Yes – this development application demonstrates how the proposal meets the code for a development application for a brothel under Schedule 3 of the *Prostitution Regulation 2014*
☒ No

Decision under section 62 of the *Transport Infrastructure Act 1994*

23.15) Does this development application involve new or changed access to a state-controlled road?

☐ Yes – this application will be taken to be an application for a decision under section 62 of the *Transport Infrastructure Act 1994* (subject to the conditions in section 75 of the *Transport Infrastructure Act 1994* being satisfied)
☒ No

Walkable neighbourhoods assessment benchmarks under Schedule 12A of the Planning Regulation
23.16) Does this development application involve reconfiguring a lot into 2 or more lots in certain residential zones (except rural residential zones), where at least one road is created or extended?
☐ Yes – Schedule 12A is applicable to the development application and the assessment benchmarks contained in schedule 12A have been considered ☒ No ***Note**: See guidance materials at www.planning.dsdmip.qld.gov.au for further information.*

PART 8 – CHECKLIST AND APPLICANT DECLARATION

24) Development application checklist	
I have identified the assessment manager in question 15 and all relevant referral requirement(s) in question 17 ***Note**: See the Planning Regulation 2017 for referral requirements*	☒ Yes
If building work is associated with the proposed development, Parts 4 to 6 of *DA Form 2 – Building work details* have been completed and attached to this development application	☐ Yes ☒ Not applicable
Supporting information addressing any applicable assessment benchmarks is with the development application ***Note**: This is a mandatory requirement and includes any relevant templates under question 23, a planning report and any technical reports required by the relevant categorising instruments (e.g. local government planning schemes, State Planning Policy, State Development Assessment Provisions). For further information, see DA Forms Guide: Planning Report Template.*	☒ Yes
Relevant plans of the development are attached to this development application ***Note**: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms Guide: Relevant plans.*	☒ Yes
The portable long service leave levy for QLeave has been paid, or will be paid before a development permit is issued (*see 21*)	☐ Yes ☒ Not applicable

25) Applicant declaration
☒ By making this development application, I declare that all information in this development application is true and correct ☒ Where an email address is provided in Part 1 of this form, I consent to receive future electronic communications from the assessment manager and any referral agency for the development application where written information is required or permitted pursuant to sections 11 and 12 of the *Electronic Transactions Act 2001* ***Note**: It is unlawful to intentionally provide false or misleading information.*
Privacy – Personal information collected in this form will be used by the assessment manager and/or chosen assessment manager, any relevant referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the development application. All information relating to this development application may be available for inspection and purchase, and/or published on the assessment manager's and/or referral agency's website. Personal information will not be disclosed for a purpose unrelated to the *Planning Act 2016*, Planning Regulation 2017 and the DA Rules except where: • such disclosure is in accordance with the provisions about public access to documents contained in the *Planning Act 2016* and the Planning Regulation 2017, and the access rules made under the *Planning Act 2016* and Planning Regulation 2017; or • required by other legislation (including the *Right to Information Act 2009*); or • otherwise required by law. This information may be stored in relevant databases. The information collected will be retained as required by the *Public Records Act 2002.*

PART 9 – FOR COMPLETION OF THE ASSESSMENT MANAGER – FOR OFFICE USE ONLY

Date received: | Reference number(s):

Notification of engagement of alternative assessment manager	
Prescribed assessment manager	
Name of chosen assessment manager	
Date chosen assessment manager engaged	
Contact number of chosen assessment manager	
Relevant licence number(s) of chosen assessment manager	

QLeave notification and payment *Note: For completion by assessment manager if applicable*			
Description of the work			
QLeave project number			
Amount paid ($)		Date paid (dd/mm/yy)	
Date receipted form sighted by assessment manager			
Name of officer who sighted the form			

DRAWING LIST - AQUATIC CENTRE	
No.	Name
SD-1-000-01	COVER SHEET
SD-1-000-02	DEVELOPMENT SCHEDULE
SD-1-100-01	EXISTING SITE SURVEY
SD-1-100-02	OVERALL SITE PLAN
SD-1-100-03	DETAILED SITE PLAN
SD-1-100-05	RoL PLAN
SD-1-100-10	MOVEMENT AND VIEWS
SD-1-120-01	OVERALL SITE SECTIONS
SD-1-120-02	DETAILED SITE SECTIONS
SD-1-200-01	FLOOR PLANS - GROUND LEVEL
SD-1-200-02	ROOF PLANS
SD-1-200-10	WATER SLIDE TOWER
SD-1-300-01	ELEVATIONS - SHEET 1
SD-1-300-02	ELEVATIONS - SHEET 2
SD-1-400-01	SECTIONS - SHEET 1
SD-1-470-01	SOLAR DIAGRAMS - SHEET 1
SD-1-800-01	MASTERPLAN - COVER SHEET
SD-1-800-10	MASTERPLAN - PRECINCTS

DRAWING LIST - AQUATIC CENTRE	
No.	Name
SD-1-800-11	MASTERPLAN - MOVEMENT AND VIEWS
SD-1-900-00	PERSPECTIVES - KEYPLAN
SD-1-900-01	PERSPECTIVE 1
SD-1-900-02	PERSPECTIVE 2
SD-1-900-03	PERSPECTIVE 3
SD-1-900-04	PERSPECTIVE 4
SD-1-900-05	PERSPECTIVE 5
SD-1-900-06	PERSPECTIVE 6
SD-1-900-07	PERSPECTIVE 7
SD-1-900-08	PERSPECTIVE 8
SD-1-900-09	PERSPECTIVE 9
SD-1-900-10	PERSPECTIVE 10
SD-1-900-11	PERSPECTIVE 11
SD-1-900-20	PERSPECTIVE 20

DRAWING LIST - AQUATIC CENTRE	
No.	Name
SD-1-900-21	PERSPECTIVE 21
SD-1-900-22	PERSPECTIVE 22
SD-1-900-23	PERSPECTIVE 23
SD-1-900-24	PERSPECTIVE 24
SD-1-900-25	PERSPECTIVE 25
SD-1-900-26	PERSPECTIVE 26
SD-1-900-27	PERSPECTIVE 27
SD-1-900-28	PERSPECTIVE 28
SD-1-900-29	PERSPECTIVE 29
SD-1-900-30	PERSPECTIVE 30
SD-1-900-31	PERSPECTIVE 31
SD-1-900-32	PERSPECTIVE 32
SD-1-900-33	PERSPECTIVE 33

BOYNE TANNUM AQUATIC CENTRE

2 CENTENARY DRIVE, BOYNE ISLAND - QUEENSLAND

SCHEMATIC D E S I G N - AQUATIC CENTRE

REV.	DATE	DESCRIPTION	APRV.
G	30.04.2021	REVISED DA ISSUE	MF
H	14.05.2021	DA ISSUE _ FORMAL	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

PROJECT: BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME: COVER SHEET

DRAWING NO.: SD-1-000-01 K

SCALE: 15.09.2021

PROJECT NO. 1019

15/09/2021 11:45:54 AM

LOCATION PLAN
1 : 2000

DEVELOPMENT SCHEDULE

SITE

SITE AREA	33,438m²

PARKING

AQUATIC CENTRE	50 CARS
AQUATIC CENTRE	20 BIKES

AREA SCHEDULE (GFA)

BUILDING 1	522m²
BUILDING 2	226m²
TOTAL AQUATIC CENTRE	**748m²**
BUILDING 3 (GRANDSTAND)	308m²

SITE COVER

BUILDING AREA	1445m²
% OF SITE	4.3%

REV.	DATE	DESCRIPTION	APRV.
G	30.04.2021	REVISED DA ISSUE	MF
H	14.05.2021	DA ISSUE _ FORMAL	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

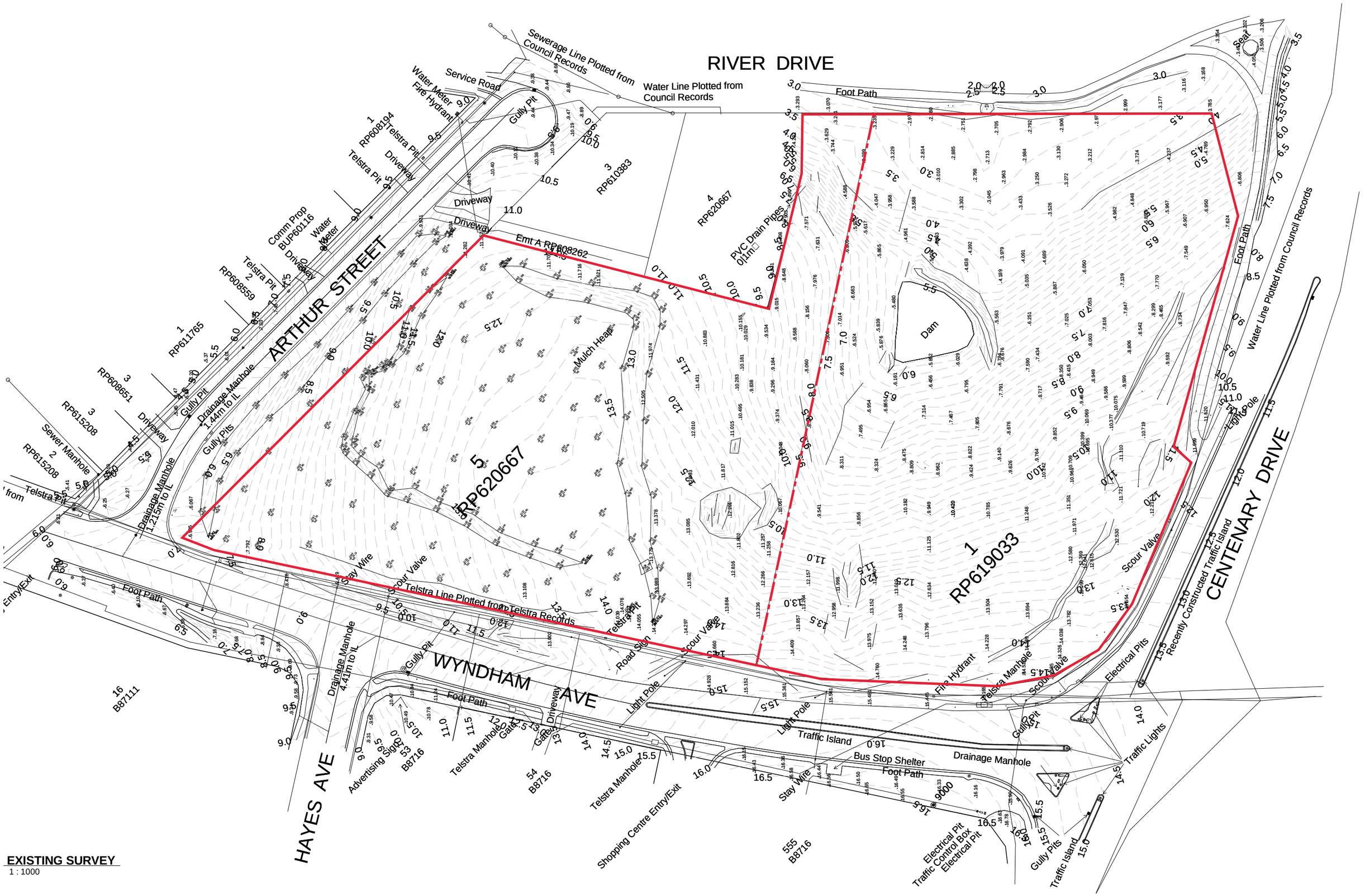
PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
DEVELOPMENT SCHEDULE

DRAWING NO.
SD-1-000-02 K

SCALE As indicated
15.09.2021
PROJECT NO. 1019

15/09/2021 11:45:56 AM



EXISTING SURVEY
1 : 1000

REV.	DATE	DESCRIPTION	APRV.
A	30.03.2021	FOR INFORMATION	MF
B	09.04.2021	DA ISSUE	MF
C	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
EXISTING SITE SURVEY

DRAWING NO.
SD-1-100-01 C

SCALE 1 : 1000
15.09.2021
PROJECT NO. 1019

15/09/2021 11:45:56 AM

OVERALL SITE PLAN
1 : 2000

REV.	DATE	DESCRIPTION	APRV.
G	30.04.2021	REVISED DA ISSUE	MF
H	14.05.2021	DA ISSUE _ FORMAL	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
OVERALL SITE PLAN

DRAWING NO.
SD-1-100-02 K

SCALE 1 : 2000
15.09.2021
PROJECT NO. 1019

15/09/2021 11:45:57 AM

Screening vegetation

1.8m acoustic fence

SITE ENTRY/EXIT

ARTHUR STREET

FOOTPATH

2972

5400

2600

6200

5400

21101

CARPARK
(50 CARS)

2400 2400

22000

26

1248

6

1
SD-1-200-01

2
SD-1-200-01

4547

BUILDING 1

AEROBICS
POOL

BIKES (15)

ENTRY/
EXIT

ENTRY/
EXIT

BUILDING 2

3815

ENTRY/
EXIT

LANDSCAPE

BIKES (5)

1603

LANDSCAPE /
RECREATIONAL
AREA

LAGOON
POOL

POOL PLANT UNDER
GRANDSTAND TO
HATCHED AREA

50m POOL

BUILDING 3

GRANDSTAND

REFUSE

BUS

COMBINED SETDOWN ZONE,
TO HATCHED AREA

1
SD-1-120-02

WATER
SLIDES

KIDS
POOL

LANDSCAPE /
RECREATIONAL
AREA

FOOTPATH

FOOTPATH

1
SD-1-200-10

WATER PLAY

3
SD-1-200-01

16025

3104

LANDSCAPE /
RECREATIONAL
AREA

INDICATIVE
COUNCIL
BUS STOP

FOOTPATH

FOOTPATH

FOOTPATH

SITE ENTRY/EXIT

2
SD-1-120-02

WYNDHAM AVENUE

DETAILED SITE PLAN

1 : 500

REV.	DATE	DESCRIPTION	APRV.
G	14.05.2021	REVISED DA ISSUE	BK
H	25.08.2021	DA RFI	MF
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

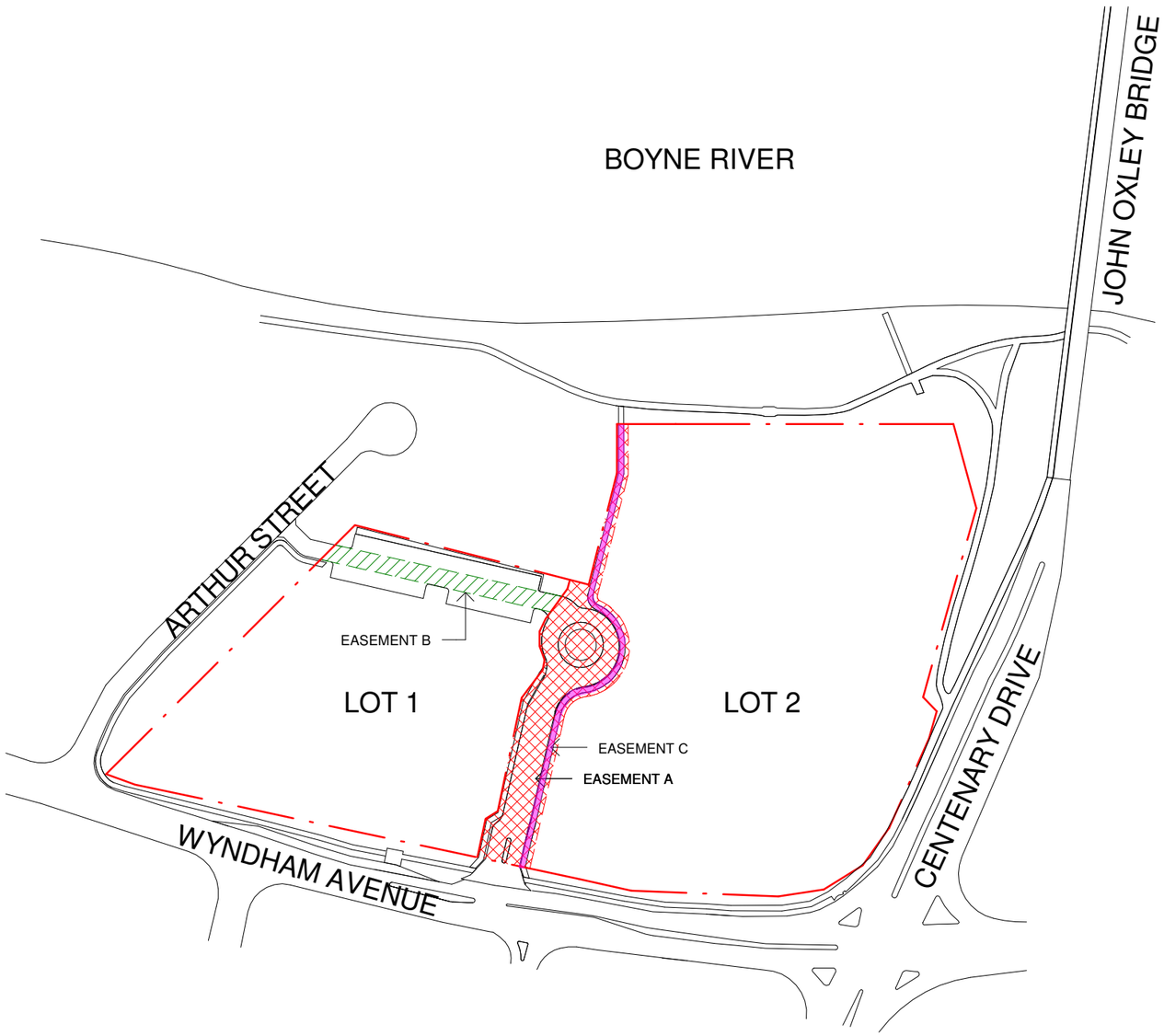
PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
DETAILED SITE PLAN

DRAWING NO.
SD-1-100-03 K

SCALE 1 : 500
15.09.2021
PROJECT NO. 1019

15/09/2021 11:41:12 AM



RoL PLAN
1 : 2000

RoL SCHEDULE

SITE

SITE AREA	33,438m²
LOT 1 (AQUATIC CENTRE)	11,216m²
LOT 2 (BALANCE LOT)	22,222m²
EASEMENT A ON LOT 2 IN FAVOUR OF LOT 1 FOR ACCESS	2,284m²
EASEMENT B ON LOT 1 IN FAVOUR OF LOT 2 FOR ACCESS	515m²
EASEMENT C ON LOT 2 FOR PUBLIC THOROUGHFARE PEDESTRIAN ACCESS	380m²

REV.	DATE	DESCRIPTION	APRV.
A	30.04.2021	REVISED DA ISSUE	MF
B	02.09.2021	DA RFI	MF
C	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
RoL PLAN

DRAWING NO.
SD-1-100-05 C

SCALE As indicated
15.09.2021
PROJECT NO. 1019

15/09/2021 11:45:57 AM

LEGEND

VIEWS THROUGH / FROM SITE

PEDESTRIAN MOVEMENT

VEHICULAR ACCESS POINT

MOVEMENT AND VIEWS

1 : 2000

REV.	DATE	DESCRIPTION	APRV.
A	15.09.2021	DA RFI	MF

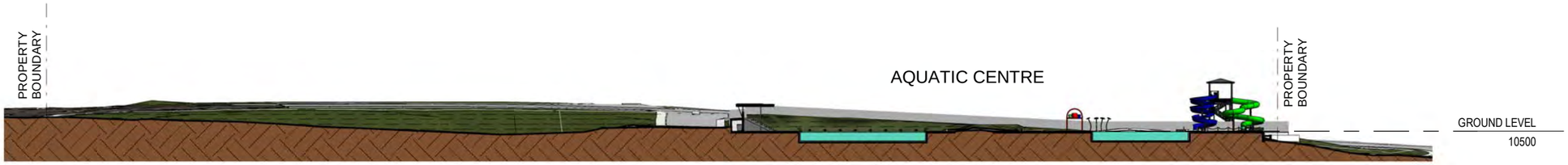
PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
MOVEMENT AND VIEWS

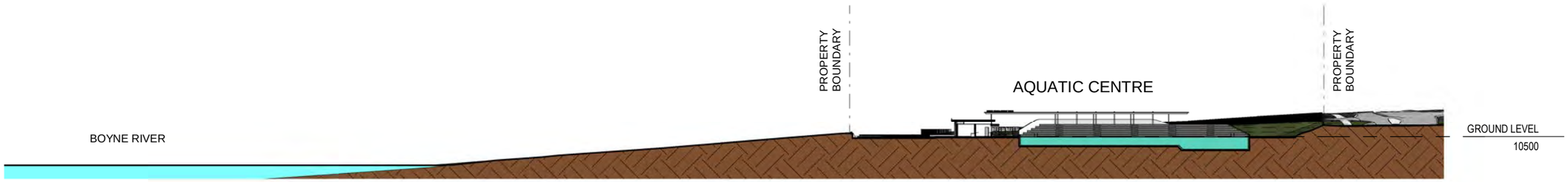
DRAWING NO.
SD-1-100-10 A

SCALE 1 : 2000
15.09.2021
PROJECT NO. 1019

16/09/2021 9:35:16 AM



OVERALL SITE SECTION 1
1 : 1000



OVERALL SITE SECTION 2
1 : 1000

REV.	DATE	DESCRIPTION	APRV.
A	30.03.2021	FOR INFORMATION	MF
B	09.04.2021	DA ISSUE	MF
C	02.09.2021	DA RFI	MF
D	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

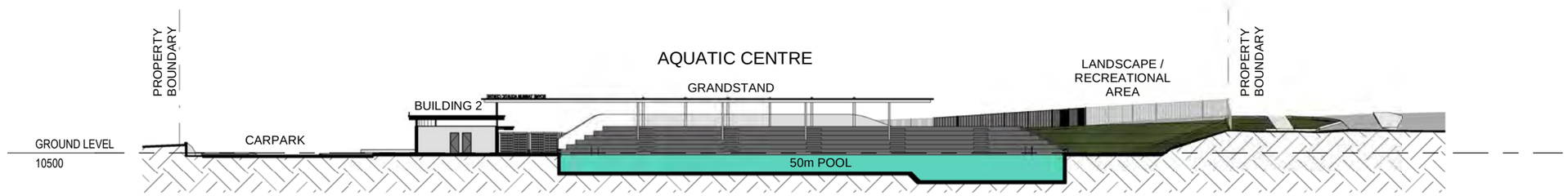
DRAWING NAME
OVERALL SITE SECTIONS

DRAWING NO.
SD-1-120-01 D

SCALE 1 : 1000
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:02 AM

DETAILED SITE SECTION 1
1 : 500



DETAILED SITE SECTION 2
1 : 500

REV.	DATE	DESCRIPTION	APRV.
G	13.05.2021	REVISED DA ISSUE	MF
H	14.05.2021	REVISED DA ISSUE	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

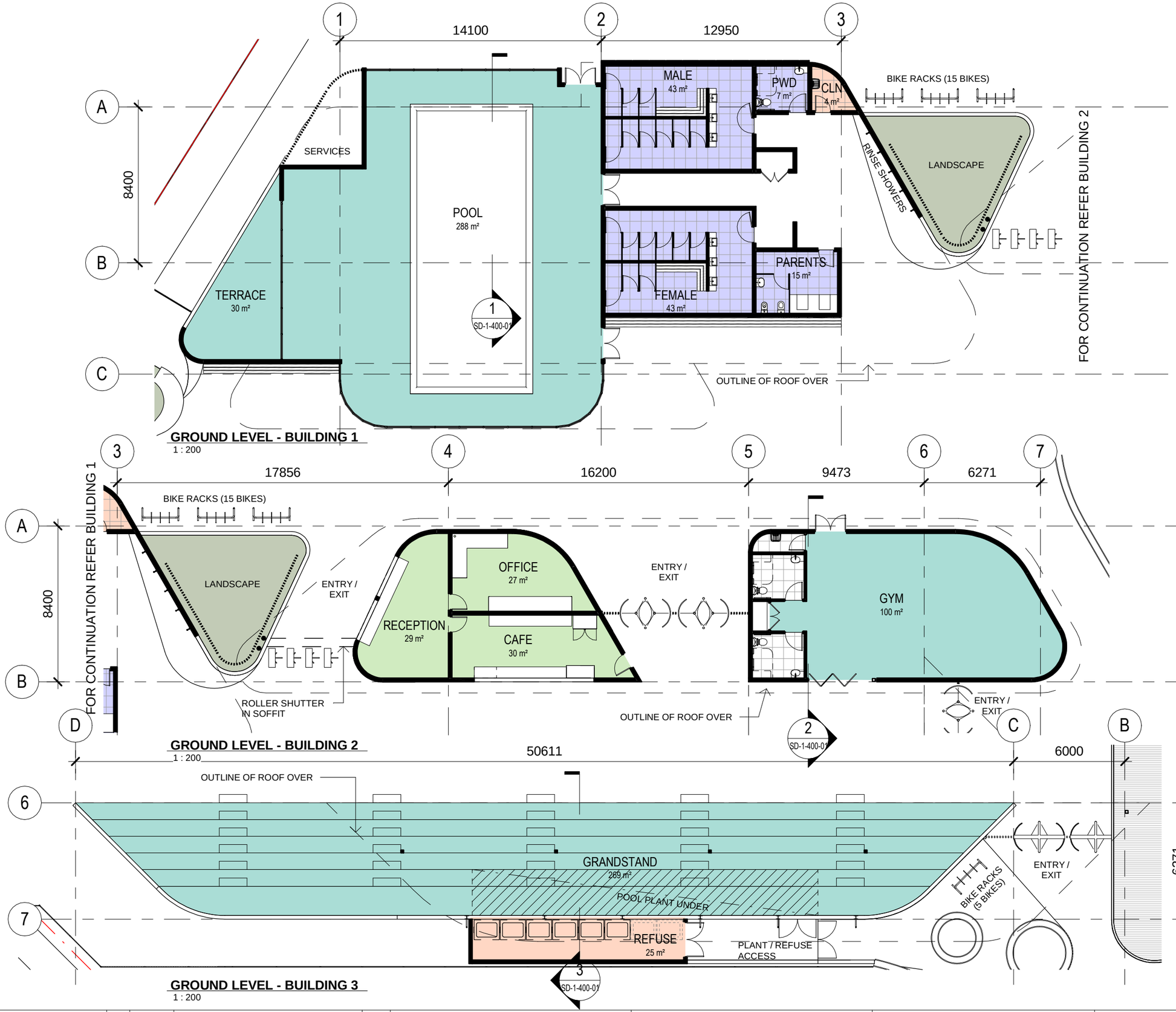
PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
DETAILED SITE SECTIONS

DRAWING NO.
SD-1-120-02 K

SCALE 1 : 500
15.09.2021
PROJECT NO. 1019

15/09/2021 11:41:15 AM



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G	13.05.2021	REVISED DA ISSUE	MF
H	14.05.2021	REVISED DA ISSUE	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

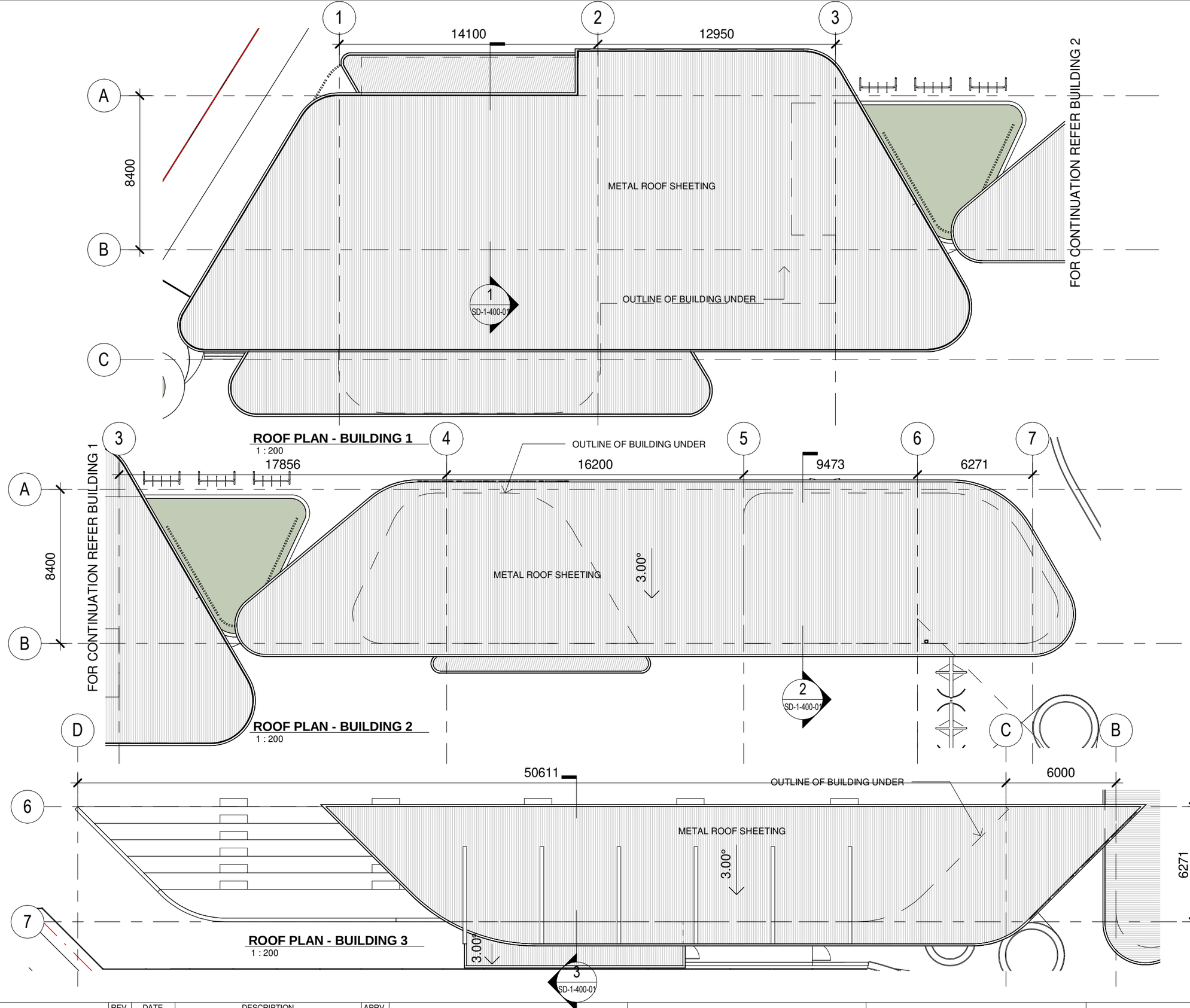
PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
FLOOR PLANS - GROUND LEVEL

DRAWING NO.
SD-1-200-01 K

SCALE 1 : 200
15.09.2021
PROJECT NO. 1019

15/09/2021 11:41:19 AM



REV.	DATE	DESCRIPTION	APRV.
G	13.05.2021	REVISED DA ISSUE	MF
H	14.05.2021	REVISED DA ISSUE	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

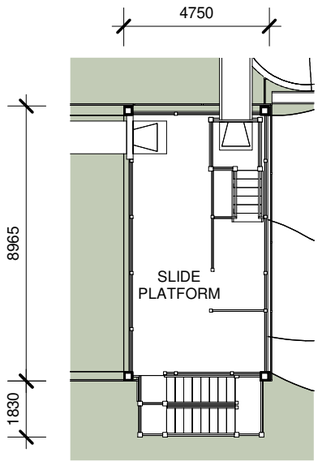
PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
ROOF PLANS

DRAWING NO.
SD-1-200-02 K

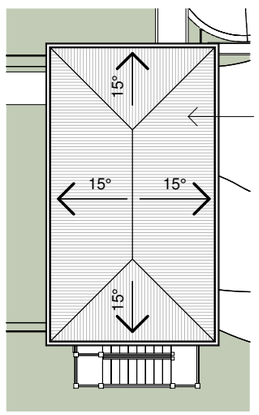
SCALE 1 : 200
15.09.2021
PROJECT NO. 1019

15/09/2021 11:41:21 AM



NOTE: WATER SLIDE TOWER IS INDICATIVE AND SUBJECT TO CHANGE TO SUIT DETAILED DESIGN REQUIREMENTS

PLATFORM LEVEL
1 : 200

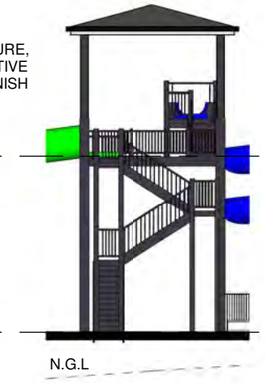


ROOF PLAN
1 : 200

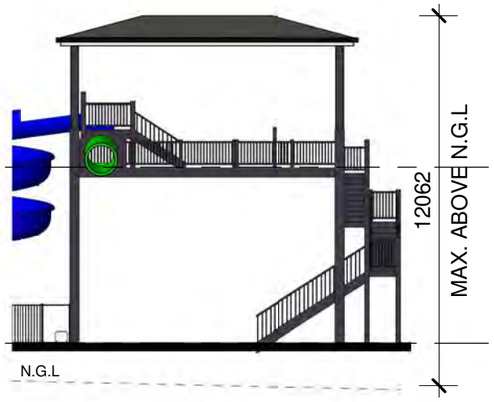
NOTE: GROUND LEVEL FENCING HIDDEN FOR CLARITY

ELEVATION - EAST
1 : 200

ELEVATION - SOUTH
1 : 200



ELEVATION - WEST
1 : 200



ELEVATION - NORTH
1 : 200

REV.	DATE	DESCRIPTION	APRV.
A	09.04.2021	DA ISSUE	MF
B	02.09.2021	DA RFI	MF
C	15.09.2021	DA RFI	MF

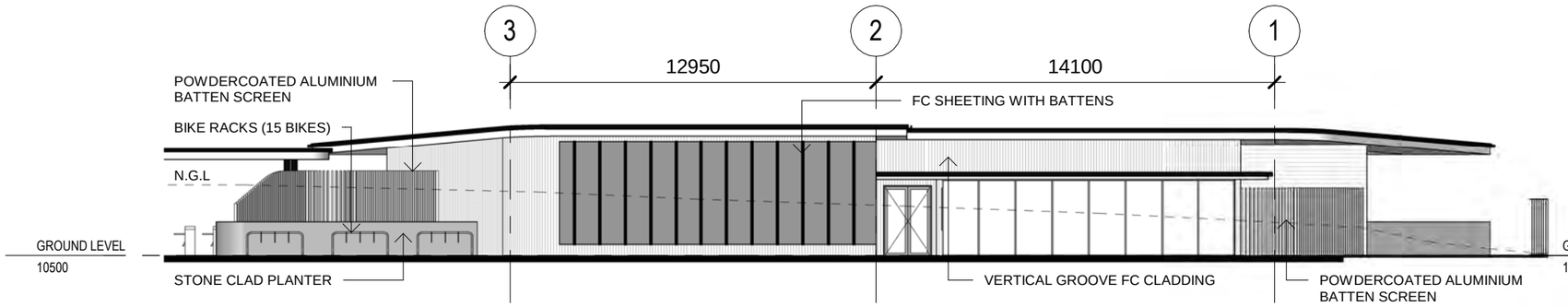
PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
WATER SLIDE TOWER

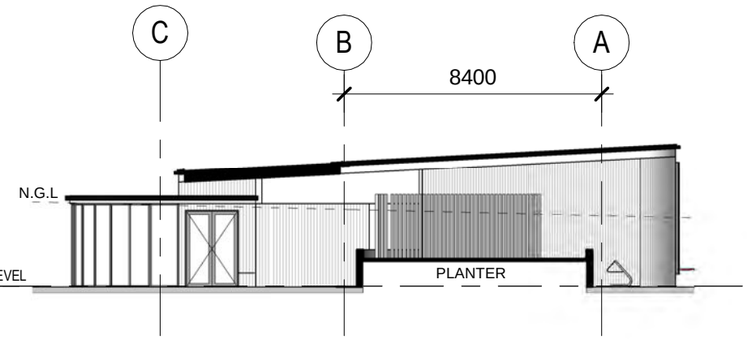
DRAWING NO.
SD-1-200-10 C

SCALE 1 : 200
15.09.2021
PROJECT NO. 1019

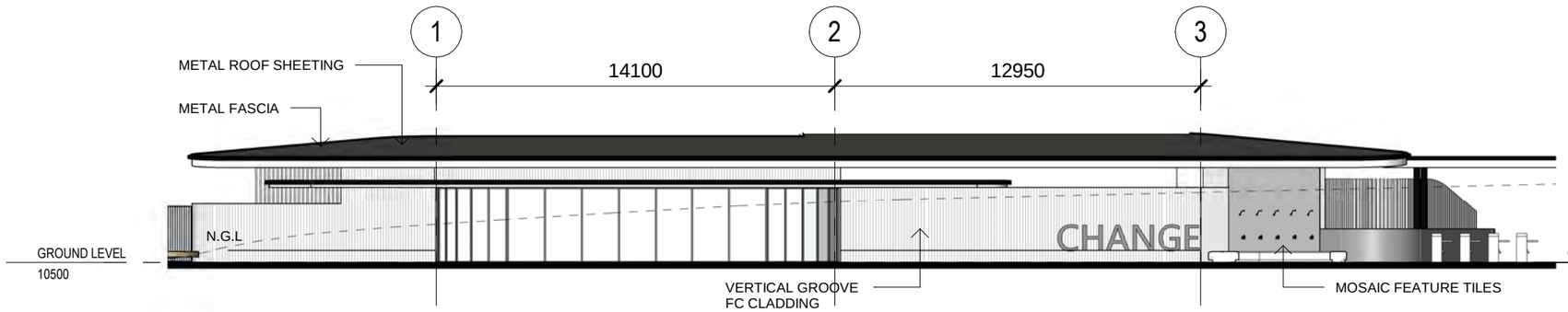
15/09/2021 11:41:26 AM



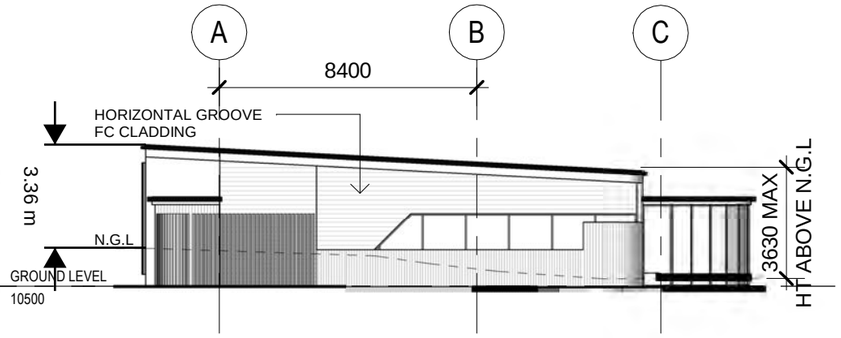
ELEVATION - BUILDING 1 - EAST
1 : 200



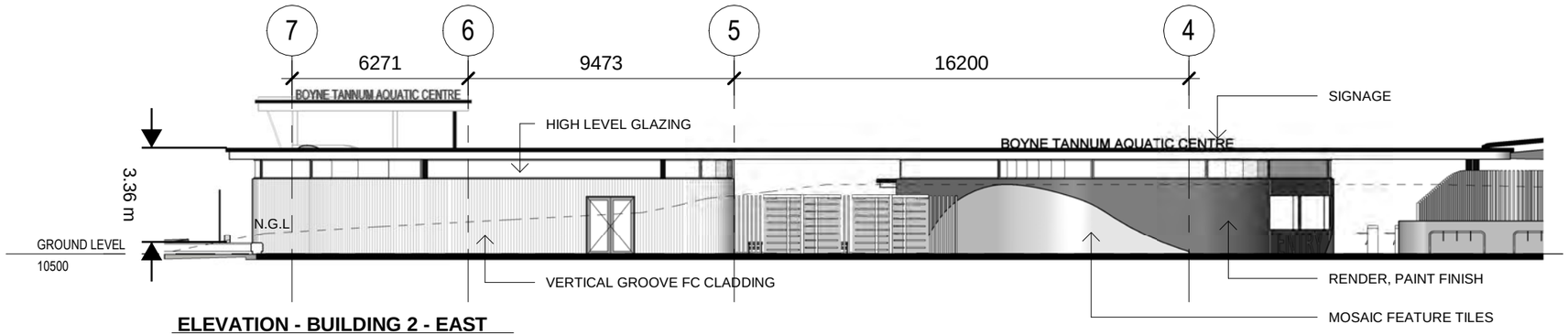
ELEVATION - BUILDING 1 - SOUTH
1 : 200



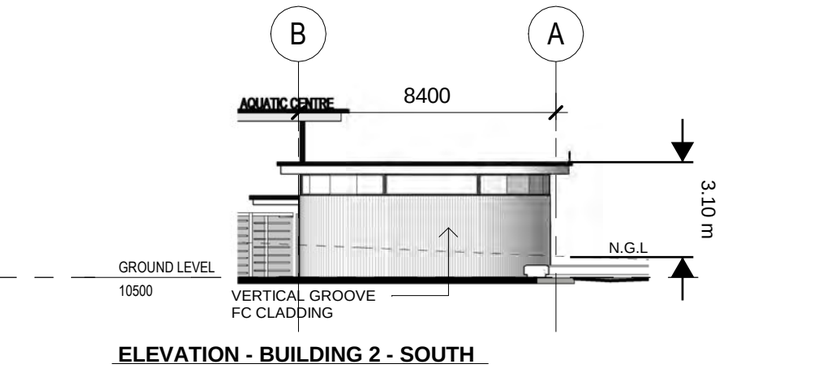
ELEVATION - BUILDING 1 - WEST
1 : 200



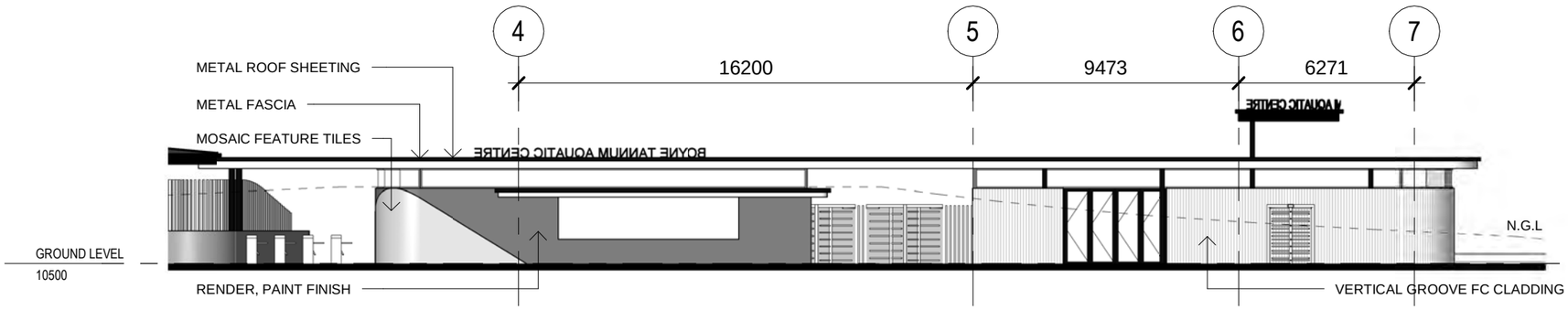
ELEVATION - BUILDING 1 - NORTH
1 : 200



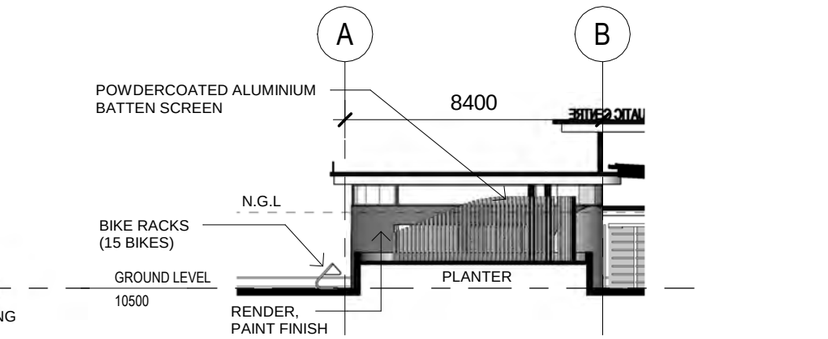
ELEVATION - BUILDING 2 - EAST
1 : 200



ELEVATION - BUILDING 2 - SOUTH
1 : 200



ELEVATION - BUILDING 2 - WEST
1 : 200



ELEVATION - BUILDING 2 - NORTH
1 : 200

REV.	DATE	DESCRIPTION	APRV.
G	13.05.2021	REVISED DA ISSUE	MF
H	14.05.2021	REVISED DA ISSUE	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

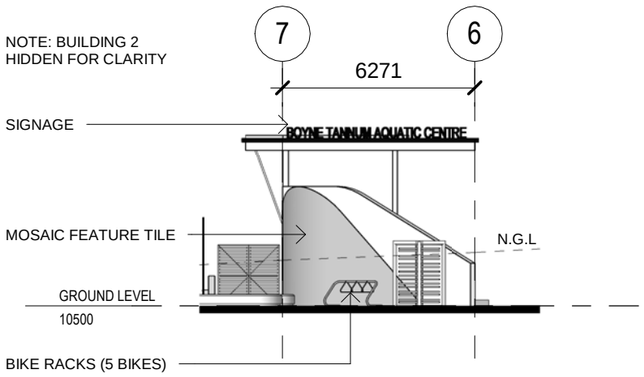
PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
ELEVATIONS - SHEET 1

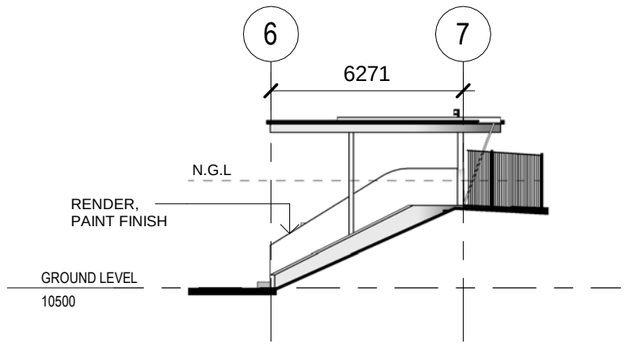
DRAWING NO.
SD-1-300-01 K

SCALE 1 : 200
15.09.2021
PROJECT NO. 1019

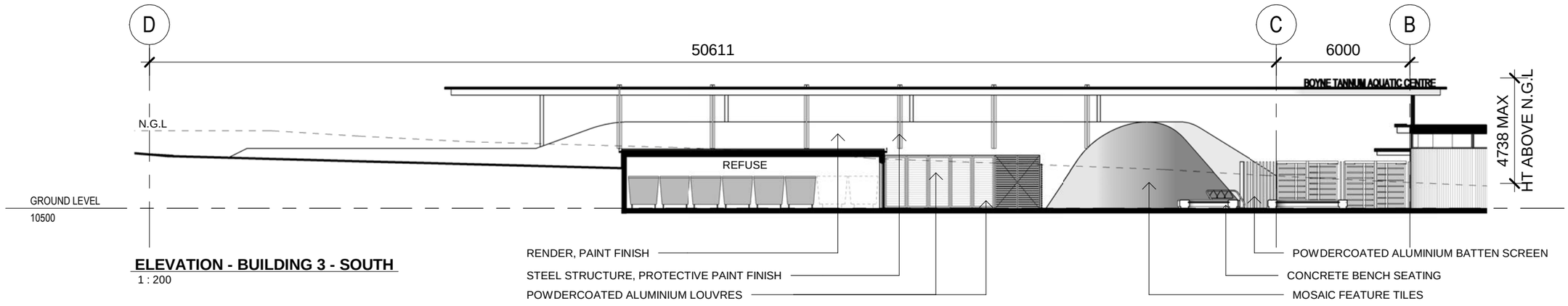
15/09/2021 11:41:31 AM



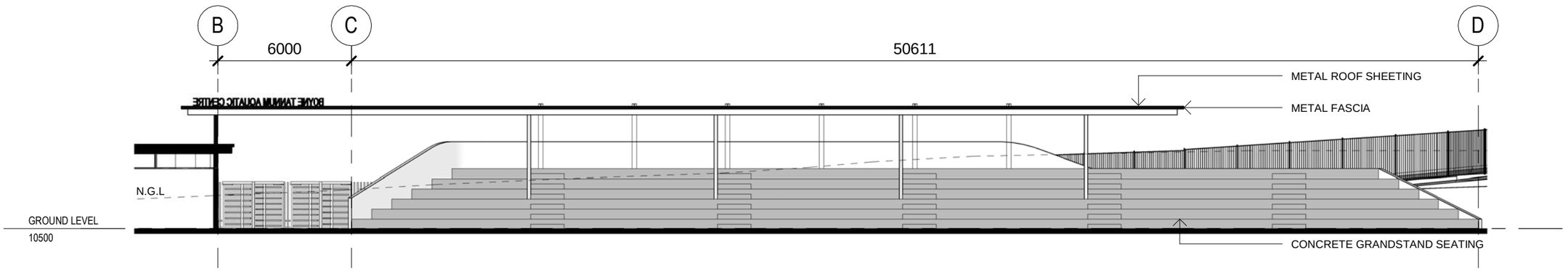
ELEVATION - BUILDING 3 - EAST
1 : 200



ELEVATION - BUILDING 3 - WEST
1 : 200



ELEVATION - BUILDING 3 - SOUTH
1 : 200



ELEVATION - BUILDING 3 - NORTH
1 : 200

REV.	DATE	DESCRIPTION	APRV.
B	09.04.2021	DA ISSUE	MF
C	28.04.2021	REVISED DA ISSUE	MF
D	02.09.2021	DA RFI	MF
E	15.09.2021	DA RFI	MF

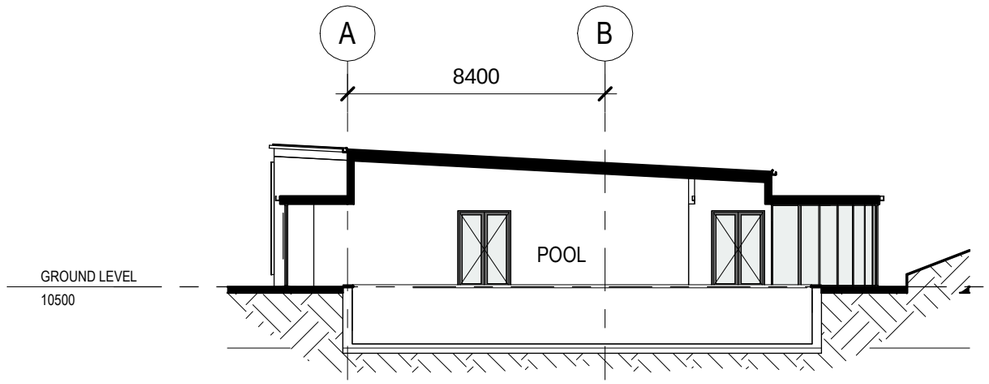
PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
ELEVATIONS - SHEET 2

DRAWING NO.
SD-1-300-02 E

SCALE 1 : 200
15.09.2021
PROJECT NO. 1019

15/09/2021 11:41:34 AM



SECTION - BUILDING 1 - 1
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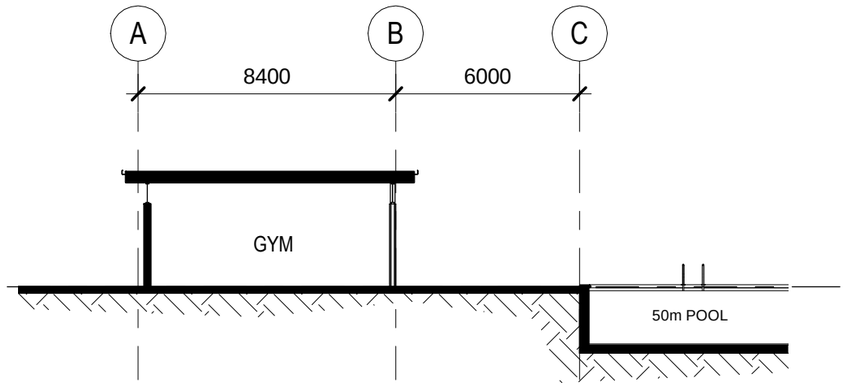

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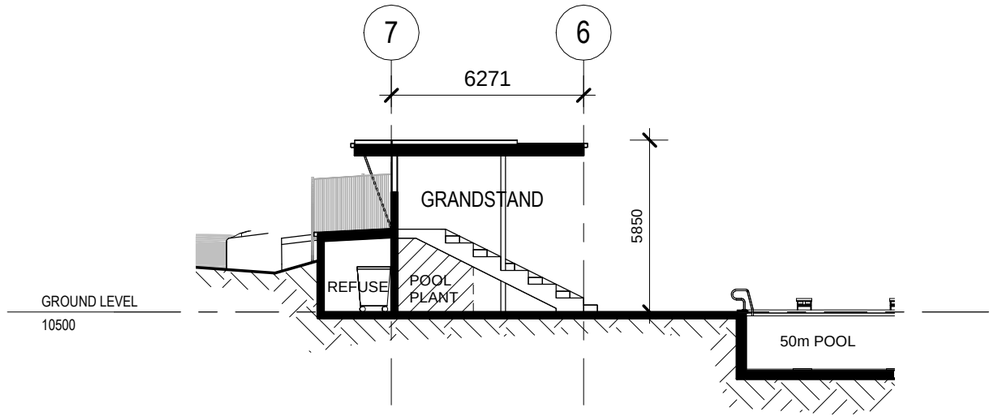

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REV.	DATE	DESCRIPTION	APRV.
G	13.05.2021	REVISED DA ISSUE	MF
H	14.05.2021	REVISED DA ISSUE	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

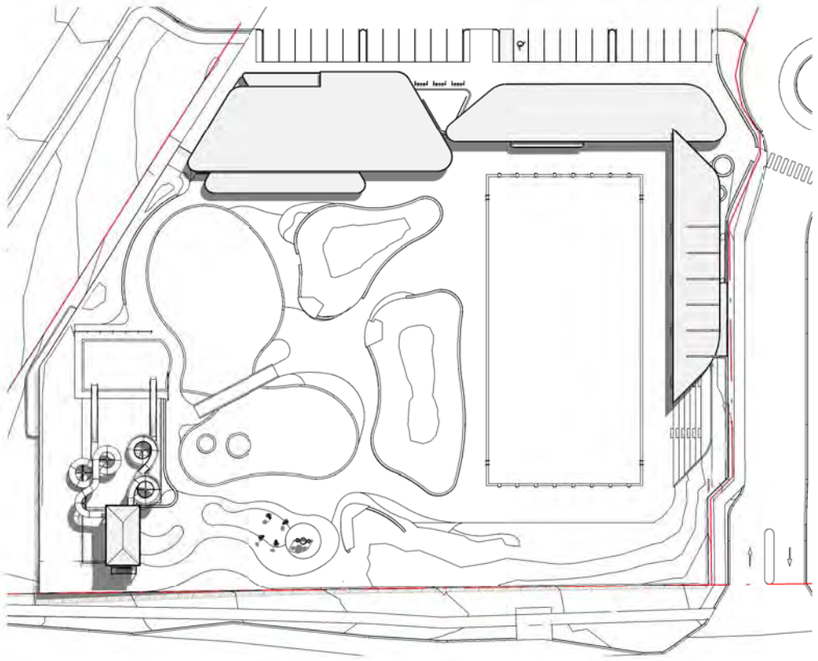
PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
SECTIONS - SHEET 1

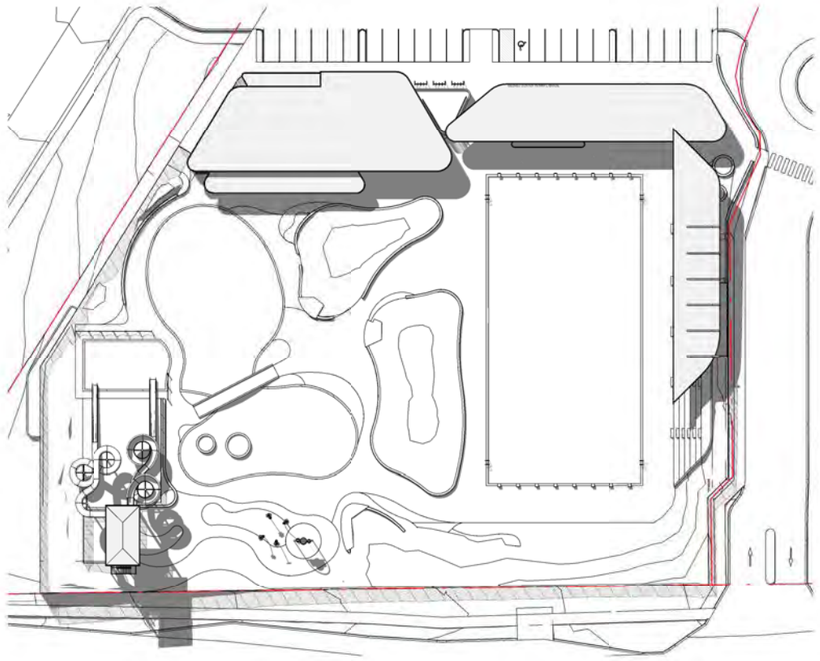
DRAWING NO.
SD-1-400-01 K

SCALE 1 : 200
15.09.2021
PROJECT NO. 1019

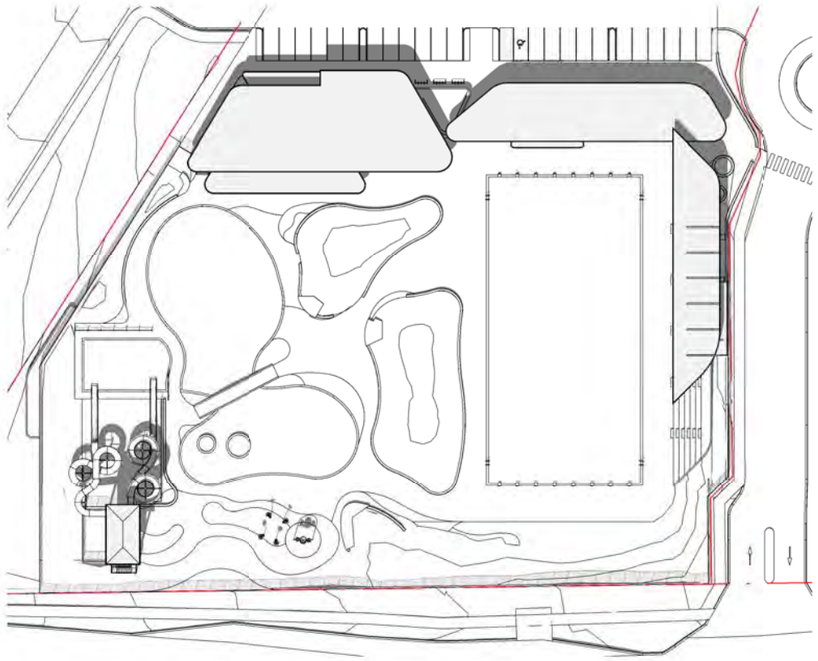
15/09/2021 11:41:37 AM



SUMMER 10AM



WINTER 10AM



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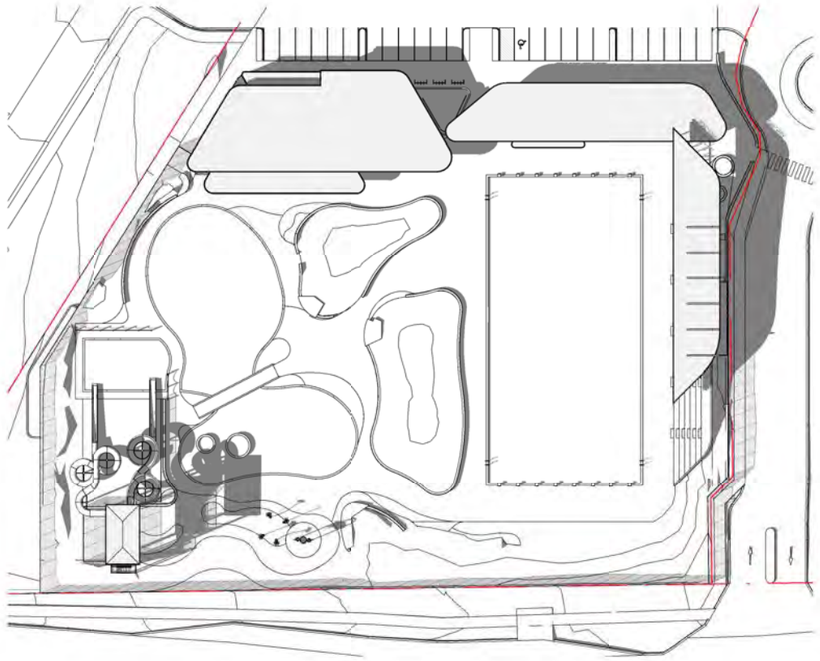


WINTER 3PM

REV.	DATE	DESCRIPTION	APRV.
G	13.05.2021	REVISED DA ISSUE	MF
H	14.05.2021	REVISED DA ISSUE	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
SOLAR DIAGRAMS - SHEET 1

DRAWING NO.
SD-1-470-01 K

SCALE 1 : 1000
15.09.2021
PROJECT NO. 1019

15/09/2021 11:41:48 AM

MASTERPLAN

FOR INFORMATION ONLY

HOTEL, BOAT CLUB AND MARINA INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
MASTERPLAN - COVER SHEET

DRAWING NO.
SD-1-800-01 A

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:02 AM

PRECINCT 2 - RIVER ACTIVATION PRECINCT (4,430m2 GFA APPROX.)

PREFERRED USES:

- CLUB (BOAT CLUB AND MARINA)

POTENTIAL USES:

- BAR
- CLUB (OTHER)
- COMMUNITY USE
- FOOD AND DRINK OUTLET
- FUNCTION FACILITY
- MARKET
- SHOP

PRECINCT 1 - HEALTH AND WELLBEING PRECINCT (748m2 GFA)

- OUTDOOR SPORT AND RECREATION (AQUATIC CENTRE)
- FOOD AND DRINK OUTLET (CAFE)
- INDOOR SPORT AND RECREATION (GYMNASIUM)

PRECINCT 3 - LIFESTYLE PRECINCT (6350m2 GFA APPROX.)

PREFERRED USES:

- SHORT-TERM ACCOMMODATION (E.G. 80 ROOM HOTEL)
- BAR
- FOOD AND DRINK OUTLET
- FUNCTION FACILITY

POTENTIAL USES:

- MULTIPLE DWELLINGS
- RESIDENTIAL CARE FACILITY
- RETIREMENT FACILITY

MASTERPLAN - PRECINCTS

1 : 2000

FOR INFORMATION ONLY

PRECINCTS 2 AND 3 SUBJECT TO FURTHER APPROVALS

REV.	DATE	DESCRIPTION	APRV.
A	30.08.2021	DA RFI	MF
B	02.09.2021	DA RFI	MF
C	15.09.2021	DA RFI	MF

PROJECT: BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME: MASTERPLAN - PRECINCTS

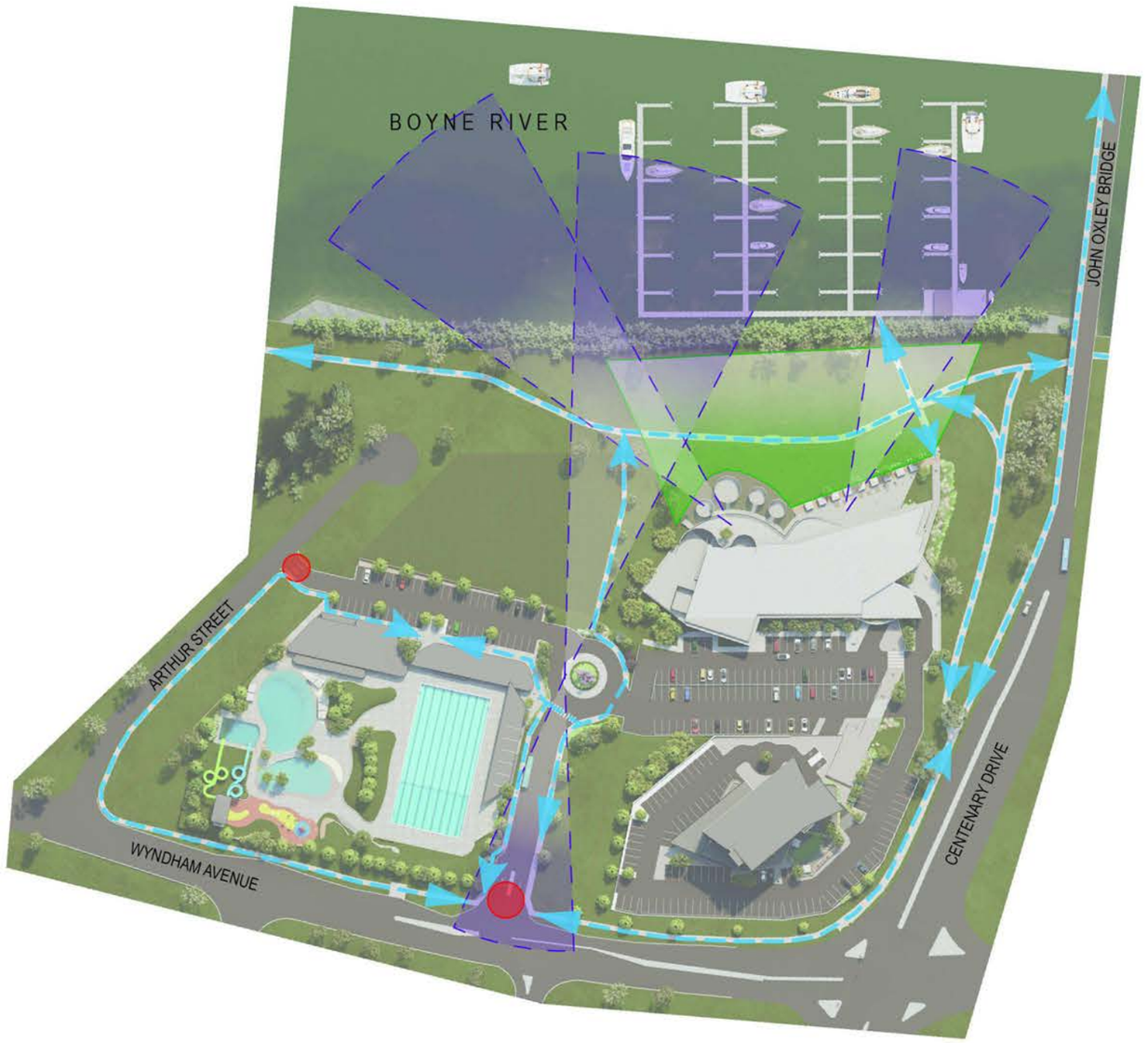
DRAWING NO.: SD-1-800-10 C

SCALE 1 : 2000

15.09.2021

PROJECT NO. 1019

15/09/2021 11:46:03 AM



LEGEND

VIEWS THROUGH / FROM SITE

PEDESTRIAN MOVEMENT

VEHICULAR ACCESS POINT

ACTIVATED RIVER FRONTAGE

MASTERPLAN - MOVEMENT AND VIEWS
1 : 2000

FOR INFORMATION ONLY

PRECINCTS 2 AND 3 SUBJECT TO FURTHER APPROVALS

REV.	DATE	DESCRIPTION	APRV.
A	30.08.2021	DA RFI	MF
B	02.09.2021	DA RFI	MF
C	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
MASTERPLAN - MOVEMENT AND VIEWS

DRAWING NO.
SD-1-800-11 C

SCALE 1 : 2000
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:03 AM

PERSPECTIVE SERIES

VIEWS 1 - 11	**PRECINCT 1 ONLY**
VIEWS 20-33	**ALL PRECINCTS**

PERSPECTIVES - KEYPLAN
1 : 2000

FOR INFORMATION ONLY

PRECINCTS 2 AND 3 SUBJECT TO FURTHER APPROVALS

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT	DRAWING NAME	DRAWING NO.	SCALE As indicated 15.09.2021 PROJECT NO. 1019	
BOYNE TANNUM AQUATIC CENTRE	PERSPECTIVES - KEYPLAN	SD-1-900-00 B		

15/09/2021 11:46:04 AM

PERSPECTIVE 1 - WYNDHAM AVENUE LOOKING NORTH-EAST

REV.	DATE	DESCRIPTION	APRV.
B	09.04.2021	DA ISSUE	MF
C	28.04.2021	REVISED DA ISSUE	MF
D	02.09.2021	DA RFI	MF
E	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 1

DRAWING NO.
SD-1-900-01 E

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:04 AM

PERSPECTIVE 2 - WYNDHAM AVENUE LOOKING SOUTH-EAST

REV.	DATE	DESCRIPTION	APRV.
C	28.04.2021	REVISED DA ISSUE	MF
D	29.04.2021	REVISED DA ISSUE	MF
E	02.09.2021	DA RFI	MF
F	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 2

DRAWING NO.
SD-1-900-02 F

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:05 AM

PERSPECTIVE 3 - ARTHUR STREET ENTRY

REV.	DATE	DESCRIPTION	APRV.
G	30.04.2021	REVISED DA ISSUE	MF
H	14.05.2021	DA ISSUE _ FORMAL	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 3

DRAWING NO.
SD-1-900-03 K

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:06 AM

PERSPECTIVE 4 - INTERNAL STREET

REV.	DATE	DESCRIPTION	APRV.
G	30.04.2021	REVISED DA ISSUE	MF
H	14.05.2021	DA ISSUE _ FORMAL	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 4

DRAWING NO.
SD-1-900-04 K

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:06 AM

PERSPECTIVE 5 - MAIN ENTRY

REV.	DATE	DESCRIPTION	APRV.
A	09.04.2021	DA ISSUE	MF
B	28.04.2021	REVISED DA ISSUE	MF
C	02.09.2021	DA RFI	MF
D	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 5

DRAWING NO.
SD-1-900-05 D

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:07 AM

PERSPECTIVE 6 - POOL AREA 1

REV.	DATE	DESCRIPTION	APRV.
G	30.04.2021	REVISED DA ISSUE	MF
H	14.05.2021	DA ISSUE _ FORMAL	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 6

DRAWING NO.
SD-1-900-06 K

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:08 AM

PERSPECTIVE 7 - POOL AREA 2

REV.	DATE	DESCRIPTION	APRV.
A	09.04.2021	DA ISSUE	MF
B	02.09.2021	DA RFI	MF
C	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 7

DRAWING NO.
SD-1-900-07 C

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:08 AM

PERSPECTIVE 8 - POOL AREA 3

REV.	DATE	DESCRIPTION	APRV.
G	30.04.2021	REVISED DA ISSUE	MF
H	14.05.2021	DA ISSUE _ FORMAL	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 8

DRAWING NO.
SD-1-900-08 K

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:09 AM

PERSPECTIVE 9 - KIDS POOL

REV.	DATE	DESCRIPTION	APRV.
A	09.04.2021	DA ISSUE	MF
B	02.09.2021	DA RFI	MF
C	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 9

DRAWING NO.
SD-1-900-09 C

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:09 AM

PERSPECTIVE 10 - LAGOON POOL 1

REV.	DATE	DESCRIPTION	APRV.
G	30.04.2021	REVISED DA ISSUE	MF
H	14.05.2021	DA ISSUE _ FORMAL	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 10

DRAWING NO.
SD-1-900-10 K

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:10 AM

PERSPECTIVE 11 - LAGOON POOL 2

REV.	DATE	DESCRIPTION	APRV.
G	30.04.2021	REVISED DA ISSUE	MF
H	14.05.2021	DA ISSUE _ FORMAL	BK
J	02.09.2021	DA RFI	MF
K	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 11

DRAWING NO.
SD-1-900-11 K

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:10 AM

PERSPECTIVE 20 - SOUTHERN EDGE OF BOAT CLUB LOOKING NORTH

FOR INFORMATION ONLY

VIEW INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 20

DRAWING NO.
SD-1-900-20 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:11 AM

PERSPECTIVE 21 - SOUTHERN BOUNDARY LOOKING NORTHWARDS ALONG THE BOYNE RIVER BANK

FOR INFORMATION ONLY

VIEW INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 21

DRAWING NO.
SD-1-900-21 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:11 AM

PERSPECTIVE 22 - INTERNAL SITE VIEW BETWEEN HOTEL AND BOAT CLUB LOOKING NORTH

FOR INFORMATION ONLY

VIEW INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 22

DRAWING NO.
SD-1-900-22 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:11 AM

PERSPECTIVE 23 - BOAT CLUB UPPER LEVEL OVERLOOKING THE BOYNE RIVER LOOKING NORTH

FOR INFORMATION ONLY

VIEW INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 23

DRAWING NO.
SD-1-900-23 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:12 AM

PERSPECTIVE 24 - BOAT CLUB LOWER LEVEL OVERLOOKING THE BOYNE RIVER LOOKING SOUTH

FOR INFORMATION ONLY

VIEW INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 24

DRAWING NO.
SD-1-900-24 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:12 AM

PERSPECTIVE 25 - BOAT CLUB UPPER LEVEL OVERLOOKING THE BOYNE RIVER LOOKING SOUTH

FOR INFORMATION ONLY

VIEW INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 25

DRAWING NO.
SD-1-900-25 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:12 AM

PERSPECTIVE 26 - BOAT CLUB GROUND LEVEL OVERLOOKING THE BOYNE RIVER LOOKING SOUTH

FOR INFORMATION ONLY

VIEW INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 26

DRAWING NO.
SD-1-900-26 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:13 AM

PERSPECTIVE 27 - SITE ENTRY FROM WYNDHAM AVENUE LOOKING EAST WITH BOYNE RIVER VISIBLE IN DISTANCE

FOR INFORMATION ONLY

HOTEL, BOAT CLUB AND MARINA INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 27

DRAWING NO.
SD-1-900-27 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:13 AM

PERSPECTIVE 28 - AQUATIC CENTRE ENTRY LOOKING NORTH-EAST WITH BOYNE RIVER VISIBLE IN DISTANCE

FOR INFORMATION ONLY

BOAT CLUB AND MARINA INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 28

DRAWING NO.
SD-1-900-28 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:13 AM

PERSPECTIVE 29 - INTERNAL SITE VIEW BETWEEN HOTEL AND AQUATIC CENTRE LOOKING WEST

FOR INFORMATION ONLY

HOTEL INDICATIVE OF POSSIBLE FUTURE USE

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 29

DRAWING NO.
SD-1-900-29 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:13 AM

PERSPECTIVE 30 - ELEVATED SITE VIEW FROM BOYNE RIVER LOOKING WEST TOWARDS WYNDHAM AVENUE

FOR INFORMATION ONLY

HOTEL, BOAT CLUB AND MARINA INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 30

DRAWING NO.
SD-1-900-30 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:14 AM

PERSPECTIVE 31 - ELEVATED SITE VIEW FROM CORNER OF WYNDHAM AVENUE AND CENTENARY DRIVE LOOKING NORTH-EAST TOWARDS BOYNE RIVER

FOR INFORMATION ONLY

HOTEL, BOAT CLUB AND MARINA INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 31

DRAWING NO.
SD-1-900-31 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:14 AM

PERSPECTIVE 30 - ELEVATED SITE VIEW FROM CORNER OF WYNDHAM AVENUE AND ARTHUR STREET LOOKING SOUTH-EAST TOWARDS BOYNE RIVER

FOR INFORMATION ONLY

HOTEL, BOAT CLUB AND MARINA INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 32

DRAWING NO.
SD-1-900-32 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:14 AM

PERSPECTIVE 33 - ELEVATED SITE VIEW FROM BOYNE RIVER LOOKING SOUTH-WEST TOWARDS WYNDHAM AVENUE

FOR INFORMATION ONLY

HOTEL, BOAT CLUB AND MARINA INDICATIVE OF POSSIBLE FUTURE USES

REV.	DATE	DESCRIPTION	APRV.
A	02.09.2021	DA RFI	MF
B	15.09.2021	DA RFI	MF

PROJECT
BOYNE TANNUM AQUATIC CENTRE

DRAWING NAME
PERSPECTIVE 33

DRAWING NO.
SD-1-900-33 B

SCALE 1 : 1
15.09.2021
PROJECT NO. 1019

15/09/2021 11:46:14 AM

9 September 2021 Project Number: 7200042

Mr Jacob Scott
Director, Zen Group
3/19 Musgrave Street
West End, QLD 4101

Via email: jacob@zengroup.com.au

Dear Jacob,

RE: Boyne Island Marina – Economic Overview

A development application was submitted to Gladstone Regional Council on 17 June 2021 by ZenDev Pty Ltd (ZenDev). The application is for a material change of use to establishing an aquatic centre with a supporting café and gymnasium. This forms Stage 1 of the Tannum Mixed Use Precinct that seeks to establish an integrated lifestyle, recreation and entertainment development within the expansion of the Boyne Island Town Centre.

The Subject Site is located at Lot 5 on RP620667 Arthur Street and Lot 1 on RP619033 Centenary Drive, Boyne Island, QLD 4680. The Subject Site is located within the Centre Zone and the Boyne Island centre of the strategic framework pursuant to the *Gladstone Regional Council Planning Scheme 2015*.

Gladstone Regional Council has requested additional information to provide further justification on how the proposed development (including aquatic centre) complements the centre vision and does not undermine the potential of the Boyne Island centre.

This letter provides a summary of the economic benefits associated with the construction and operation of the proposed development and highlights the opportunities associated with co-locating with the Boyne Island Town Centre and other proposed uses at the Subject Site.

The analysis and discussion presented in this letter covers the following:

1. Development Overview
2. Locational Context
3. Regional Economic Overview
4. Economic Benefits of the Proposal
5. Conclusion

Appendix. Economic Benefits Summary

1.0 Development Overview

ZenDev is proposing the development of a mixed-used development that integrates lifestyle, recreation and entertainment activities within three precincts. The aquatic centre with accompanying café and gymnasium form Stage 1 of the development within the Precinct 1 – Health and Wellbeing. The other precincts and uses are subject to future development approvals. The following provides a brief description of each precinct identifying both preferred and potential uses.

Precinct 1 - Health and Wellbeing Precinct

- Aquatic Centre: A new landmark aquatic centre for the community, incorporating:
  - 50m, seven lane pool with grandstand seating for 300 persons;
  - significant splash and play areas and slides;
  - indoor aerobics and learn to swim pool; and
  - café and gymnasium.

Precinct 2 – River Activation Precinct

Preferred Uses:

- Club (Boat Club and Marina – 75 berths)

Potential uses:

- Bar
- Club (other)
- Community Use
- Food and Drink Outlet
- Function Facility
- Market
- Shop

Precinct 3 – Lifestyle Precinct

Preferred Uses:

- Short-term Accommodation (e.g. 80 room hotel)
- Bar
- Food and Drink Outlet
- Function Facility

Potential uses:

- Multiple dwellings
- Residential care facility
- Retirement facility

An overview of the proposal is shown in Figure 1.

The analysis presented in the balance of this letter is based on development of the preferred uses outlined in the concept plan, as per the above and below. However, it is noted the final composition of future uses over Precincts 2 and 3 is yet to be confirmed, and there is potential for other uses to be delivered in each precinct such as retail, food and drink outlets, a community centre, health care services, retirement and aged care facilities, apartments, function facilities and a possible riverside market, and these uses will also synergies with each other and the Boyne Island Town Centre.

Figure 1: Boyne Island Aquatic Centre and Mixed-Use Development

Source: Zen Dev

2.0 Locational Context

Located between the coastal communities of Boyne Island and Tannum Sands, the Subject Site is approximately 14km south-east of the Gladstone CBD and is strategically located on the corner of main access routes Centenary Drive and Wyndham Avenue; directly opposite the Boyne Island Town Centre and fronting the Boyne River.

This location provides significant opportunities for synergies with the Town Centre, as visitation to the Subject Site is likely to also encourage visitation to the adjoining Town Centre.

The Boyne Island Town Centre currently comprises Boyne Plaza, a neighbourhood shopping centre anchored by a Woolworth supermarket and containing 12 speciality tenancies. A limited provision of retail and commercial uses are located in the surrounding area. In broad terms, the centre is not considered to be a strong performing centre and has experienced limited investment in recent years. The development of a small medical centre on Haynes Avenue being the only recent new development in the centre. In this context, it is important that the development of the Subject Site supports the viability of the Boyne Island Town Centre.

The masterplan development will allow the community to have better access to the natural amenity of the Boyne River, and will improve the integration of the centre and the river.

Figure 2: Locational Context

Source: MapInfo; Nearmap

3.0 Regional Economic Overview

The following provides a brief overview of the regional economy, providing background context for the proposed development.

Population

Queensland has seen an increase in interstate migration, with this trend being amplified by the COVID-19 pandemic in the last 18-months. Current internal migration to Regional Queensland is at its highest level since late 2008, underpinned by Queensland's overall limited exposure to the virus and shifting preferences in choosing where to live.

In 2020, Gladstone Regional Council was home to a resident population of 63,860 persons. Since mid-2016, Queensland Government projections indicate the Gladstone Regional Council population will expand to 74,900 persons by 2040, representing an average annual growth rate of 0.8%. These projections were produced in 2018, prior to the COVID-19 pandemic and do not account for recent trends in the market – in this context they would be considered conservative.

Growth in the short-term is anticipated to continue to exceed previous expectations, driven by the new working from home paradigm: a shift in the balance of utility derived from workplace commute time and distance, and that derived from affordability, amenity, space and lifestyle.

Locally, the population in Boyne Island and Tannum Sounds is estimated at approximately 10,100 persons (ABS, 2020) with the population remaining relatively stagnant over the past eight or so years. Queensland Government projections indicate the population in Boyne Island and Tannum Sounds will increase moderately by 0.7% per annum over the next 15 or years.

Investment Trends

Over the five years to June 2021, building applications valued at approximately $796 million were approved in Gladstone, dominated by residential dwellings ($370 million). Gladstone also has a significant investment pipeline, with an estimated $5.9 billion across 71 projects Major projects including:

- **H2-HUBTM Gladstone, Gladstone, $1.6 billion.** Construction of an industrial complex for the large-scale production of green hydrogen & ammonia. *Project time frame: March 2024 to March 2025.*
- **Central Queensland Power Project, Fitzroy Renewable Energy Zone, $1.0 billion.** Delivery of over 2GW of wind, solar & storage developments & new transmission infrastructure. *Project time frame: December 2022 to May 2032.*
- **Pacificus Tourism Project, Hummock Hill Island, $1.0 billion.** Construction of world class ecological sustainable integrated tourism-based community on Hummock Hill Island (30km south of Gladstone). *Project time frame: December 2023 to December 2032.*

Key strategic priorities identified by Gladstone Regional Council (Gladstone Regional Council, Strategic Priorities, 2020/21) include the following:

- **Gladstone Heavy Vehicle Transport Corridor, $72m-$454m**. The Gladstone Heavy Vehicle Transport Corridor will provide improved heavy vehicle freight access from Central and Western Queensland to the Port of Gladstone. The corridor incorporates the Gladstone Port Access Road - extension and upgrade of the Glenlyon Street and Port Access Road.
- **Inland Rail Extension to the Port of Gladstone**. Linking the Inland Rail to the Port of Gladstone will unlock long-term regional economic benefits and improve road safety while reducing land and sea transport congestion in South East Queensland.

- **Boyne Burnett Inland Rail Trail ($20.5m).** The proposed Boyne Burnett Inland Rail Trail would be developed on two disused railway corridors between Taragoola (Calliope) and Reids Creek (Gayndah). Council is seeking funding from the Queensland Government for the construction of the identified trails including the detailed design development plans for the rail trails being prepared.

In addition to the above, Council has also identified the development of the Boyne Tannum Aquatic Recreation Centre as a strategic priority project that will provide:

- *"Delivery of an important piece of social infrastructure for a regional community and economic development*
- *Improve community health and Wellbeing outcomes*
- *Improve community water safety outcomes*"

Employment Profile

Over the last 18-months the Gladstone unemployment rate has gradually fallen from 8.3% in December 2012 to 7.3% in March 2021, however, this is still substantially above the Queensland average of 6.0%.

Employment in Gladstone is underpinned by manufacturing, construction, and retail trade jobs. The municipality has a higher share of manufacturing, construction, and transport, postal and warehousing jobs compared to Queensland benchmarks.

Over the five years to 2016, employment in Gladstone has followed broader trends in the national economy, including a decline in manufacturing and increase in retail trade, health and social services, and education and training.

The estimated $67 million investment associated with the construction of the proposed development will help to support employment outcomes in the short-term, in particular the local construction industry, and other industries in the supply chain such as manufacturing, and transport, postal and warehousing, all of which are industries with relatively high shares of employment in Gladstone. Longer-term employment outcomes will also be supported by ongoing operation of the development.

Tourism

Tourism represents a modest important part of the Gladstone economy, representing 1,830 jobs in 2020, and supporting an average of 470 tourism businesses between 2015 and 2018. Annual visitation is underpinned by domestic visitation, with an average 887,000 domestic visitors, 2.3 million domestic visitor nights, and $292 million in domestic visitor expenditure over the period.

Primary tourism markets in Gladstone include fishing and boating, events and special interest such as boating, diving, and weddings. The biggest annual event in Boyne Island is the The Boyne Tannum Hookup, held 500m north of the Subject Site, the event attracts over 27,000 visitors and generates approximately $480,000 in expenditure.

COVID-19 Impacts

COVID-19 has had a major impact on the Queensland economy, in particular Regional Queensland's tourism industry. While Queensland's movement restrictions over the course of 2020 were relatively limited compared to NSW and Victoria, tourism businesses were significantly impacted by the lack of interstate and international travellers, with total visitation dropping from 29 million in Q4 2019 to 17 million in Q1 2021 (Tourism Research Australia, *National and International Visitor Surveys*).

The forward outlook for the industry in Regional Queensland is positive, underpinned by a resurgence in domestic travel as a result of international border restrictions and pent-up demand. Notwithstanding, there remains uncertainty around the future of interstate travel with delays in the vaccine roll-out and current outbreaks in NSW and Victoria.

Boyne Island and Tannum Sands are well placed to leverage this surge in domestic tourism, and the proposed development will enhance the area's appeal, attracting additional visitation.

Implications for the Proposal

Key implications from the regional economic overview for the proposed development include the following:

- The local population in local Boyne Island and Tannum Sounds area has been relatively stagnant in recent years and is forecast to increase only moderately in the future. This will limit the demand for new development and investment in the Boyne Island Town Centre. The proposed represents an opportunity to attract a development that will support the viability and level of activity in the centre while not impacting the viability of other centres in the surrounding area.
- The development of an aquatic centre has been identified as a strategic priority by Council.
- Employment generated by the construction of the proposal will support local manufacturing, construction, and transport, postal and warehousing industries, all major employing industries in Gladstone.
- The development of the aquatic centre, and the potential hotel and boat club (incl. marina) will enhance the local tourism offering, providing opportunities to attract new visitors and support local events.

4.0 Economic Benefits of Proposal

Economic Impacts

Economic benefits generated by the proposal can be divided into two categories, benefits derived from the construction period and the ongoing operation of the Subject Site.

Approximately $67 million in direct investment will be generated from the construction of the proposal, this investment is estimated to support 510 (direct and indirect) full-time equivalent (FTE) jobs over the construction period.

Ongoing operations at the Subject Site are estimated to generate $16 million in total output and $5 million in value added. Approximately 240 (direct and indirect) FTE jobs are anticipated to be supported by the operations.

The proposal is expected to generate significant visitation, attracting approximately 700,000 visits to the Subject Site a year. These visitors will generate expenditure in the order of $7 million a year, some of which will support Boyne Island business beyond the Subject Site, including the Boyne Island Town Centre. Note, some overlap will occur with revenue from different components of the Subject Site.

Benefits of Co-Location and Mixed-Use Centres

Clearly, the proposal will generate significant economic benefits and activity for the Boyne Island and broader Gladstone economies. An important factor facilitating these benefits are the potential synergies associated with co-location of complementary uses at the Subject Site and the Boyne Island Town Centre. For example:

- Parents dropping kids off at the aquatic centre may then visit the Boyne Island Town Centre or club restaurant.
- An agreement between operators of the aquatic centre and future hotel could see additional bookings for the hotel on the basis of having access to a pool, and in turn increase patronage of the Aquatic Centre.
- Likewise, synergies between the future hotel and club exist as well.

With Boyne Island Town Centre located across Wyndham Avenue, the synergies of co-location are likely to extend there as well; provided appropriate and safe access is incorporated into the development. The proposal is estimated to attract in the order of 700,000 visits per year, and the hotel 42,750 visitor nights; many of which may patronise businesses in the Town Centre.

Mixed-use centres are broadly recognised as having positive outcomes, servicing a range of needs of the local community. Increased foot traffic from non-retail uses helps to support retail businesses, build critical mass, facilitate trip chaining, and improve overall amenity.

Currently, the Boyne Island Town Centre provides limited non-retail uses and the development would introduce a range of non-retail uses not currently provided. Apart from local convenience shopping, the Boyne Island Town Centre provides limited other facilities or services.

The need for mixed-use centre is increasingly becoming a necessity, with the use of online and digital platforms accelerating as a result of the pandemic. Bricks and mortar retailers are increasingly focusing on ‘place experience’.

Place experience refers to the attractiveness of the overall shopping environment, the suitability for socialising and recreational shopping, and the mix of complementary uses which are available. A focus of urban design improvements to enhance the desirability of visiting and spending time/money in a centre, and the increased emphasis on leisure and entertainment facilities are both key related trends.

The proposed development will enhance the role of the Boyne Island Town Centre, increase the range of amenity available to the community, and provide additional support to businesses in the Town Centre; which in turn will support development of a more diverse retail offering.

5.0 Conclusion

The Gladstone economy has been relatively resilient to the COVID-19 pandemic; however, unemployment remains above the Queensland average. The municipality has a high concentration of employment in the construction, manufacturing, and transport, postal and warehousing industries; which will benefit from the investment associated with the proposed development.

Economic benefits associated with the construction and operation of the proposed development will provide significant support for the Gladstone economy, in particular the construction, retail and tourism industries.

Delivery of the mixed-use complex adjacent to the Boyne Island Town Centre will enhance the Town Centre’s role, strengthening its viability by diversifying the centre’s offering, in-line with national activity centre trends.

Overall, the proposed development represents a significant opportunity to diversify the Boyne Island Town Centre offer, providing a broader range of uses to the local community, increasing amenity, and supporting local businesses. This will not undermine development at the Town Centre, it will facilitate development of the centre as it supports a larger critical mass. Furthermore, the development represents an opportunity for significant investment into the Boyne Island Town Centre, a level of investment that may not be expected in the foreseeable future given the relatively limited

local population growth that has occurred in recent years and which is forecast over the next 15 or so years.

***

I trust this letter of advice addresses your requirements to provide a summary of the economic benefits associated with the construction and operation of the mixed-use complex.

Nick Brisbane
Director, Economics
(03) 9419 7226 and 04 3832 4779
nbrisbane@ethosurban.com

Appendix: Economic Benefits Summary

Economic Impacts

Construction Investment

$67 million over construction period

Construction Employment

150 direct jobs supported

360 indirect jobs supported

Output

$15.9 million

Value Added

$5.0 million

Ongoing Employment (FTE)

110 direct iobs

130 indirect iobs

Visitation to the site Trip

In the order of 700,000 visitors

(Total visitation is approximate as some overlap will occur between uses. Excludes visitor nights)

Estimated Expenditure

$2.8 million

(Some overlap will occur with revenue from different components. Excludes overnight visitors)

Visitors – Overnight

42,750 visitor nights

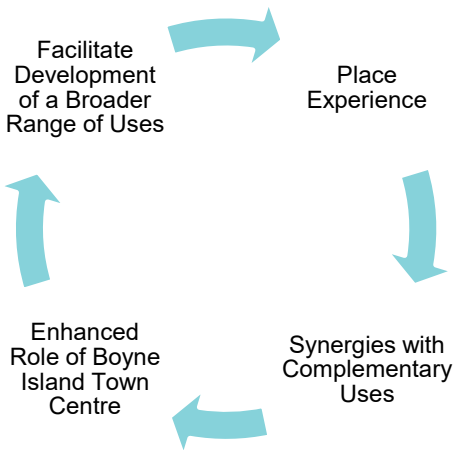
Estimated Expenditure

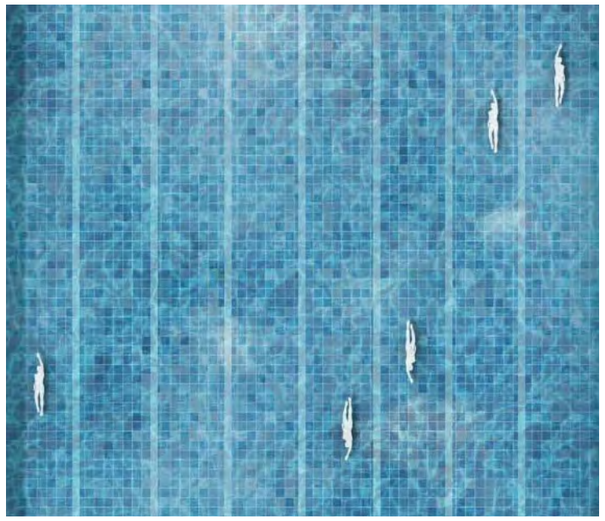
$4.3 million

(Some overlap will occur with revenue from different components.)

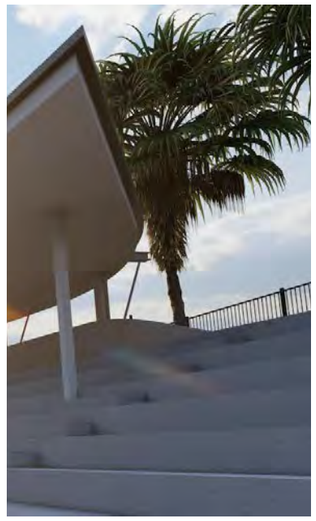
Note: Figures represent high-level estimates based on the concept design and industry benchmarks.

Benefits of Co-Location and Mixed-Use Centres





PROPOSED AQUATIC CENTRE
2 CENTENARY DRIVE, BOYNE ISLAND

BOYNE TANNUM AQUATIC CENTRE

The intention of the landscape design for the aquatic centre is to transform a large vacant site into a vibrant and well-designed recreational hub. The landscape design will facilitate a variety of active recreational uses for a wide range of age groups, ranging from a water play space for young children including wading pool, a water park including water slides for older children and the adventure minded, through to aerobics pool and 50m lap pool. Passive recreational uses are catered for by the lagoon pool, plenty of lawn to passive uses including resting and watching children, as well as generous seating provided.

The proposed planting will consist of and ensure the spaces are surrounded by lush, subtropical planting with an eye for a contemporary modernist theme. The landscape design to all areas shall draw inspiration from the architectural character and features of the proposed built forms.

The grouping of planting seeks to provide an enclosed planting context to the site's edges for natural screening, privacy and visual amenity, lush planting grouping strategically located through out, including within the water bodies for visual amenity and shade planting to the more passive recreational lawn areas. Evergreen canopy trees and groupings of palm trees are provided to ensure shade to the passive recreational lawn areas to avoid excessive ground surface temperatures, and to reduce exposure to UV radiation. Shade trees are provided to the carpark area. Shade trees are proposed to the entry and along with mass planting of accent shrub and groundcovers seeking to create a soft and inviting entry into the aquatic centre.

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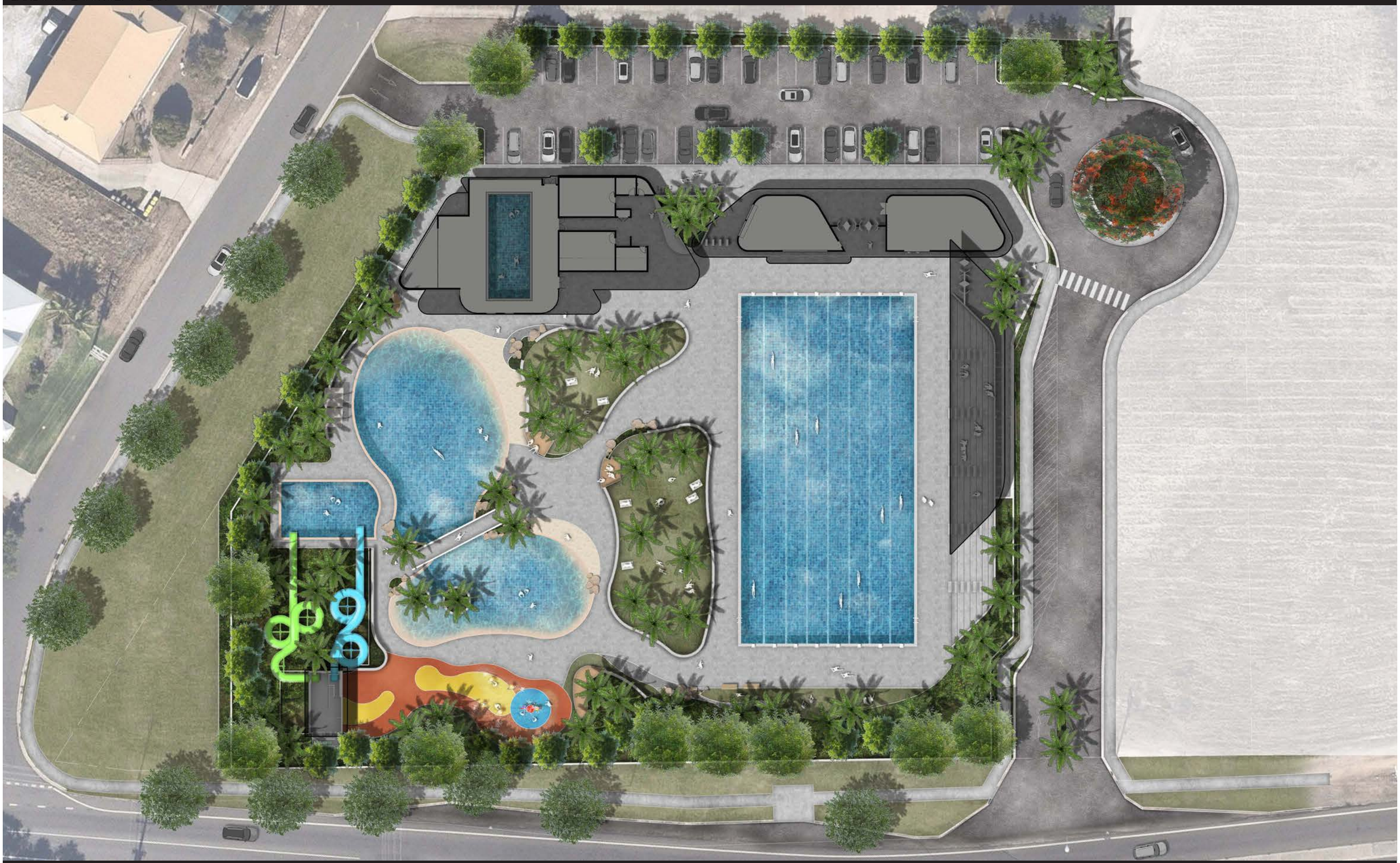
PROPOSED AQUATIC CENTRE
2 CENTENARY DRIVE, BOYNE ISLAND

JOB NUMBER	SHEET NO.	ISSUE	DRAWN BY
21.067	2	F	AG/ JD

LANDSCAPE CONCEPT PLAN

NEARMAPS DATED: 06/12/20 (PHOTOMANIPULATED)



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PROPOSED AQUATIC CENTRE
2 CENTENARY DRIVE, BOYNE ISLAND

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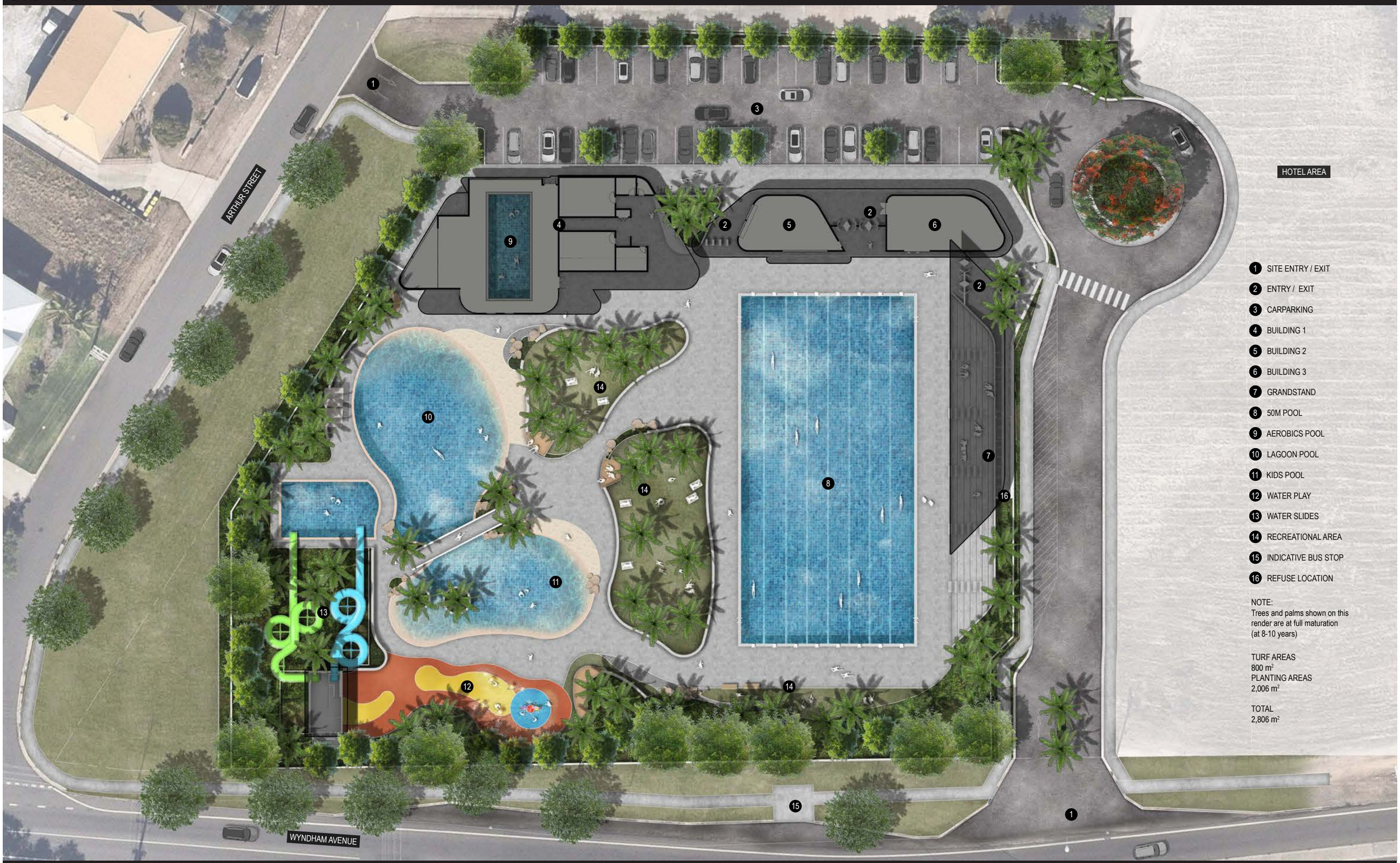
LANDSCAPE CONCEPT PLAN

NEARMAPS DATED: 06/12/20 (PHOTOMANIPULATED)



NOTE:
Trees and palms shown on this render are at full maturation (at 8-10 years)

TURF AREAS
800 m²
PLANTING AREAS
2,006 m²

TOTAL
2,806 m²

ANDREW GOLD LANDSCAPE ARCHITECTURE
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PROPOSED AQUATIC CENTRE
2 CENTENARY DRIVE, BOYNE ISLAND

JOB NUMBER	SHEET NO.	ISSUE	DRAWN BY
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PROPOSED PLANTING SCHEDULE


1.1


2.1


2.2


2.3


2.4

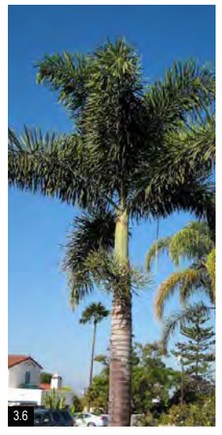

3.1


3.2


3.3


3.4


3.5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CODE	SPECIES	COMMON NAME	SIZE**	SPACING	HEIGHT	WIDTH
PROPOSED LARGE FEATURE TREE						
1.1	*Delonix regia*	Poinciana	100L	as shown	10	15
PROPOSED SHADE TREES						
2.1	*Atractocarpus fitzalanii (Randia fitzalanii)*	Native Gardenia	100L	as shown	10	5
2.2	*Ficus lyrata*	Fiddle-leaf Fig	100L	as shown	15	12
2.3	*Flindersia schottiana*	Bumpy Ash	100L	as shown	12	8
2.4	*Tristaniopsis laurina* Luscious	Water Gum	100L	as shown	10	5
PROPOSED PALMS						
3.1	*Archontophoenix cunninghamiana*	Bangalow Palm	100L	as shown	25	6
3.2	*Bismarckia nobilis*	Bismarck Palm	100L	as shown	6	5
3.3	*Pandanus tectorius*	Screw Pine	100L	as shown	6	5
3.4	*Phoenix canariensis*	Canary Island Date Palm	100L	as shown	20	15
3.5	*Washingtonia robusta*	Mexican Fan Palm	100L	as shown	25	3
3.6	*Wodyetia bifurcata*	Foxtail Palm	100L	as shown	10	5

**PLANT CONTAINER SIZE:

100L	100 Litre container stock min	Min. height at time of planting: 2.4m

The spacing of plants shown on plan have been derived as a compromise between growth rate, anticipated size, and the ability to provide a good vegetative cover within a reasonable space of time. Height and width of plants shown on this schedule are at full maturation (at 8-10 years).

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PROPOSED AQUATIC CENTRE
2 CENTENARY DRIVE, BOYNE ISLAND

JOB NUMBER 21.067
SHEET NO. 5
ISSUE F
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PROPOSED PLANTING SCHEDULE


4.1


4.2


4.3


4.4


4.5


4.6

CODE	SPECIES	COMMON NAME	SIZE**	SPACING	HEIGHT	WIDTH
PROPOSED SCREEN PLANTING						
4.1	*Alpinia zerumbet* Green Shell	Shell Ginger	200mm	1.5	2.5	2
4.2	*Heliconia bihai x caribaea* Hot Rio Nights	Parrot's Beak	200mm	1.2	3-4	1.5
4.3	*Monstera deliciosa*	Swiss Cheese Plant	200mm	1.5	2-4	2-4
4.4	*Ptychosperma macarthurii*	Macarthur Palm	300mm	2	8	3
4.5	*Radermachera pierrei* Summerscent	Summerscent	300mm	2	3	2.5
4.6	*Syzygium australe* Resilience	Lillypilly	300mm	1.5	5	2.5

**PLANT CONTAINER SIZE:

300mm	300mm dia minimum pot size
200mm	200mm dia minimum pot size

The spacing of plants shown on plan have been derived as a compromise between growth rate, anticipated size, and the ability to provide a good vegetative cover within a reasonable space of time. Height and width of plants shown on this schedule are at full maturation (at 8-10 years).

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PROPOSED AQUATIC CENTRE
2 CENTENARY DRIVE, BOYNE ISLAND

JOB NUMBER	SHEET NO.	ISSUE	DRAWN BY
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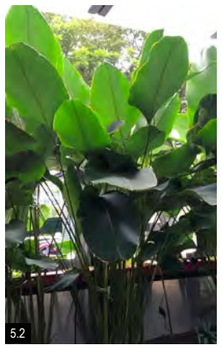
PROPOSED PLANTING SCHEDULE


5.1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CODE	SPECIES	COMMON NAME	SIZE**	SPACING	HEIGHT	WIDTH
PROPOSED SHRUBS AND GROUNDCOVERS						
5.1	*Alpinia nutans*	Dwarf Cardamom	200mm	1	1	1.2
5.2	*Calathea lutea*	Cigar Plant	200mm	1.5	3-4	1.5
5.3	*Carissa grandiflora*	Desert Star	200mm	0.7	1	1
5.4	*Carpobrotus glaucescens*	Pigface	140mm	1.5	0.2	2
5.5	*Dichondra argentea* Silver Falls	Silver Pony's Foot	200mm	0.8	0.3	1.8
5.6	*Heliconia psittacorum* Golden Torch	Parrot's Beak	200mm	1.2	1.5	2
5.7	*Hymenocallis littoralis*	Spiderlilly	200mm	0.6	0.7	0.7
5.8	*Juniperus conferta*	Shore Juniper	200mm	0.8	0.5	3
5.9	*Kalanchoe bracteata*	Silver Teaspoons	200mm	0.8	1.2	1
5.10	*Philodendron* Xanadu	Xanadu	200mm	0.8	1	1
5.11	*Pittosporum tobira* Wheelers Dwarf	Japanese Pittosporum	200mm	1	1	1.2
5.12	*Rhapis excelsa*	Broadleaf Lady Palm	200mm	0.8	1.8	1.2
5.13	*Schefflera* Madam de Smet	Dwarf Umbrella	200mm	0.9	2.0	1.0
5.14	*Senecio serpens*	Blue Chalksticks	200mm	0.5	0.25	0.6
5.15	*Zoysia tenuifolia*	Temple Grass	140mm	0.3	0.1	0.4

**PLANT CONTAINER SIZE:

200mm	200mm dia minimum pot size
140mm	140mm dia minimum pot size

The spacing of plants shown on plan have been derived as a compromise between growth rate, anticipated size, and the ability to provide a good vegetative cover within a reasonable space of time. Height and width of plants shown on this schedule are at full maturation (at 8-10 years).

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PROPOSED AQUATIC CENTRE
2 CENTENARY DRIVE, BOYNE ISLAND

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Your reference: DA/24/2021

13 September 2021

Gladstone Regional Council
PO Box 29
GLADSTONE QLD 4680
Address Line 3

Attention: **Shaunte Farrington**

Sent via email: info@gladstone.qld.gov.au

Dear Shaunte,

RE: INFORMATION REQUEST RESPONSE | TRAFFIC AND TRANSPORT ITEMS | PROPOSED OUTDOOR AQUATIC CENTRE, BOYNE ISLAND

1.0 INTRODUCTION

Zen Group (applicant) has commissioned Bitzios Consulting to provide traffic engineering advice in relation to a development application (DA) for a proposed outdoor aquatic centre at Boyne Island.

The development is located at the corner of Wyndham Avenue and Arthur Street, Boyne Island (subject site). The subject site is formally described as Lot 5 RP620667 and Lot 1 on RP619033 which herein are described as Proposed Lot 1 and Proposed Lot 2 respectively.

This letter responds to an information request (IR) dated 23rd June 2021 (IR) and a further issues letter 16th July 2021 (Further Issues Letter) issued by Gladstone Regional Council (Council) in relation to the proposed development. A copy of the IR and Further Issues Letter is included at **Attachment A.**

The proposed development plans have also been revised. A copy of the revised Aquatic Centre plans is included at **Attachment B**.

2.0 IR Item 7(Letter 1): Parking Bays

7. The Applicant has stated that the proposed Aquatic Centre will construct 50 vehicle parking spaces, 20 bicycles spaces and relocate the external public bus stop along Wyndham Avenue. This is further referenced in the supporting Traffic Impact Assessment and Engineering and Stormwater Assessment Reports.

   Upon review of the Planning Scheme's vehicle parking rates policy, an Outdoor Sport and Recreation is calculated by *1 space per 20m2 GFA, or 1 space per 5 spectators able to be seated; or 4 spaces per court or lane*. The proposed grandstand has not provided maximum capacity numbers, therefore, the assumed surplus of parking spaces may be incorrect.

   Furthermore, the Traffic Impact Assessment report does not address taxi ranks, loading bays, internal bus parking (i.e. coordinated bus drop off) internal to the site.

   As such, Council requests the Applicant revise the material to address expected patron usage at any one time (including a scenario for events), and provide further justification regarding taxi, loading and bus bays internal to the site.

Bitzios Response

As outlined in our Traffic Impact Assessment (TIA), the development is proposed to include 779m^2 Gross Floor Area (GFA) and 50 car parking spaces. The car parking provision exceeds 39 car parking spaces required based on Council's 1 space per 20m^2 GFA provision rate for the Outdoor Sport & Recreation use.

It is acknowledged that Council's planning scheme also identifies a parking provision rate of 1 space per 5 spectators able to be seated for the Outdoor Sport & Recreation use. However, the applicant has indicated that the proposed grandstand is not currently intended to have a specific seating capacity. Further, the grandstand is primarily proposed to allow for school swimming carnivals and the like to occasionally be held onsite. During such events, buses will transport those using the grandstand (students etc.) to and from the site, limiting car parking demands.

Importantly, the development plans have been amended to include a loading area on site which can accommodate up to two (2) two buses if required. The loading area will also allow for car and taxi set-down / pick-up, as well as general site servicing. Importantly, servicing will be scheduled to occur outside of development peak periods to reduce the likelihood of it impacting overall site operation.

In summary, the proposed car parking provision is expected to be sufficient to accommodate demands typically generated by the development.

3.0 Further Advice Letter Item 4: Amended Traffic Impact Assessment

4. Provide an amended version of the Traffic Impact Assessment to show the impact of the full development, to allow for a cumulative assessment of the site/project to be undertaken.

Bitzios Response

At this stage, Proposed Lot 2 development uses, yields etc. and the timing of any development is not known. The development of Proposed Lot 2 will ultimately be subject to further assessment as part of future DAs.

However, to provide further comfort around the suitability of the proposed access arrangement, the applicant provided us with a potential development scenario to consider.

Assumed subject site uses and yields are as follows:

- Aquatic Centre: 499m^2 Gross Floor Area (GFA) + 280m^2 GFA Grandstand
- Commercial / Office: 1,300m^2 GFA
- Hotel: 80 rooms
- Yacht Club / Marina: 3,000m^2 GFA

Potential future development arrangements have also been indicatively identified in the revised Aquatic Centre plans which are included at **Attachment B**.

Table 3.1 summarises the adopted peak hour trip generation rates.

Table 3.1: Trip Generation Rates

Land Use	Weekday PM Peak	Weekend Peak	Unit	Source
Aquatic Centre	100	100	trips	See TIA
Commercial / Office	2.00	1.00	trips / 100m^2 GFA	RMS GTGD[1]
Hotel Rooms	0.40	0.40	trips / room	RMS GTGD[1]
Yacht Club[2]	5	5	trips / 100m^2 GFA	RMS GTGD[1]

1. Roads and Maritime Services Guide to Traffic Generating Developments
2. Assumed to generate similar traffic volumes to a restaurant

The directional splits for all uses are expected to be 50% in and 50% out.

Table 3.2 summarises the total trips that may be generated based on the potential development scenario.

Table 3.2: Traffic Generation

Land Use	Weekday PM Peak (Trips)			Weekend Peak (Trips)		
	Inbound	Outbound	Total	Inbound	Outbound	Total
Aquatic Centre	50	50	100	50	50	100
Commercial / Office	13	13	26	13	13	26
Hotel Rooms	16	16	32	16	16	32
Yacht Club	75	75	150	75	75	150
Total	**154**	**154**	**308**	**154**	**154**	**308**

In summary, the subject site may generate in the order of 300 peak hour trips.

Table 3.3 summarises the adopted external traffic distribution which is consistent with that adopted as part of our Aquatic Centre traffic impact assessment dated 30th April 2021.

Table 3.3: Traffic Distribution

Direction	Via	Proportion
North	Wyndham Avenue	5%
East	Centenary Drive	50%
South	Malpas Street	40%
West	Centenary Drive	5%
TOTAL	**-**	**100%**

Turn warrants analysis at the Wyndham Avenue access based on the following traffic volume scenarios has been undertaken:

- **2024 Background plus Aquatic Centre Development**: Surveyed volumes factored by 2.5% per annum plus aquatic centre development traffic volumes
- **2034 Background plus Potential Development**: Surveyed volumes factored by 2.5% per annum plus potential development traffic volumes.

Figure 3.1 identifies the results of turn warrants analysis undertaken at the Wyndham Avenue site access.

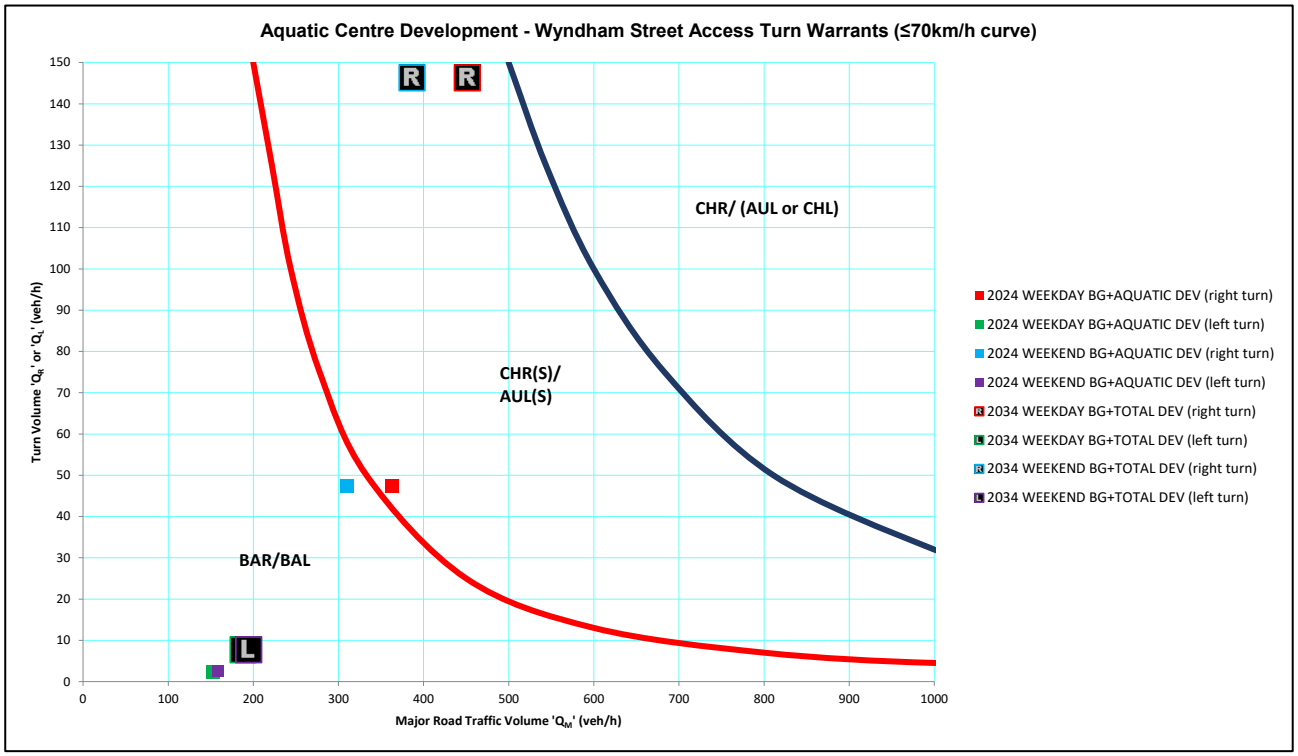


Figure 3.1: Turn Warrants Assessment Results – Wyndham Avenue Site Access

The turn warrant analysis indicates that notwithstanding the additional development, a short channelised right turn (CHR(s)) turn treatment is still required at the access.

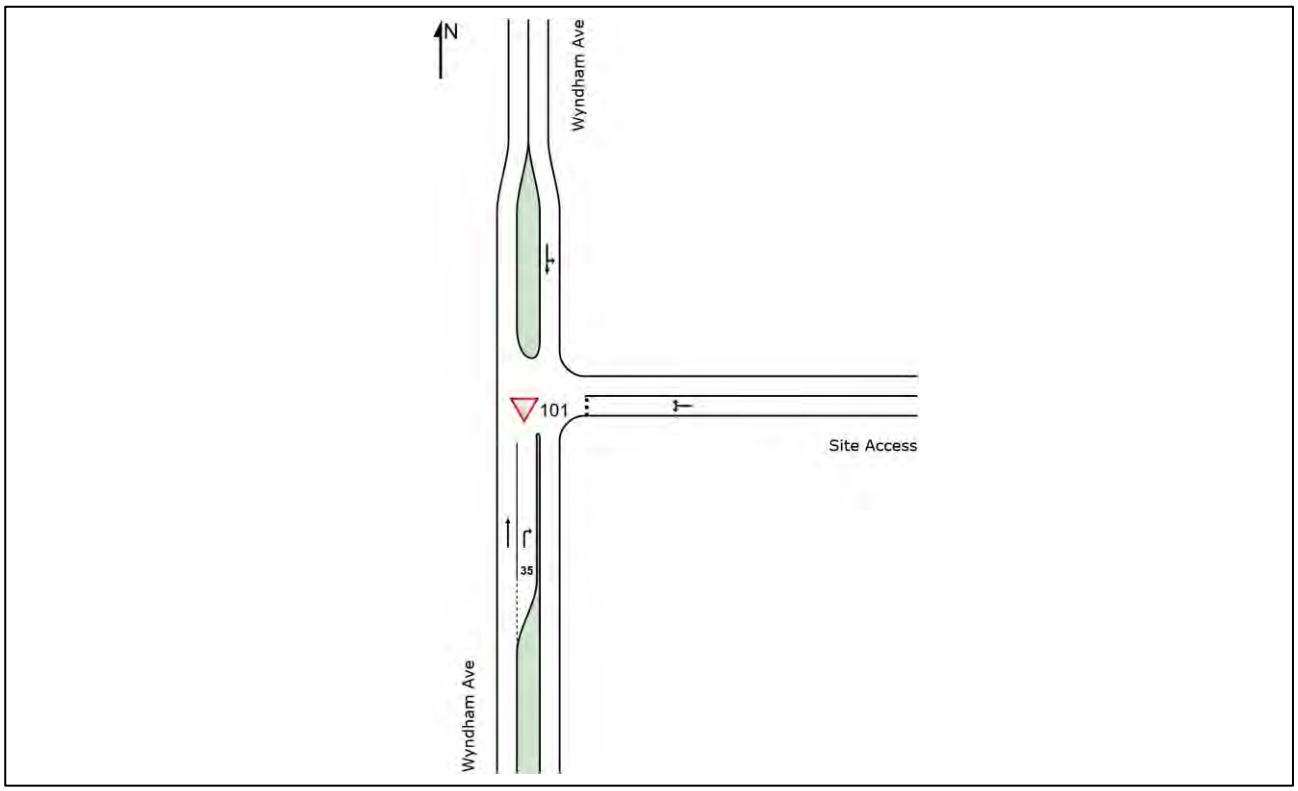
Further, noting that the turn warrants curves become more vertical as the y-axis increases, a CHR(s) treatment would still likely be sufficient if right turn volumes were 20% higher than estimated.

In summary, the above assessment indicates that the CHR(s) turn treatment proposed at the site access will be sufficient to support full development of the subject site.

Intersection analysis has also been undertaken at the Wyndham Avenue site access based on the following traffic volume scenario:

- **2034 Background plus Potential Development**: Surveyed volumes factored by 2.5% per annum plus potential development traffic volumes.

Figure 3.2 illustrates the Wyndham Avenue site access geometry modelled in SIDRA.



Source: SIDRA 9

Figure 3.2: SIDRA Geometry – Wyndham Avenue Site Access

Table 3.4 summarises the SIDRA results. Detailed outputs are included at **Attachment C**.

Table 3.4: SIDRA Results – Wyndham Avenue Site Access

Year	Peak	Volume	Degree of Saturation	Average Delay	95th Percentile Queue	Northbound Right Turn Lane – 95th Percentile Queue	Northbound Right Turn Lane – Average Delay
2034	THU	752	0.14	2.6s	4m	3m	6.2s
	SAT	687	0.13	2.8s	4m	3m	6.2s

The SIDRA analysis results indicate that the proposed Wyndham Avenue Site Access will operate well within the typically adopted performance threshold for a priority-controlled intersection (i.e. degree of saturation (DOS) less than 0.80).

The results also indicate that 95th percentile queues in the proposed right turn lane will be ~3m or around half a car length. Motorists turning right from this lane are expected to experience average delays of only around 6 seconds.

In summary, with full development of the subject site the proposed access is expected to operate well and have negligible impact on the surrounding road network.

4.0 Further Advice Letter Item 5: Amended Wyndham Avenue Access

> 5. Provide amended versions of the Traffic Impact Assessment and Engineering Services Report that show the proposed Wyndham Avenue access amended to be left in/left out only, due to the potential impacts on the existing shopping centre and its access by facilitating right turn movements out of the existing access as a result of shortening the existing concrete dividing median. It is noted that the provided Traffic Impact Assessment states that this is not expected to occur; however, this presents a sufficient safety concern to warrant the median remaining in its existing form as a physical prevention to right turn movements from the shopping centre.

Bitzios Response

Restricting the Wyndham Avenue site access to left-in / left-out only is considered inappropriate as well as unnecessary for several reasons as discussed herein.

Restricting access will result in motorists approaching the site from south of Centenary Drive and east of Wyndham Avenue needing to either access the site via Hayes Avenue or Arthur Street. Both streets predominately support residential development. Increasing traffic volumes on residential streets is not ideal from a traffic safety and amenity perspective.

Wyndham Avenue traffic movements passing the Wyndham Avenue / Hayes Avenue intersection are also likely to increase. This will likely make it more difficult for drivers to turn out of Hayes Avenue (onto Wyndham), particularly for those wanting to turn right noting that they need to give-way to two (2) flows of traffic.

It is acknowledged that Wyndham Avenue traffic volumes are likely to be lower in proximity to Arthur Street, thereby making it easier for development traffic to turn. However, it is important to consider that the number of drivers that right out of Hayes Avenue is expected to be much higher than the number turning right out of the development (due to the limited development catchment north of the site). Therefore, having development traffic pass the Wyndham Avenue / Hayes Avenue intersection is likely to have a greater overall impact on road network operation than the access arrangement as proposed. Particularly when also noting a right turn lane is proposed at the access.

It is also noted that the proposed Wyndham Avenue site access arrangements have been revised. A concept plan illustrating the revised access arrangements is included at **Attachment D**.

The raised medians at the site access will make it difficult for drivers to illegally turn right from the shopping centre. The shopping centre also has another driveway fronting Centenary Drive which allows drivers to turn left out. After exiting the shopping centre drivers can continue east or turn south (right) at the Centenary Drive / Wyndham Avenue / Malpas Street intersection as they would be able to do if they turned right out of the centre onto Wyndham Avenue. Travel times are unlikely to be significantly different to those if drivers chose to illegally turn right onto Wyndham Avenue.

Considering the above, we do not believe the proposed site access arrangement will result in illegal right turns from the shopping centre opposite

5.0 Further Advice Letter Item 6: Service Vehicle Access

> 6. Demonstrate that a service vehicle can safely enter and exit the development site using the Arthur Street access when vehicles are parked on Arthur Street and another vehicle is using the access. It is noted that the currently provided swept paths suggest that this may not be able to occur with the current proposal.

Bitzios Response

The proposed development servicing arrangements have been revised such that service vehicles are no longer required to use Arthur Street. Service vehicles are now proposed to:

- Enter the subject site via Wyndham Avenue
- Stop in the proposed loading area adjacent to the site's east-west circulation aisle
- Exit the subject site via Wyndham Avenue after leaving the loading area and U-turning at the roundabout on site.

Swept path diagrams have been prepared which illustrate that 12.5m heavy rigid vehicles (HRVs) and 14.5m buses (i.e. the largest service vehicles expected to access the site) can manoeuvre through the site as described above. A copy of the swept path diagrams is included at **Attachment D**.

In summary, no changes to existing Arthur Street arrangements are required to support the development.

6.0 Summary

I trust the above is sufficient to address the traffic and transport related queries raised in the IR and the Further Issues Letter, and therefore allow Council to prepare reasonable and relevant conditions of approval.

Yours faithfully,

Nathan Edwards
Senior Traffic Engineer & Transport Planner
Bitzios Consulting

Attachments:

A: Council Information Request and Further Issues Letter

B: Revised Plans

C: Wyndham Avenue Site Access SIDRA Outputs

D. Revised Site Access Concept & Swept Path Diagrams

Attachment C

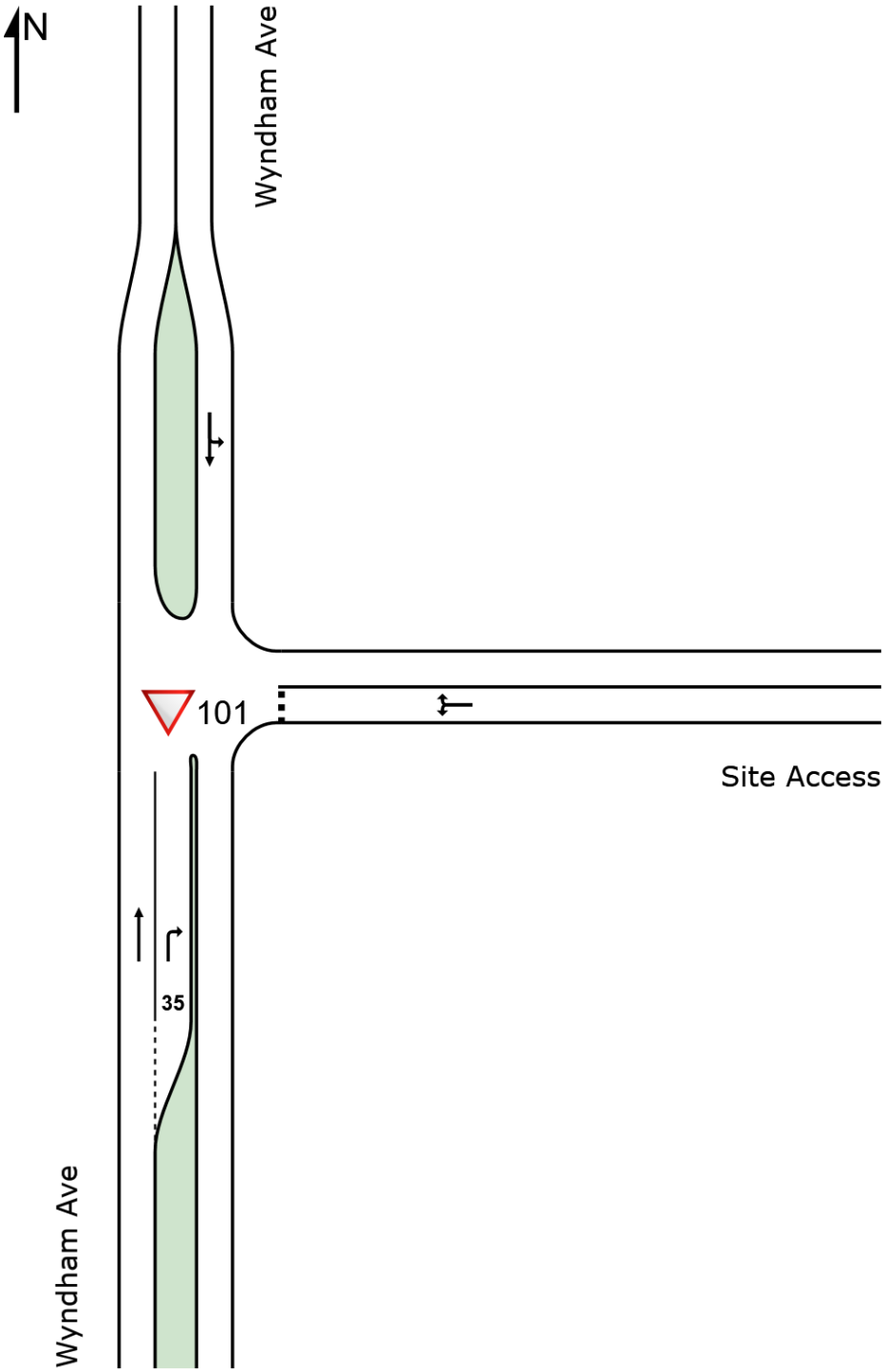
Wyndham Avenue Site Access SIDRA Outputs

SITE LAYOUT

Site: 101 [2034 BG+Full DEV THU (Site Folder: General)]

P5064 Boyne Island Precinct TIA
Prepared: AL
Reviewed: NE
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [2034 BG+Full DEV THU (Site Folder: General)]

P5064 Boyne Island Precinct TIA
Prepared: AL
Reviewed: NE
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyndham Ave														
2	T1	256	5.0	269	5.0	0.143	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	146	1.0	154	1.0	0.104	6.2	LOS A	0.4	2.9	0.26	0.59	0.26	52.4
Approach		402	3.5	423	3.5	0.143	2.3	NA	0.4	2.9	0.09	0.22	0.09	56.9
East: Site Access														
4	L2	146	1.0	154	1.0	0.127	6.2	LOS A	0.5	3.7	0.31	0.59	0.31	52.6
6	R2	8	1.0	8	1.0	0.127	10.0	LOS A	0.5	3.7	0.31	0.59	0.31	52.1
Approach		154	1.0	162	1.0	0.127	6.4	LOS A	0.5	3.7	0.31	0.59	0.31	52.6
North: Wyndham Ave														
7	L2	8	1.0	8	1.0	0.109	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.1
8	T1	188	5.0	198	5.0	0.109	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach		196	4.8	206	4.8	0.109	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles		752	3.4	792	3.4	0.143	2.6	NA	0.5	3.7	0.11	0.24	0.11	56.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [2034 BG+Full DEV SAT (Site Folder: General)]

P5064 Boyne Island Precinct TIA
Prepared: AL
Reviewed: NE
Site Category: (None)
Give-Way (Two-Way)

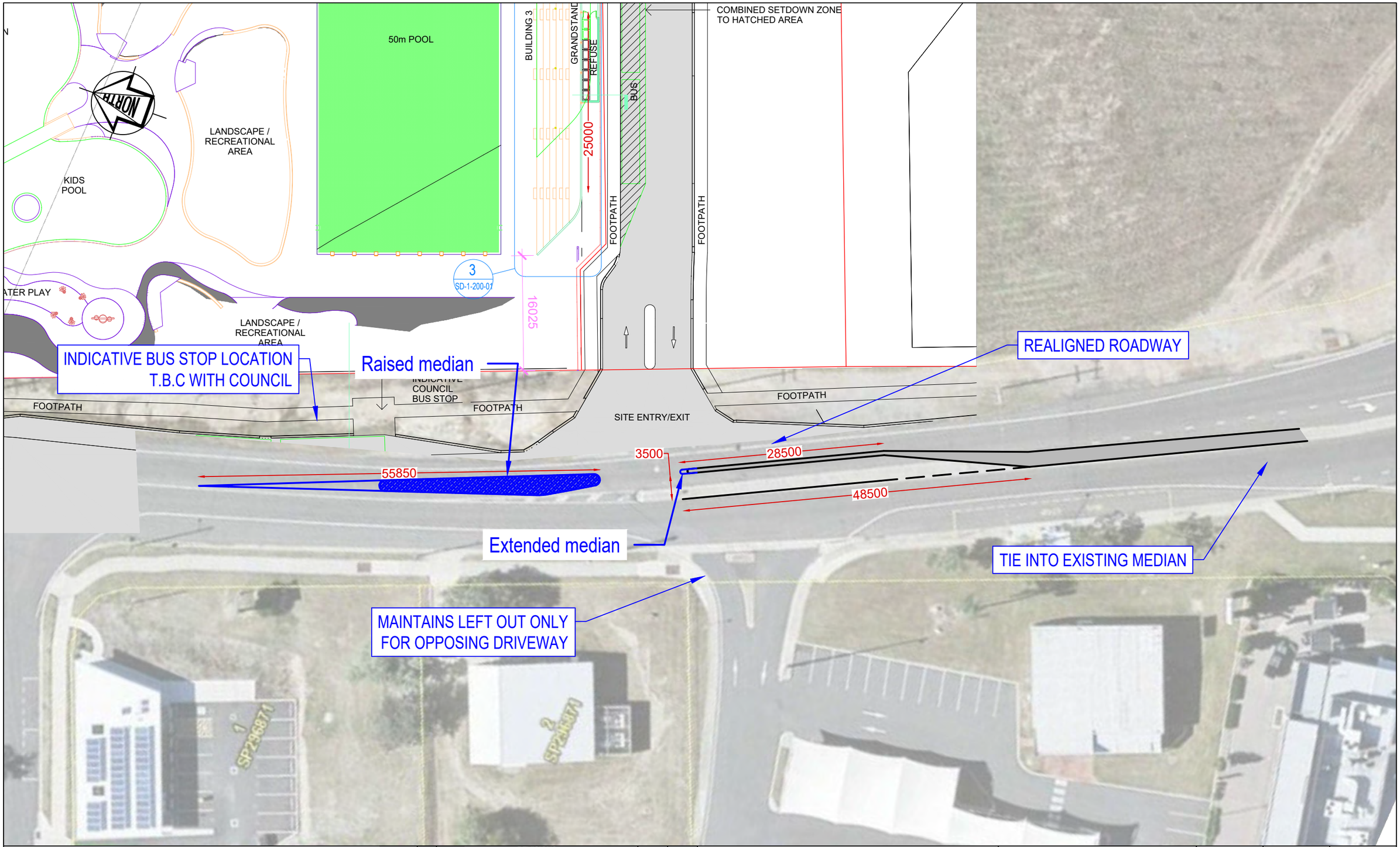
Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wyndham Ave														
2	T1	184	5.0	194	5.0	0.103	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
3	R2	146	1.0	154	1.0	0.105	6.2	LOS A	0.4	2.9	0.27	0.59	0.27	52.4
Approach		330	3.2	347	3.2	0.105	2.8	NA	0.4	2.9	0.12	0.26	0.12	56.3
East: Site Access														
4	L2	146	1.0	154	1.0	0.126	6.3	LOS A	0.5	3.7	0.32	0.59	0.32	52.6
6	R2	8	1.0	8	1.0	0.126	9.3	LOS A	0.5	3.7	0.32	0.59	0.32	52.1
Approach		154	1.0	162	1.0	0.126	6.4	LOS A	0.5	3.7	0.32	0.59	0.32	52.6
North: Wyndham Ave														
7	L2	8	1.0	8	1.0	0.113	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.1
8	T1	195	5.0	205	5.0	0.113	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach		203	4.8	214	4.8	0.113	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles		687	3.2	723	3.2	0.126	2.8	NA	0.5	3.7	0.13	0.27	0.13	56.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Attachment D

Revised Site Access Concept & Swept Path Diagrams



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	TURN TREATMENT FOR DEVELOPMENT APPLICATION	A.L	27.04.2021
002	Updates based on revised plans	N.E	13.09.2021

Scale @ A3 0 5 10 15 20 25 1:500

ENGINEERING CERTIFICATION (RPEQ)

Name	Signature	No.	Date

Project: BOYNE ISLAND AQUATIC CENTRE TIA

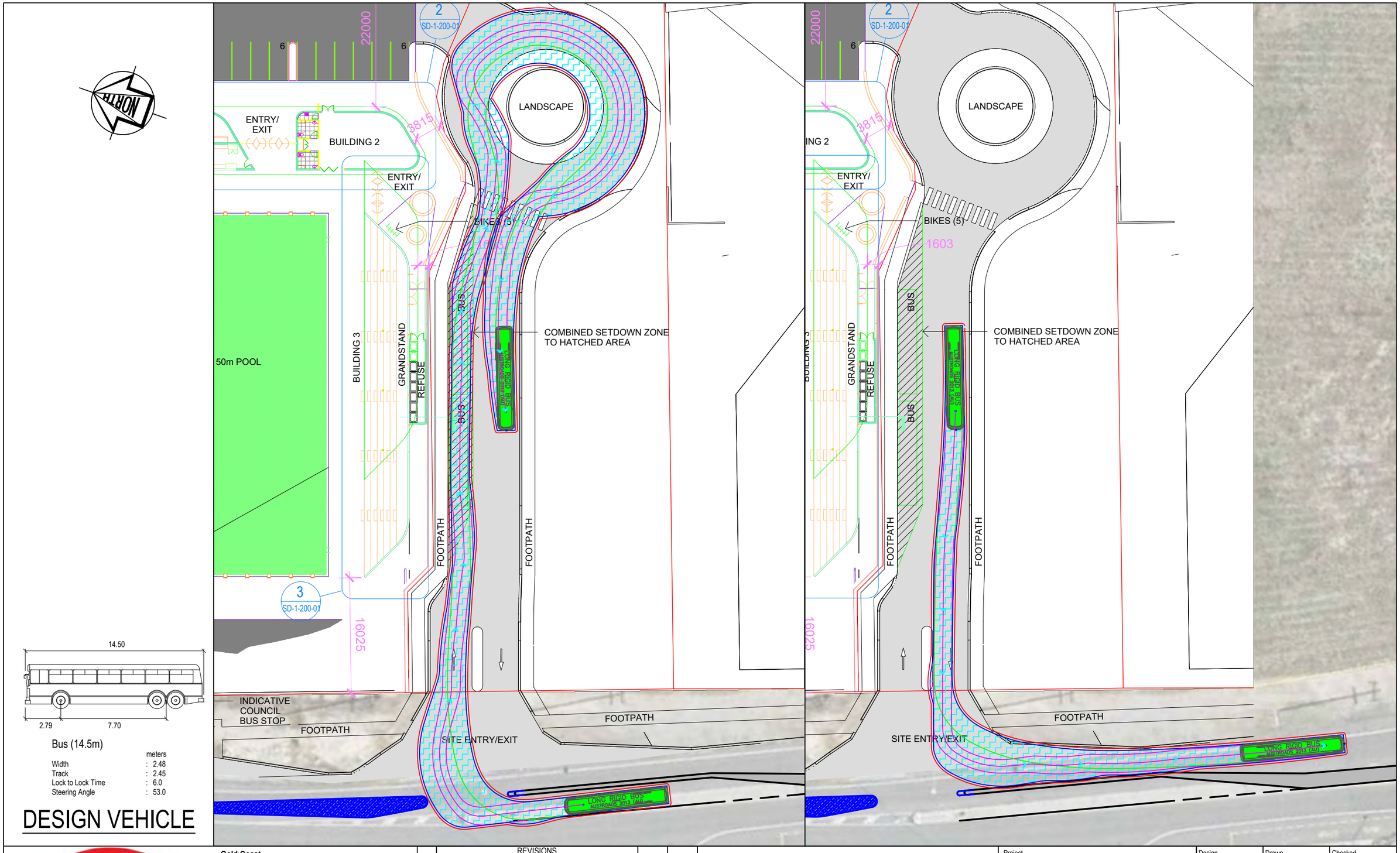
Title: WYNDHAM AVENUE TURN TREATMENT CONCEPT

Design	Drawn	Checked
A.L	N.E	N.E

CONCEPT ONLY

Date: 13.09.2021

Project Number	Sheet Number	Issue
P5064	1	002



Bus (14.5m)

	meters
Width	: 2.48
Track	: 2.45
Lock to Lock Time	: 6.0
Steering Angle	: 53.0

DESIGN VEHICLE

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	SWEPT PATHS FOR DA	A.L	27.04.2021
002	Updates based on revised plans	N.E	13.09.2021

Scale @ A3 0 5 10 15 20 25 1:500

ENGINEERING CERTIFICATION (RPEQ)

Name	Signature	No.	Date

Project: BOYNE ISLAND AQUATIC CENTRE TIA

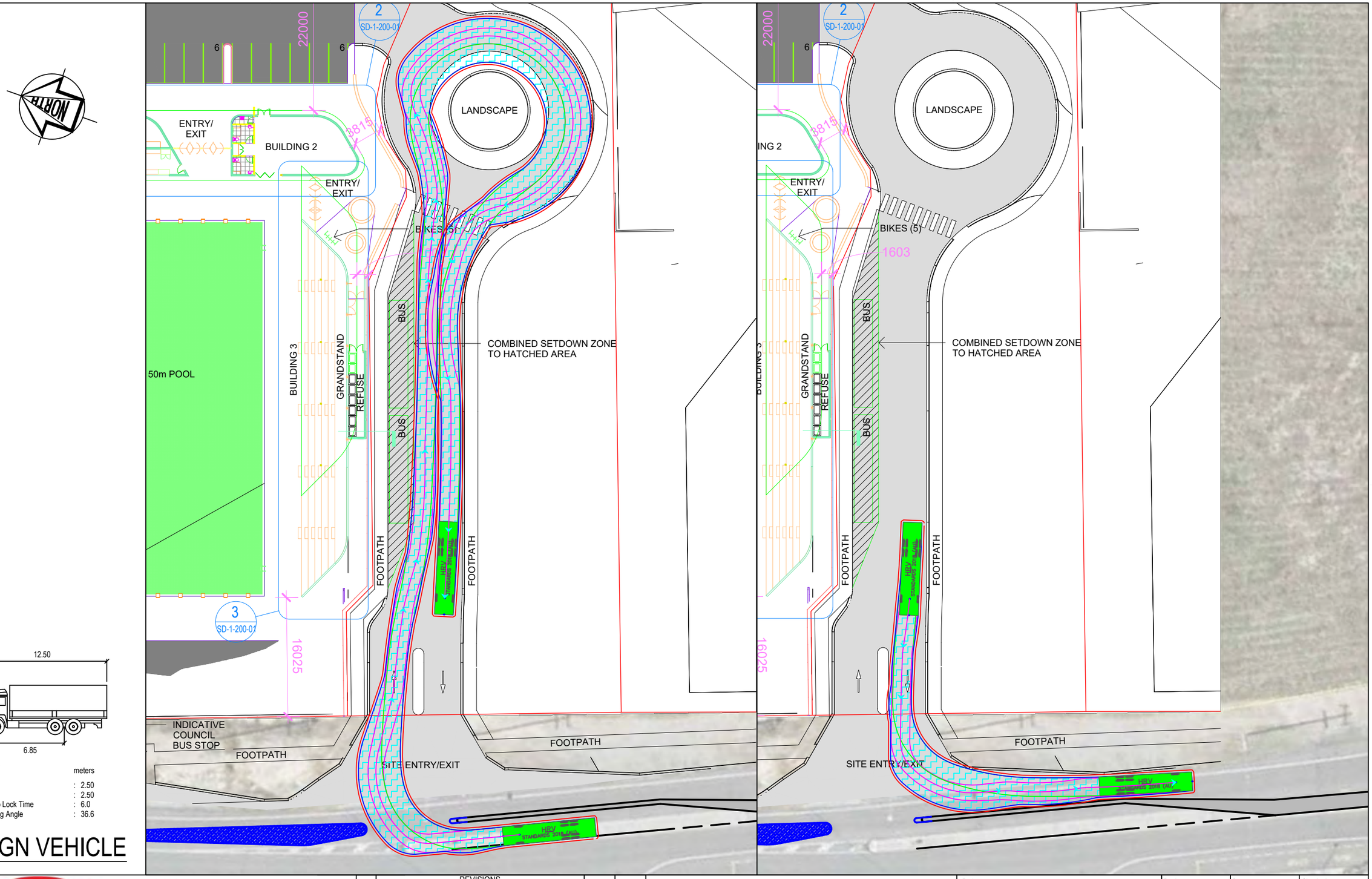
Title: ACCESS SWEPT PATHS

Design	Drawn	Checked
A.L	N.E	N.E

CONCEPT ONLY

Date: 13.09.2021

Project Number	Sheet Number	Issue
P5064	3	002



HRV	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

DESIGN VEHICLE

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	SWEPT PATHS FOR DA	A.L	27.04.2021
002	Updates based on revised plans	N.E	13.09.2021

Scale @ A3 0 5 10 15 20 25 1:500

ENGINEERING CERTIFICATION (RPEQ)

Name	Signature	No.	Date

Project: BOYNE ISLAND AQUATIC CENTRE TIA

Title: ACCESS SWEPT PATHS

Design	Drawn	Checked
A.L	N.E	N.E

CONCEPT ONLY

Date: 13.09.2021

Project Number	Sheet Number	Issue
P5064	2	002

Our Ref: 21032-L02-RFI.Docx

1 September 2021

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VT CONSULTING ENGINEERS PTY LTD, as Trustee for van Tonder Family Trust ABN 73 781 850 547, trading as vT Consulting Engineers (vTCE)

ATT: SHAUNTE FARRINGTON

Gladstone Regional Council
PO Box 29, Gladstone QLD 4680
07 4975 8500
07 4970 0700

Dear Shaunte Farrington,

RE: INFORMATION REQUEST (REF. DA/24/2021)
MCU – OUTDOOR SPORT AND RECREATION (AQUATIC CENTRE)
& ROL (2 INTO 2 & ACCESS EASEMENT)
LOT 1 & 5 HAMPTON DRIVE, BOYNE ISLAND QLD 4680

vT Consulting Engineers has received the Information Request for DA/24/2021 dated the 16th of July 2021. Please find our responses to the requested applicable items listed below for your convenience.

1. *Provide a Sewerage Master Plan:*
    a. *Including sewerage demand calculations (and diurnal pattern) and demonstrate that the proposed development will be serviced by appropriate sewerage infrastructure in accordance with Acceptable Outcome 2.1 of the Development Design Code.*
    A sewer and water layout plan has been added to the set of civil drawings. Please refer to the attached Drawing No. *'21032-1-P004'.* Assessment of the sewer demand for the development has been undertaken and details are provided within the updated engineering report. Please refer to Section 7 of the attached report '21032-1-ENG-D' for details.

    b. *Details of the sewerage impacts of pool operational/maintenance measures to avoid exceedance of design demands.*
    Details regarding pool drainage to sewer infrastructure have been included within Section 8.b. of the attached engineering report.

2. *Provide an amended version of the Engineering Report & Stormwater Management Plan that demonstrates compliance with the Queensland Urban Drainage Manual requirements for stormwater quantity including:*
    a. *Demonstrating non-worsening between pre- and post- developed states at the discharge point on Arthur Street.*

Stormwater detention requirements have been provided in the updated report. Please refer to Section 5.e of the attached report for proposed Stormwater Quantity Management details.

3. *Provide an amended version of the Engineering Report and Stormwater Management Plan that demonstrates compliance with the State Planning Policy 2017 requirements for stormwater quality including:*
    a. *Specification of the proposed stormwater quality improvement devices;*
    The attached engineering report has been updated and includes details of the stormwater quality devices proposed by SPEL. Refer to Sections 5.c and 5.d for details regarding Stormwater Quality Management and the MUSIC model.

    b. *Outputs from a MUSIC model that demonstrate that the reduction targets in Appendix B have been achieved.*
    A MUSIC model was provided from SPEL and details of the model parameters and achieved pollutant reduction targets is available in Section 5.c and 5.d of the updated report.

7. *Provide a Water Master Plan (including modelling):*
    a. *clarifying the alignment of the new proposed water main and the location of connection to GRC's water network. Appendix H Engineering Report and Stormwater Management Plan (vT Consulting Engineers 2021) proposes a new service connection to GRC's existing main on Wyndham Avenue; however, a new water main is proposed in the Planning Report (Ethos Urban 2021).*
    No new water main for the development is proposed. The existing infrastructure in Wyndham Avenue has been determined to be sufficient to service the proposed development. Please refer to the attached Drawing No. '*21032-1-P004'* for the Sewer and Water Layout Plan. Refer to Section 8 of the report for details of the water supply assessment.

    b. *including water demand calculations (including diurnal pattern) and demonstrate that the proposed development will be serviced by an adequate supply of potable water in accordance with Acceptable Outcome 1.1 of the Development Design Code.*
    Please refer to Section 8 of the report for water demand details.

Please do not hesitate to contact the undersigned should you require any further information.

Kind Regards

Andrew van Tonder
Director, Civil Engineer (RPEQ)

Encl. Updated Civil Drawings No. '*21032-1-P001'* to '*21032-1-P004*'
Encl. Updated Engineering Report, Reference No. '*21032-1-ENG-D*'

MIXED USE (OUTDOOR AQUATIC CENTRE)

2 Centenary Drive, Boyne Island QLD 4680

Engineering Report &
Stormwater Management Plan

September 2021
Project No.: 21032-1
Revision No.: D

CIVIL & STRUCTURAL ENGINEERING | DESIGN | MANAGEMENT

vT CONSULTING ENGINEERS

Contents

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Document Status:

REVISION	PREPARED BY	REVIEWED BY	DATE
DRAFT	S. Carroll	A. van Tonder	29/04/2021
A	B. Kaminski	A. van Tonder	30/04/2021
B (DRAFT)	S. Carroll	A. van Tonder	06/05/2021
B	S. Carroll	A. van Tonder	06/05/2021
C	S. Carroll	A. van Tonder	14/05/2021
D	S. Carroll	A. van Tonder	01/09/2021

1. Introduction

vT Consulting Engineers has been commissioned by Zen Group to prepare this engineering services report and stormwater management plan. The development is located at 2 Centenary Drive, Boyne Island QLD 4680. The site locality is illustrated in Figure 1.1. This report is being submitted to support the Development Approval for the proposed mixed-use development (outdoor aquatic centre) for Gladstone Regional Council's consideration.

This report looks at Lot 5 RP620667 only. The following report will detail civil engineering requirements for the development.

Street Address	2 Centenary Drive, Boyne Island QLD 4680
Real Property Description	Lot 5 RP620667
Total Site Area	1.55 ha
Proposed Use	Mixed Use Development (Outdoor Aquatic Centre)
Local Authority	Gladstone Regional Council

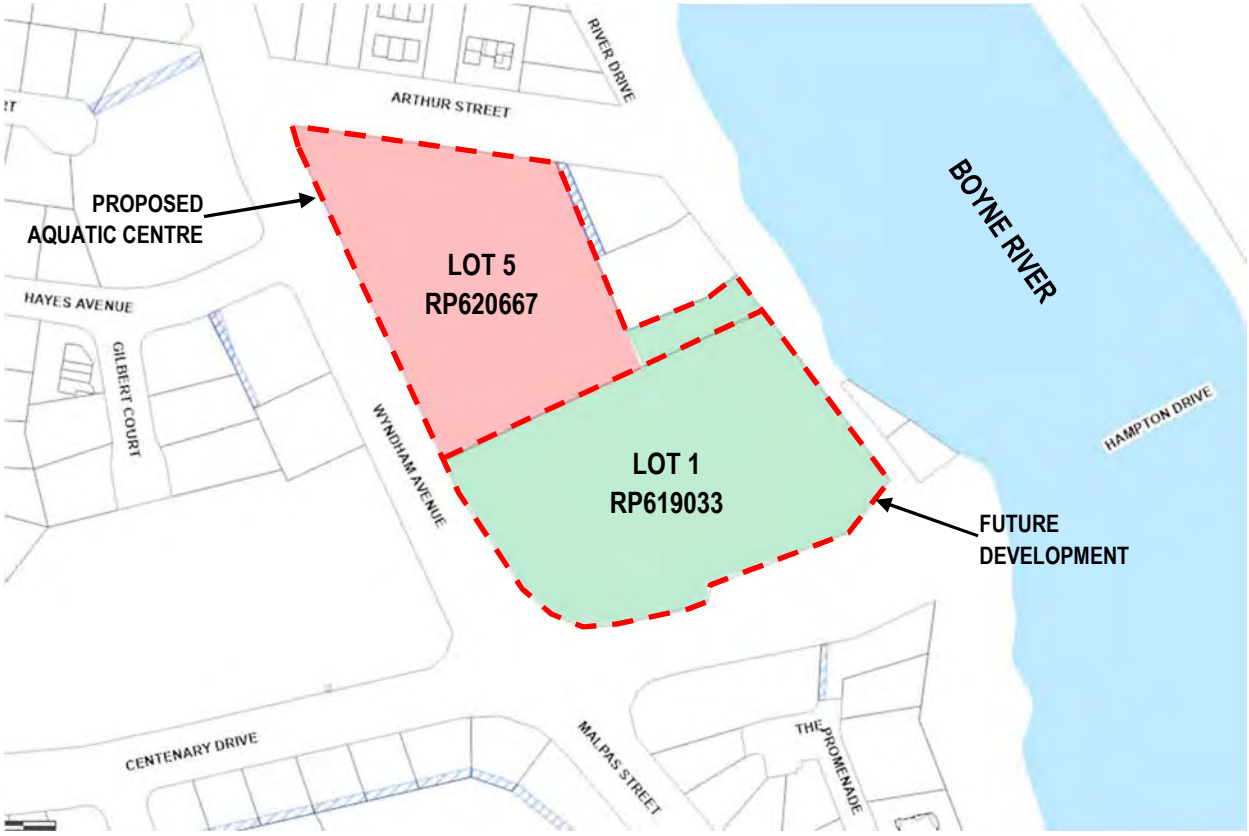

Figure 1.1 Existing Site Layout Plan (Gladstone Regional Council Interactive Mapping)

a. Existing Topography

The levels on the site (lot 5 RP620667) and within the extents of the proposed works, range from approximately RL14.75 in the south-west corner to RL7.50 in the south-east and north-west locations of the site. The site is located in Gladstone Regional Council's Centre Zone and is bounded by Boyne River and two residential properties to the east. The property fronts onto Arthur Street to the north and Wyndham Avenue to the west. The properties in the surrounding area include a mix of low-medium density residential, community facilities, open spaces and commercial sites.

b. Existing Land Use

The property is currently vacant and is predominately grassed with a few shrubs.

c. Proposed Land Use

The proposed development is for an outdoor aquatic centre, with carparking proposed on the east of the site and vehicle access from the north and west. The development also involves a proposed reconfiguration of a lot for the realignment of the lot boundaries to establish proposed Lot 1 for the outdoor aquatic centre and the future development area on the residual land. For reference, a proposed site layout has additionally been included in Figure 1.2.

Refer attached Appendix A for proposed layout plans and details.

Figure 1.2 Proposed Site Layout Plan (Kearney Architecture)

2. Erosion and Sediment Control

Using the International Erosion Control Association's (IECA) Erosion Hazard Assessment Procedure AustIECA, 2016a), we believe the proposed development site represents an erosion risk as trigger values were equalled or exceeded and resulted in a total score of 23 (Refer Appendix B for Erosion Hazard Assessment Form). IECA requires that a preliminary Erosion and Sediment Control Plan (ESCP) be submitted to the local government for approval during the planning phase if the development obtains a total point score of 17 or greater or when any trigger value is scored or exceeded.

The construction contractor is responsible for ensuring that soil and debris does not leave the site as well as the confines of the construction zone and is not deposited on external roads or existing in-use areas due to the proposed earthworks and construction activity.

Acid Sulphate Soils

The local council is listed in the Glossary (Acid Sulphate soil affected area) in State Planning Policy July 2017, indicating that this development application may require compliance with the State Planning Policy July 2017 acid sulphate soils development objectives.

Acid sulphate soil testing is typically conducted in areas with reduced levels of less than 5.0m Australian Height Datum (AHD) as stated in State Planning Policy July 2017. This policy also states that developments below 20.0m AHD that involve a Material Change of Use or operational works are required to be assessed against the State Planning Policy July 2017 acid sulphate soils development objectives. As the lowest point in the development area is an approximate level of RL 7.50 and the proposed floor level for the development is RL 10.50, we believe that there is low possibility of acid sulphate soil being present and therefore testing wouldn't be likely.

Figure 2.1 provides a visual aid to determining assessable development.

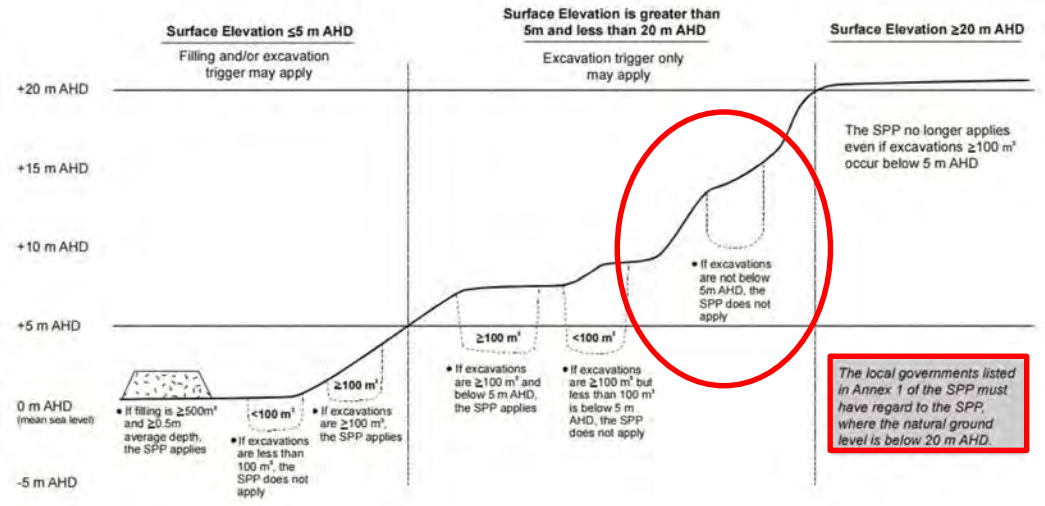

Figure 2.1 Acid Sulphate Soils assessment diagram (Adapted from SPP Water Quality State Interest Guideline 2016)

As the proposed excavations are not expected to be below RL5.0m AHD, the State Planning Policy does not apply.

The requirements for Acid Sulphate Testing will be confirmed by a geotechnical engineer prior to the detailed design stage of this proposed development.

Land Disturbing Activities

Important causes/issues of erosion for this site would consist of the following:

- Precipitation and consequent run-off
- Stripping and removal of topsoil
- Removal of fill
- Other earthwork operations
- Heavy vehicle use on site
- Wind erosion

The proposed development's construction period is anticipated to be approximately 12 to 15 months, which will be programmed so that the shortest period of time elapses between ground cover removal and restoration.

Erosion and Sediment Control Measures

Sediment control filter fabric will be securely placed around the downstream boundaries of the construction site. This will ensure sediment is trapped before being released into the catchment. Refer Appendix C.

An ESC measure will be provided at any vehicular access points to the site. Construction and maintenance details are given in Appendix C. A temporary construction entrance will be provided from the adjacent roads for access during construction.

A filter sock sediment trap will be utilized on all downstream stormwater inlets. Refer Appendix C for construction and maintenance details.

No clearing will be undertaken unless preceded or accompanied by installation of adequate run-off and sediment control measures, as described above.

Following practical completion of the project a minimum of 70% coverage of all soil with ground cover (i.e. topsoiling and seeding) will be provided within 30 calendar days.

During the demolition and construction phases, spraying of water will be used with care to act as a dust suppression method.

Monitoring and Maintenance Programs

Water discharge from the site will adhere to a total suspended solid content of less than 50 milligrams per litre and a pH range of between 6.5 and 8.5 at all times. If the pH of the flocculated water is not achieved, then pH adjustments will be required. This could possibly be done by a dosing of lime.

Site personnel will inspect all erosion and control measures at least at the following frequencies:

- Weekly when construction works are not happening,
- Within 24 hours of expected rain, and
- Within 18 hours of an impacting rainfall event.

All erosion and sediment control measures that have an order of efficiency below 75% will be corrected by the end of that working day.

3. Earthworks

For the purpose of this proposed development earthworks will be conducted for constructing the new proposed building platform. Excavation on site will be required for the service trenches and pool areas. Any excess cut will be stockpiled on site and protected in accordance with local council requirements. Retaining walls are proposed on the north side of the property. Retaining walls will be required along the eastern and western property boundaries.

A geotechnical report will be prepared for the site during the detailed design stage.

4. Roadworks

The proposed aquatic centre development fronts onto Arthur Street and Wyndham Avenue. New crossovers will be provided as shown on the proposed layout plans. An easement is to be established over the neighbouring site to provide access to Lot 5 (RP620667) from Wyndham Avenue.

As per traffic engineer's advice, the development will involve external roadworks on Wyndham Avenue in the area of the proposed access to the site. It is proposed to alter the existing road and construct a channelised right turn treatment (CHR) to provide a turning lane to the site. The eastern edge of the road will be widened to provide a parking lane, north of the proposed crossover. The proposed CHR is in the area of an existing bus stop, located adjacent to the development on Wyndham Avenue. It is currently proposed to relocate the bus stop, north of the proposed crossover. The revised bus stop location is to be confirmed in discussion with council.

5. Stormwater Drainage

a. Existing Stormwater Drainage

Existing site stormwater on Lot 5 RP620667 flows predominately towards the north and south-east. Stormwater runoff to the north sheet flows towards Arthur Street and is captured by existing stormwater infrastructure in the road. It is anticipated that the captured stormwater is conveyed to a concrete lined open channel (approximately 60m north of the development), which discharges east to Boyne River through a drainage easement (DRP615208).

The stormwater runoff to the south sheet flows onto the neighbouring lot and predominately falls to the east where runoff is partially mitigated by an existing dam located on the property. The rest of the eastern runoff falls towards the low point of the neighbouring site where flows are captured and discharged to Boyne River via a headwall outlet.

Figure 5.1 below shows the existing stormwater drainage in the area of the site. Refer to the Appendix A layout plans for further information regarding existing stormwater.

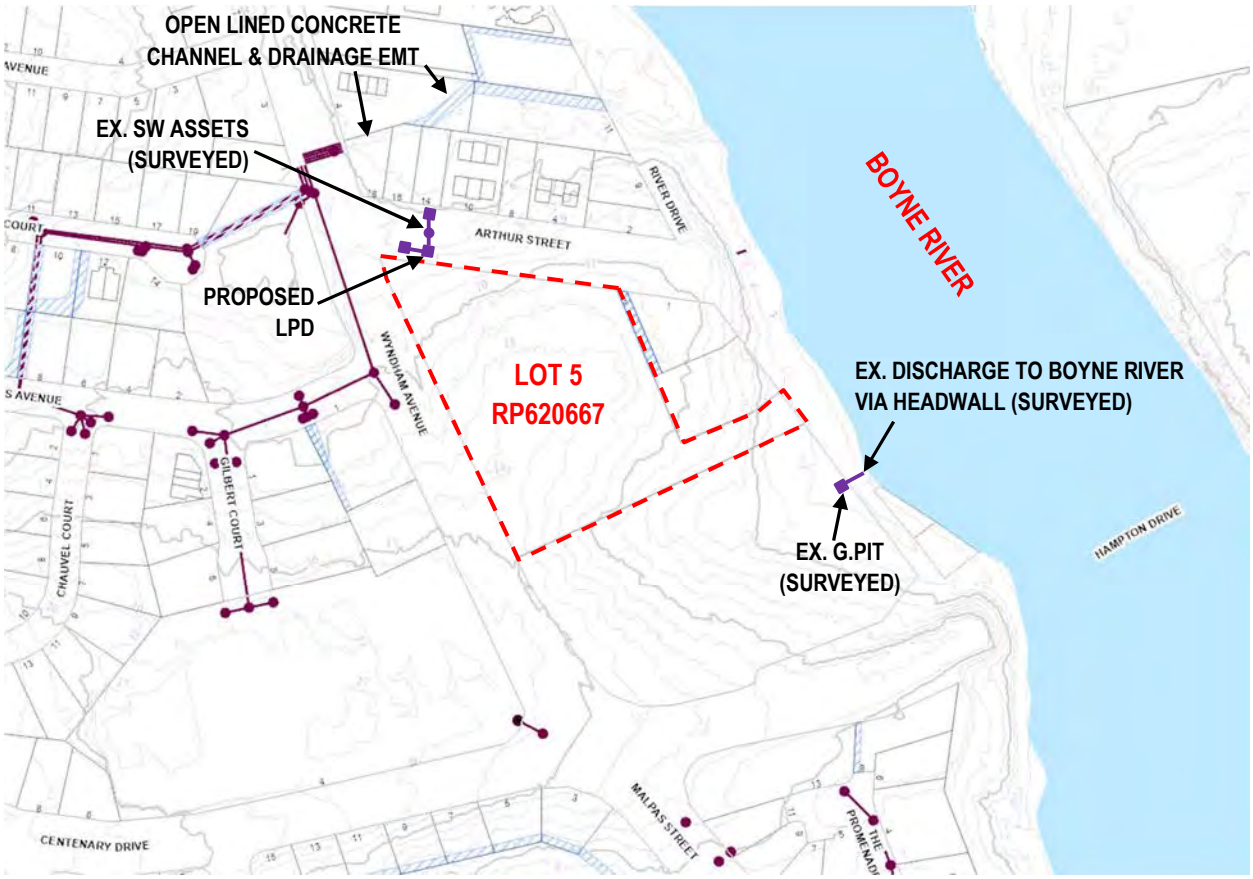

Figure 5.1 Stormwater Layout (Gladstone Regional Council Interactive Mapping)

b. Proposed Stormwater Drainage

It is proposed to capture and convey stormwater via the proposed inter-allotment drainage system shown in the design drawings. Captured stormwater will be conveyed to the north of the site and piped to the existing infrastructure located in Arthur Street. This is considered to be the proposed lawful point of discharge for the development.

Refer to attached Appendix A for proposed layout plans and details.

c. Stormwater Quality Management

State Planning Policy

The State Planning Policy (SPP) applies for stormwater quality management and management of new or expanded non-tidal artificial waterways applies to development that is outlined below in Table 5.1.

SPP PART E: INTERIM DEVELOPMENT ASSESSMENT REQUIREMENTS. STATE INTEREST – WATER QUALITY	YES / NO
Material change of use for urban purposes that involves a land area greater than 2500m^2 that:	
will result in an impervious area greater than 25% of the net developable area	YES
Will result in 6 or more dwellings	NO
Reconfiguring a lot for urban purposes that involves a land area greater than 2500m^2 and will result in six or more lots:	NO
Operational works for urban purposes that involve disturbing more than 2500m^2 of land	YES

Table 5.1 Water Quality Objectives

The proposed development does trigger applicable items in the above Table 5.1, therefore the SPP is applicable and compliance is expected by the local government authority.

The software program Model for Urban Stormwater Improvement Conceptualisation (MUSIC) Version 6, was used to assess pollutant generation and the performance of the stormwater treatment measures for the proposed development. Selection and testing of stormwater management options was undertaken in accordance with MUSIC Modelling Guidelines prepared by Water by Design (2018).

The catchment was further split to include pavement areas, road areas and landscaped areas in accordance with the MUSIC Modelling Guidelines prepared by Water by Design (2018). The stormwater quality treatment train used in the MUSIC model is shown in the figure below.

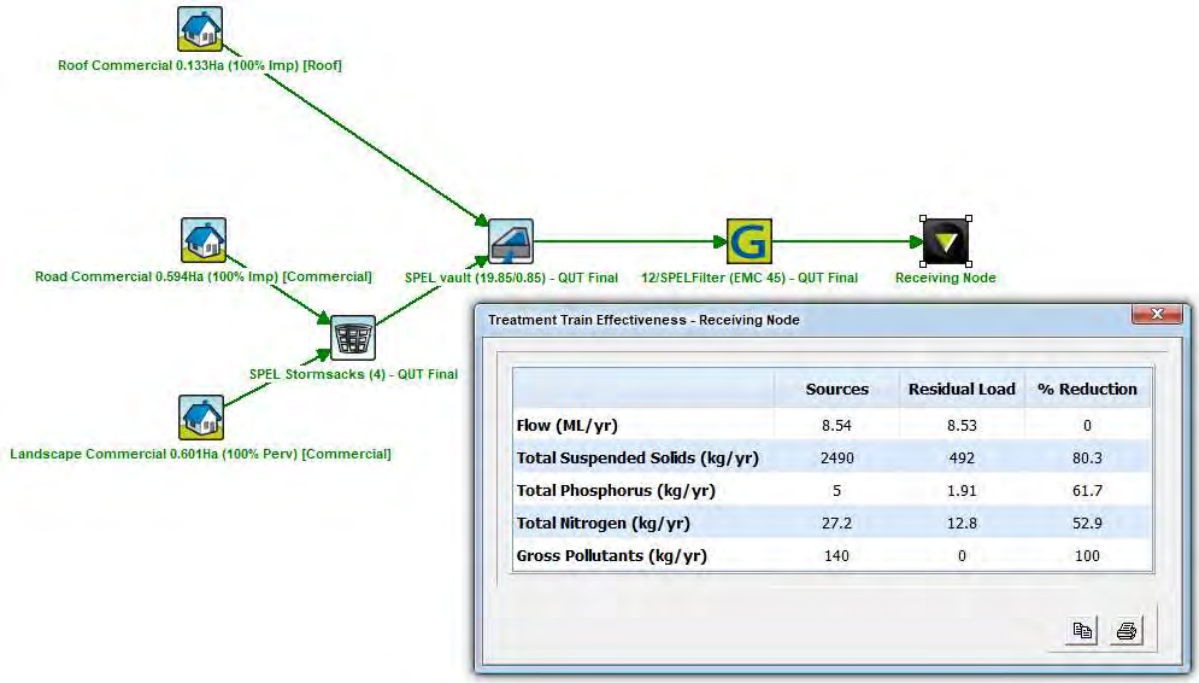

Figure 5.2 Music Model Treatment Parameters

Music Model Parameters

The split catchment parameters used as the MUSIC Pollutant Export Parameters are shown below in Table 5.2, and where derived from Table 3.9 of the MUSIC Modelling Guidelines prepared by Water by Design (2018).

FLOW TYPE	SURFACE TYPE	TSS LOG^{10} VALUES		TP LOG^{10} VALUES		TN LOG^{10} VALUES	
	Commercial	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Baseflow Parameters	Roof	N/A	N/A	N/A	N/A	N/A	N/A
	Road	0.78	0.39	-0.60	0.50	0.32	0.30
	Ground	0.78	0.39	-0.60	0.50	0.32	0.30
Stormflow Parameters	Roof	1.30	0.38	-0.89	0.34	0.37	0.34
	Road	2.43	0.38	-0.30	0.34	0.37	0.34
	Ground	2.16	0.38	-0.39	0.34	0.37	0.34

Table 5.2 Source Node MUSIC Pollutant Export Parameters

The parameters used as the MUSIC Rainfall-Runoff Parameters are shown in the table below, and where derived from Appendix A, Table A1.2 of the MUSIC Modelling Guidelines prepared by Water by Design (2018).

PARAMETER	COMMERCIAL
Rainfall Threshold (mm)	1
Soil Storage Capacity (mm)	18
Initial Storage (% Capacity)	10
Field Capacity (mm)	80
Infiltration Capacity Coefficient - a	243
Infiltration Capacity Exponent - b	0.6
Initial Depth (mm)	50
Daily Recharge Rate (%)	0
Daily Baseflow Rate (%)	31
Daily Deep Seepage Rate (%)	0

Table 5.3: MUSIC Rainfall-Runoff Parameters

Music Model Treatment Parameters

The proprietary system is designed to treat the stormwater runoff by filtering the runoff through 4 SPEL Stormsacks and 12 SPEL Filters in accordance with the manufacturers specifications. The MUSIC model parameters have been provided by SPEL.

An alternative proprietary system may be proposed during the detailed design of the project, subject to certification by the manufacturer and a Registered Professional Engineer of Queensland (RPEQ) that the alternative system meets the local authority and SPP requirements.

d. MUSIC Model Results

Using the MUSIC software. The treatment train for the catchment areas was designed to comply with the water quality objectives (WQO). It was determined that the water quality objectives for the whole proposed development were met as shown in the table below:

POLLUTANT TYPES	WQO OBJECTIVES REDUCTION (%)	PRE-DEVELOPMENT	POST-DEVELOPMENT	REDUCTION (%)	COMPLYING WITH WQO
Total Suspended Solids (kg/yr)	80.0	2490	492	80.3	✓
Total Phosphorus (kg/yr)	60.0	5	1.91	61.7	✓
Total Nitrogen (kg/yr)	45.0	27.2	12.8	52.9	✓
Litter/gross pollutants (kg/yr)	100.0	140	0	100.0	✓

Table 5.4 Water Quality Treatment Results

As shown by the above results, the proposed stormwater treatment train adopts best practice stormwater treatment and will achieve the required Water Quality Objectives. The proposed design is in accordance with the Water Sensitive Urban Design Technical Design Guidelines (by Water by Design).

e. Stormwater Quantity Management

The proposed development will have a larger impervious area than the existing site and will require a stormwater detention system to mitigate the effects of the additional runoff.

The stormwater runoff from the development site will discharge into the proposed detention basin to ensure non-worsening effects on surrounding properties.

XP Storm is a software package for dynamic modelling of urban stormwater systems, river systems and floodplains. XP Storm was used to determine the required detention storage volume to ensure that the developed flow is equal to or less than the pre-development flow. The Laurensen method was used for determining the volume of runoff within the XP Storm model. Figure 5.3 shows the pre-development stormwater flows for various storm events. For clarity, only the maximum storm events for each return period are shown, the 25m storm event was determined to be the maximum storm for every return period modelled.

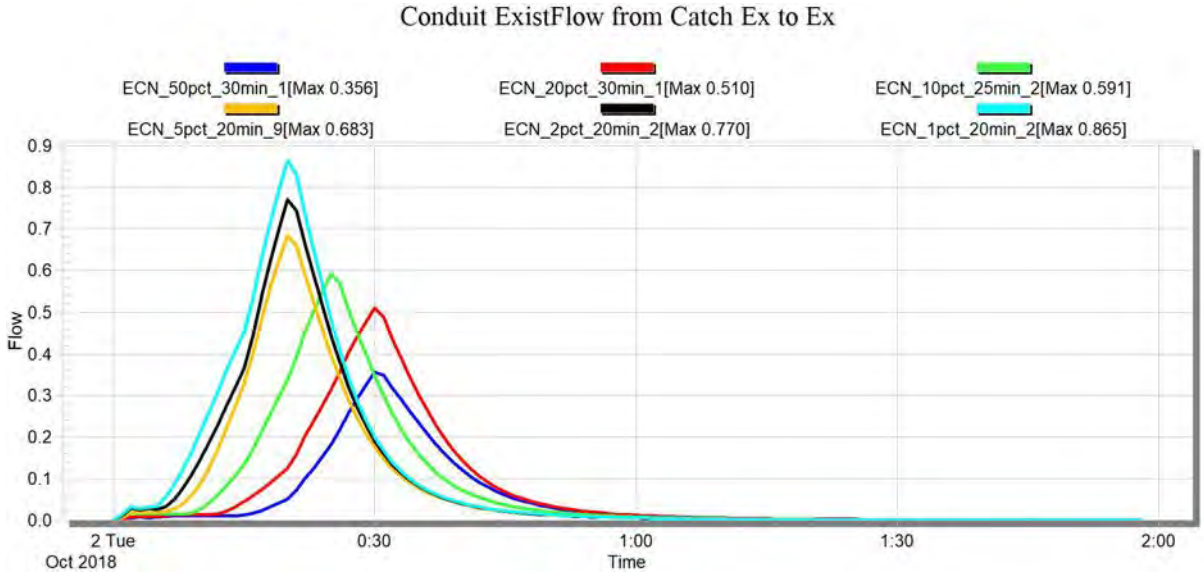

Figure 5.3 Existing stormwater flows for various storm events

As a check for the XP Storm model, the Rational Method was used as outlined in Section 4.3 of the Queensland Urban Drainage Manual (QUDM 2017), to determine the peak flow rate corresponding to the minor and major storm events for the existing conditions. It should be noted that the Rational Method was not used in the calculation of detention volumes but rather as a check that the peak flow outputs for the existing scenario in the XP Storm model were feasible.

Table 5.5 below shows the peak stormwater discharge from the development site for existing conditions.

Runoff Coefficient (C_{10}) - Undeveloped:	0.70	t_c =	13	min.

PARAMETERS							
ARI		2yr	5yr	10yr	20yr	50yr	100yr
Rainfall Intensity	mm/hr	141.0	180.0	202.0	233.0	274.0	305.0
Frequency Factor	$f_{y=}$	0.85	0.95	1.00	1.05	1.15	1.20
Undeveloped C	C_u=	0.60	0.67	0.70	0.74	0.81	0.84

FLOWS								
Undeveloped Flow	Q_u	C*I*A	l/s	242.8	355.6	431.7	513.5	645.8	735.4

Table 5.5 Peak Discharge using Rational Method

Comparing the results from Figure 5.3 and Table 5.5, the relationship is good between the XP Storm and Rational method results and therefore the XP Storm model output is acceptable.

Settings within the XP Storm models are shown in Tables 5.6. Results summaries are shown in Tables 5.7.

PARAMETER	DETENTION TANK
Detention Volume (m^3)	31.1
Base Area (m^2)	16.4
Minor Orifice Area (m^2)	0.1257 (0.40m dia)
Major Orifice IL Above Minor Orifice IL (m)	0.80
Major Orifice Area (m^2)	0.2827 (0.60m dia)

Table 5.6 Detention Parameters

EVENT	PRE-DEVELOPMENT (l/s)	POST-DEVELOPMENT (l/s)
2yr	356	297
5yr	510	420
10yr	591	495
20yr	683	583
50yr	770	701
100yr	865	840

Table 5.7 Pre- and Post-Development outlet flows

The detention basin was sized using the XP Storm model, the results of which are shown in Figures 5.4.

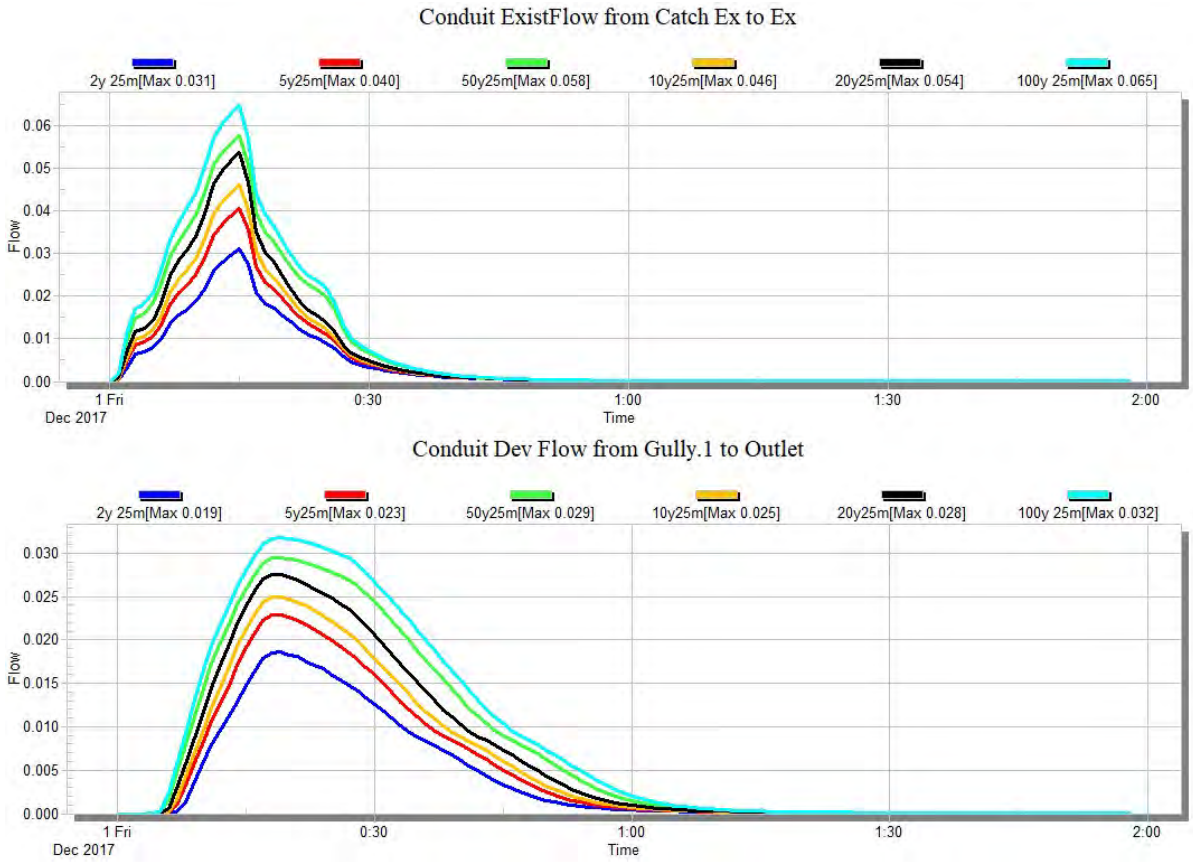

Figure 5.4 Undeveloped vs. Developed stormwater flows for various storm events

Figure 5.4 shows comparisons of the 2yr, 5yr, 10yr, 20yr, 50yr and 100yr flow events for pre- and post-development scenarios using a detention basin volume of **31.1m^3** plus freeboard.

f. Maintenance

Construction Phase Management Plan

Potential construction phase impacts include the following:

- Sedimentation and erosion
- Management of contaminated soils and materials on the site Construction Material (such as cement)

General

The objective of the Construction Phase Management Plan is to comply with the requirements of the Queensland Environmental Protection Act 1994 and Environmental Protection (Water) Policy 2009 so that the environmental values of effected receiving waters are maintained or enhanced. In essence the purpose of the Plan is to prevent polluted stormwater being discharged to the local waterways.

Performance Indicators

The management is not being effective when any of the following occur during the construction phase of the project.

- The required water quality objectives are not achieved,
- Contaminated water is released off site.

Construction Phase Management of Sedimentation and Erosion

Existing vegetation from site will be removed in stages as required to reduce the likelihood of surface erosion. A sediment and siltation fence will be erected around the property boundary to ensure that sediment is not washed off site and onto adjacent properties or roads. Entry and exit from the site will be restricted to a single stabilised location to minimise the rise of onsite transport of silt sediment or mud. It is anticipated that a layer of crushed rock will provide the necessary stabilisation of the access route. If required a specific bunded wash down area will be provided for the cleaning of plant before leaving the site and all wash down waste water will be collected. In the event that debris or sediment leaves the site it will be cleaned.

Management of Imported Materials

Any material imported to the site including construction materials will be stockpiled in a location where it cannot contaminate the stormwater system or stormwater runoff.

Complaint Response

The contractor will erect signage at the entrance to the works with contact information, including afterhours contact numbers. The contractor will properly deal with all complaints.

Monitoring and Reporting

All sediment and erosion control devices will be checked daily and after rainfall events by the construction site supervisor. Defective or full devices will be cleaned and repaired as required. Regular inspections and maintenance of the storm water system will be carried out by the property owner. The civil components (structural and erosion) are to be assessed by a suitably qualified engineer as required.

Stormwater Treatment Systems

The design, installation and ongoing maintenance of the stormwater treatment systems is to be in accordance with the manufacturers specifications and in accordance with the service station operator maintenance guidelines and procedures.

It remains the service provider and user's responsibility to maintain the treatment and site in accordance with the current State Planning Policy and legislation requirements.

Lifecycle cost assessment

There will be no abnormal capital or recurrent costs for the proposed stormwater strategy.

6. Flood Planning and Overland Flow

Figure 6.1 below shows the extent of flooding in relation to the site. The extent of flooding is mostly contained within the east of the site which is located outside of the proposed development works area. Gladstone Regional Council's records indicate that the 1% AEP flood level for the site is 3.62mAHD.

In accordance with Gladstone Regional Council's Planning Scheme requirements for flood immunity levels, the minimum habitable floor level for the proposed development is to be at the 1% AEP flood level defined above, plus 1m freeboard. Since the building is not to be used for residential purposes and the proposed floor level for the aquatic centre development is 10.50mAHD, well above predicted flood levels, it is not anticipated that the development will be affected by flooding. vT Consulting Engineers have not been commissioned to complete a flood assessment report for this development.

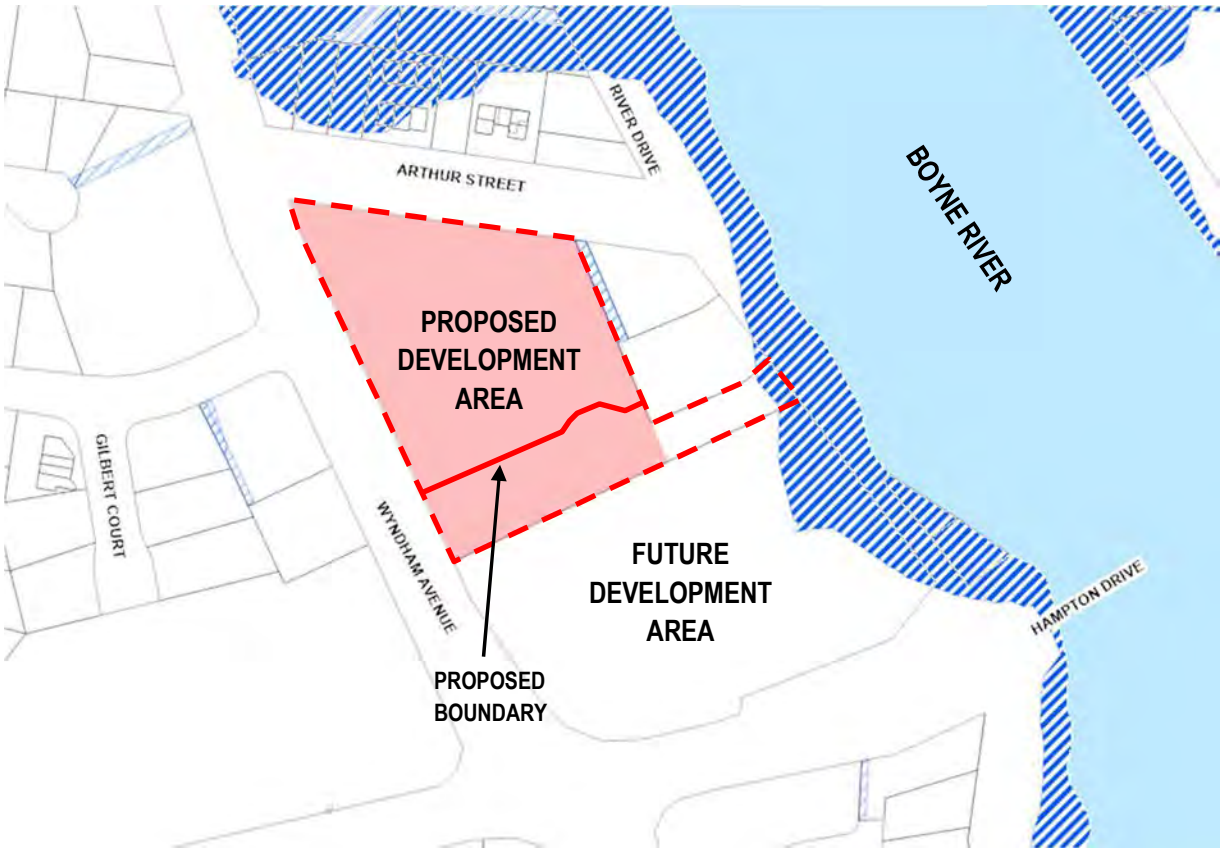

Figure 6.1 Gladstone Regional Council Interactive Mapping – Flood Hazard Overlay

7. Sewer Reticulation

Records and survey data indicate that there is no existing sewer connection available to the proposed site. The nearest sewer infrastructure to the site is located north-east at the end of Arthur Street, as shown by the Gladstone Regional Council interactive mapping sewer layout in Figure 7.1. It is proposed to construct a new maintenance hole over the existing 150mm diameter uPVC main (Asset ID: 3816) and a new sewer main along the southern verge of Arthur Street to the north-east of the property. A new property connection will be established at the end of the new line to service the proposed development. As shown in the figure below, a second extension from the existing manhole (Assetic ID: SND100052) is proposed to be established by future development on the adjacent lot to provide the property with a new connection.

For more details refer to the engineering plans in Appendix A.

Internal house drainage design for this proposed development will be by others.

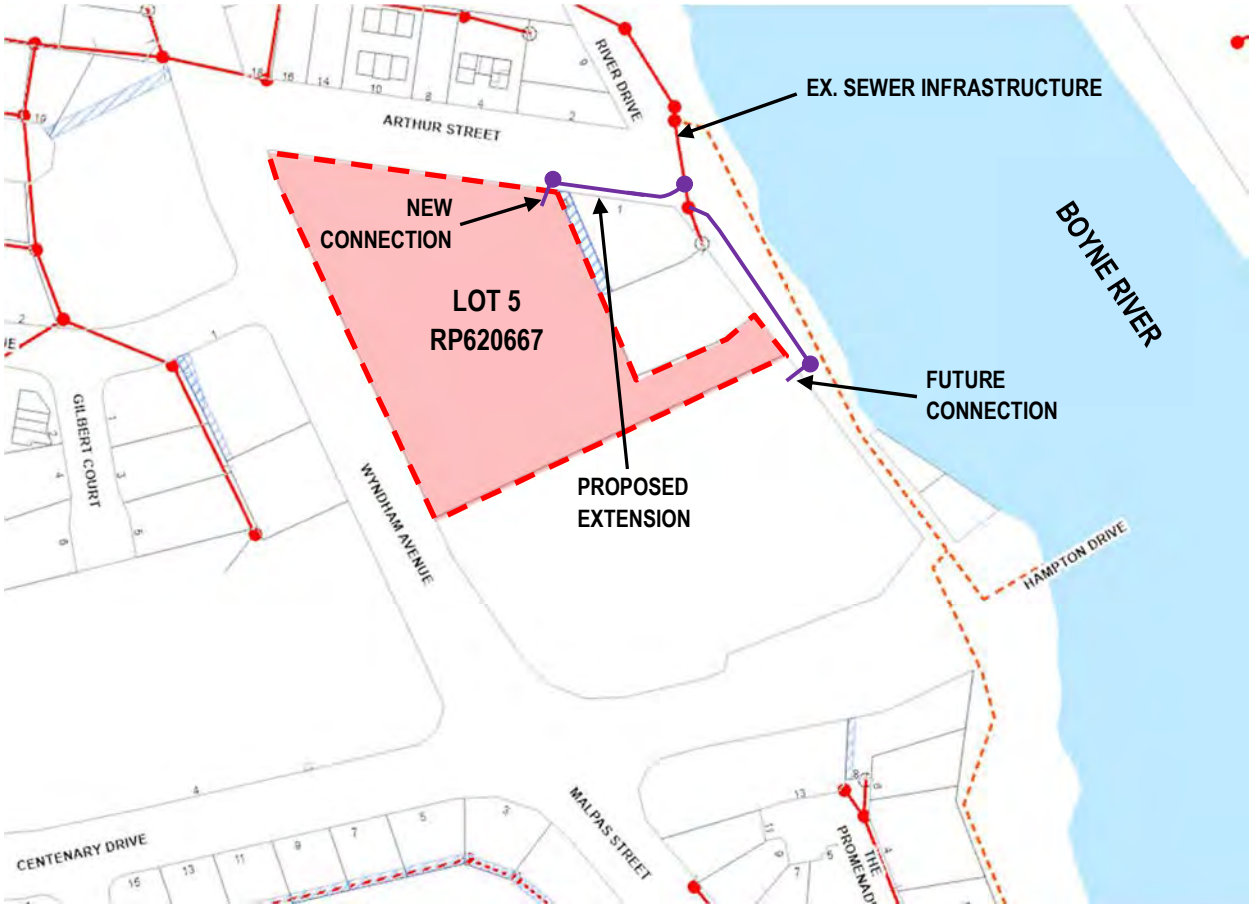

Figure 7.1 Sewer Infrastructure Plan (Gladstone Regional Council Interactive Mapping)

a. Development Sewer Demand

A sewerage demand assessment has been completed to demonstrate that the proposed development will be serviced by appropriate sewer infrastructure. Sewerage demand loads of the development were determined in accordance with the Capricorn Municipal Development Guidelines (CMDG) and the Gladstone Regional Council (GRC) Local Government Infrastructure Plan (LGIP). The sewer demand design parameters were adopted from Table 4.2.4.2.1 in the LGIP. An overconservative measurement was used for the applicable development area and the Equivalent Population (EP) demand rate for the development was determined using the CMDG: D12 Sewerage Reticulation design guidelines and are shown below:

$$\begin{aligned} \boldsymbol{ADWF} &= \mathbf{585}\ \boldsymbol{L/ET/day} \\ &= \mathbf{225}\ \boldsymbol{L/EP/day} \\ &= \frac{\mathbf{225}}{\mathbf{86400}} \times \mathbf{204.2} \\ &= \mathbf{0.54}\ \mathbf{L/s} \end{aligned}$$

Where:

$\mathbf{2.6} = \boldsymbol{EP/ET}$

Site Development Area = 11216m²

EP per 100m² = 1.82 (CMDG D12 – Appendix C)

$$\therefore \boldsymbol{EP} = \frac{\mathbf{11216}}{\mathbf{100}} \times \mathbf{1.82} = \mathbf{204.2}$$

$$\begin{aligned} \boldsymbol{PWWF} &= \mathbf{5} \times \boldsymbol{ADWF} \\ &= \mathbf{5} \times \mathbf{0.54} \\ &= \mathbf{2.70}\ \boldsymbol{L/s} \end{aligned}$$

$$\begin{aligned} \boldsymbol{PDWF} &= \mathbf{2} \times \boldsymbol{ADWF} \\ &= \mathbf{2} \times \mathbf{0.54} \\ &= \mathbf{1.08}\ \boldsymbol{L/s} \end{aligned}$$

As shown above, the determined EP for the development is 204.2 and the Average Dry Weather Flow (ADWF) equates to 1.08L/s. The calculated EP above converts to an approximate Equivalent Tenement (ET) value of 78.54. Section 5.5.5 of the Gravity Sewerage Code of Australia, version 3.1 (WSA 02-2014) provides tabulated values (Table 5.6) for maximum gravity sewer capacities (given in maximum No. of ETs) per various grades and pipes size based on 1 hour rainfall intensity for average recurrence interval of 2 years ($I_{1,2}$). Using an $I_{1,2}$ of 40.5mm/hr (for site location) and interpolation of Table 5.6 (WSA 02-2014); the maximum No. of ET for a 150mm diameter gravity sewer equates to 121. Therefore, 150mm diameter mains will be sufficient (78.54 Dev ET < 121 Max ET) for the external sewerage mains to cater for the developed demand.

8. Water Reticulation

As shown in Figure 8.1 below, water infrastructure exists to the west of the site on Wyndham Avenue and to the north on Arthur Street. It is proposed to establish a new service connection from the 150mm diameter water main on Wyndham Avenue to service the development from the south-west. As shown in the figure below, the adjacent lot will need to be provided with a new service connection to service the lot from the north-west location and is to be established by future development.

It is anticipated that a 150mm fire supply connection will be established to service the development to meet the required firefighting flows (30L/s for 4hrs duration from up to 3 hydrants) in accordance with the Planning Guidelines for Water Supply and Sewerage (Queensland Government Department of Energy and Water Supply 2014). Domestic and fire supply services for the development are to be confirmed by the hydraulic engineer. GRC have confirmed that the existing 150mm diameter main on Wyndham Avenue contains a Fireflow residual pressure of 52.8m of head (Approx. 518 kPa), which is more than sufficient pressure to service the proposed development. As per Table 4 of the Planning Guidelines, the minimum residual pressure in the main at a hydrant and for elsewhere in the supply zone is 12m and 6m of head, respectively.

For more details refer to the engineering plans in Appendix A.
The Internal water supply design for this proposed development will be by others.

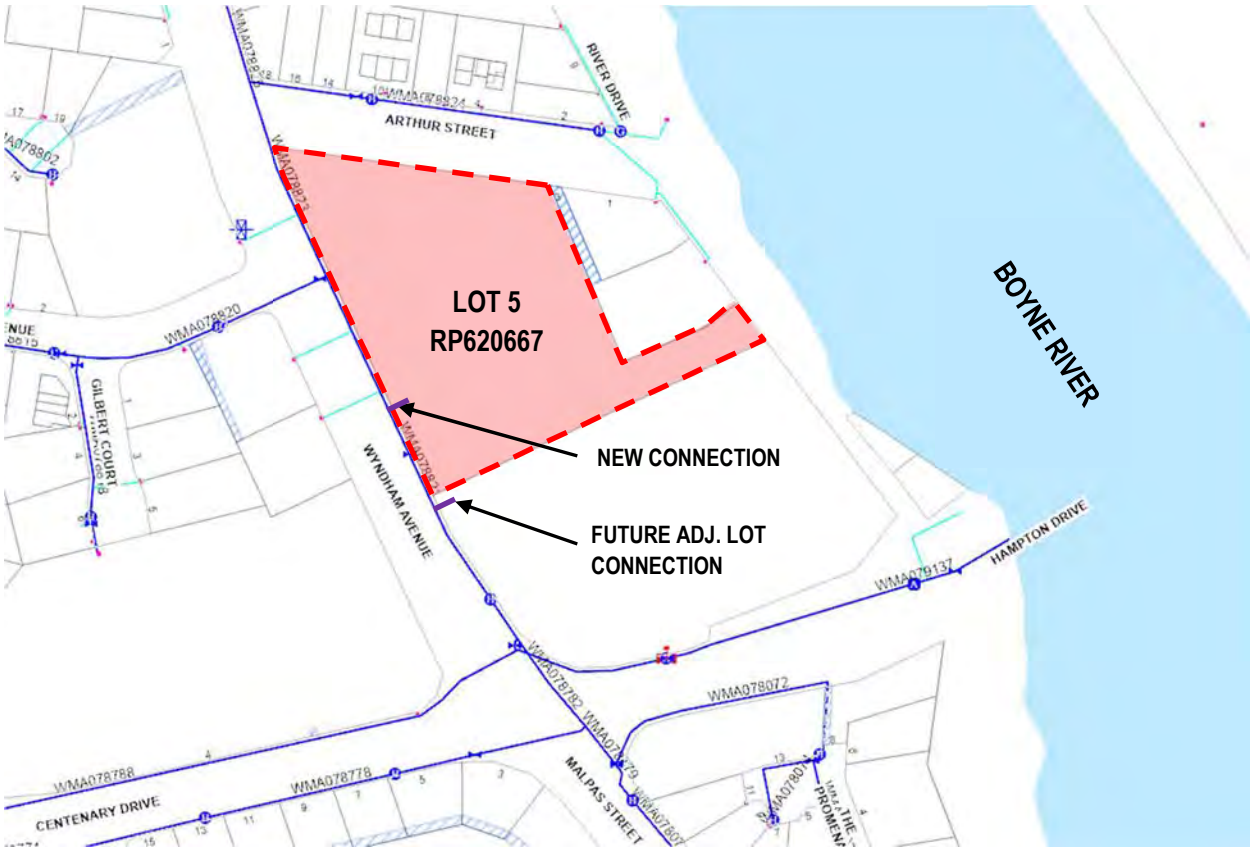

Figure 8.1 Water Infrastructure Plan (Gladstone Regional Council Interactive Mapping)

a. Development Water Supply Demand

A water demand assessment has been completed to demonstrate that the proposed development will be serviced by appropriate water infrastructure available. Water demand loads of the development were determined in accordance with the Capricorn Municipal Development Guidelines (CMDG) and the Gladstone Regional Council (GRC) Local Government Infrastructure Plan (LGIP). GRC have also confirmed that the adopted Average Day (AD) design demand is 312L/EP/d. Using the Average Day value provided, the Mean Day Max Month (MDMM) and the Max Day (MD) were determined in accordance with the CMDG design guidelines. The development EP per unit value was adopted from Table D11.32.01 (CMDG: D11 Water Supply Network). The determined cumulative water demand for the development is as shown below:

$$AD = 312\ L/EP/day$$
$$= \frac{312}{86400} \times 63$$
$$= 0.23\ \mathrm{L/s}$$

Where:

$$2.6 = EP/ET$$

Site Development Area = 11216m²

EP per gross ha = 56 (CMDG D11 – Table D11.32.01)

$$\therefore EP = \frac{11216}{10000} \times 56$$
$$= 63$$

$$MDMM = 1.5 \times AD$$
$$= 1.5 \times 0.23$$
$$= 0.35\ L/s$$

$$MD = 2.25 \times AD$$
$$= 2.25 \times 0.23$$
$$= 0.52\ L/s$$

Records of the pressure available in the existing 150mm diameter water main on Wyndham Avenue has been provided by GRC and is available in Appendix E. The average day minimum and maximum pressure has been confirmed to be 53.7m (Approx. 527kPa) and 54.9m (Approx. 538kPa Approx.) of head, respectively.

b. Pool Draining and Filling

Platinum Aquatics have provided advice regarding draining of the proposed pools to the existing sewer infrastructure. It is recommended that pool draining is completed at a flow rate of 5L/s and can be achieved by trickle feeding prior to discharging to the infrastructure. Backwashing of the pools will be required to divert pool water to a suitably sized holding tank, prior to discharging (flow rate of 5L/s) to the sewer. The existing downstream 150mm diameter sewer main contains a calculated 75% pipe flow depth of 8.045L/s, which is more than sufficient for the combined PDWF and pool discharge.

As advised by Platinum Aquatics, filling of the pool can be achieved using hydrants at a typical flow rate of 10L/s. Initial filling of the swimming pools is proposed to be completed via a tanker truck. The design of the swimming pool facilities will be completed during detailed design.

9. Electrical and Telecommunication

The electrical supply and communications supply for this proposed development will be by others.

10. Safety in Design

At the time of preparing this report, it is considered that there is no atypical safety in design issues for a project of this type and use. Typical issues to be reviewed include but are not limited to construction activities, falls, confined spaces, excavations and hazardous materials.

A full review of and preparation of a Safety In Design report will be conducted during the detailed design of the project by the project design engineer. The ongoing implementation, review and amendments to the Safety in Design register is to be by the property owner or users.

11. Development Codes

The following applicable Local Codes have been completed to address the proposed development and are included in Appendix D:

- GRC Operational Works Code

12. Conclusions

vT Consulting Engineers has undertaken a preliminary review of civil engineering services required for the proposed development located at 2 Centenary Drive, Boyne Island QLD 4680.

Based on all the findings outlined in this report, vT Consulting Engineers believes that, should the recommendation contained within the report be implemented, there are no significant engineering issues in relation to this development.

13. References

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Appendix A - Proposed Preliminary Design Drawings

LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING EASEMENT BOUNDARY
- EXISTING CONTOUR - MAJOR
- EXISTING CONTOUR - MINOR
- EXISTING BUILDING
- SW — EXISTING STORMWATER DRAINAGE
- RW — EXISTING ROOFWATER DRAINAGE
- S — EXISTING SEWER
- W — EXISTING WATER
- E — EXISTING ELECTRICAL
- EU — EXISTING ELEC. UNDERGROUND
- EXISTING ELEC. OVERHEAD
- T — EXISTING COMMUNICATIONS
- ABANDON EXISTING SERVICE
- PROPERTY BOUNDARY
- EASEMENT BOUNDARY
- BUILDING
- EARTHWORKS TOP OF BATTER
- EARTHWORKS BOTTOM OF BATTER
- SF — SEDIMENT FENCE
- SW — STORMWATER DRAINAGE
- S — SEWER
- W — WATER
- EXTENT OF WORK
- EXISTING SURFACE LEVEL (ESL)
- + RL1.234 — FINISHED SURFACE LEVEL (FSL)

BOYNE RIVER

3
RP610383

4
RP620667

1
RP619033

5
RP620667

CONSTRUCTION ENTRY/EXIT WITH CATTLE GRID

SEDIMENT CATCH DRAIN

TEMPORARY SEDIMENT BASIN

SEDIMENT FENCE TO BE ERECTED AROUND SITE. TYPICAL

SEDIMENT CATCH DRAIN

SEDIMENT FENCE TO BE ERECTED AROUND SITE. TYPICAL

1m WIDE SEDIMENT WEIR

SEDIMENT FENCE

STOCKPILE LOCATION (INDICATIVE ONLY)

TEMPORARY SEDIMENT BASIN

SEDIMENT CATCH DRAIN

ARTHUR STREET

AQUATIC CENTRE

CENTENARY DRIVE

WYNDHAM AVE

HAYES AVE

LAYOUT PLAN
SCALE 1:500

0 5 10 20 25
SCALE 1:500

REV.	DATE:	AMENDMENT:	BY:	APP:
A	06.05.21	ORIGINAL ISSUE	MD	AvT

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SCALE:	AS SHOWN	DRAWN:	MD
SHEET SIZE:	A1	DESIGN:	MD
DATUM:	AHD	CHECKED:	AvT
		APPROVED:	

PROJECT: TANNUM SANDS MIXED USE PRECINCT OUTDOOR AQUATIC CENTRE

JOB No.: 21032-1

DRAWING TITLE: PRELIMINARY EROSION AND SEDIMENT CONTROL LAYOUT PLAN

DRAWING No.: P001 PRELIMINARY

REV.: A

PLOTTED: 06.05.2021

LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING EASEMENT BOUNDARY
- EXISTING CONTOUR - MAJOR
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- EXISTING BUILDING
- EXISTING STORMWATER DRAINAGE
- EXISTING ROOFWATER DRAINAGE
- EXISTING SEWER
- EXISTING WATER
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- SEWER
- WATER
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- RL1.234 FINISHED SURFACE LEVEL (FSL)

BOYNE RIVER

3 RP610383

4 RP620667

5 RP620667

1 RP619033

PROPOSED SEWER. REFER TO DWG No. P004 FOR DETAILS.

CONCRETE CROSSOVER TO GLADSTONE REGIONAL COUNCIL STANDARDS

STORMWATER QUANTITY DETENTION TANK. 31.1m³ PLUS 100mm FREEBOARD TO BE PROVIDED. PRECAST DETENTION TANK TO MANUFACTURERS SPECIFICATIONS. INCLUDING TANK, HEAVY DUTY CLASS D BOLT DOWN LID, BAFFLES AND WEIRS. REFER TO SWMP FOR DETAILS. TYPICAL

PROPOSED Ø600 RCP FOR STORMWATER DISCHARGE

BREAK INTO AND CONNECT TO EXISTING ON ROAD GULLY PIT

PROPOSED STORMWATER ACCESS CHAMBER

STORMWATER QUALITY IMPROVEMENT DEVICE TO MANUFACTURERS SPECIFICATIONS. INCLUDING TANK, HEAVY DUTY CLASS D BOLT DOWN LID, BAFFLES AND WEIRS. REFER TO SWMP FOR DETAILS. TYPICAL

BARRIER KERB AND CHANNEL TO BE CONSTRUCTED ALONG SITE FRONTAGE

PAVEMENT WIDENING

ARTHUR STREET

HAYES AVE

WYNDHAM AVE

CENTENARY DRIVE

SITE ENTRY/EXIT

CARPARK (50 CARS)

GULLY PIT

BUILDING 1

BUILDING 2

AEROBICS POOL

LAGOON POOL

WATER SLIDES

KIDS POOL

WATER PLAY

LANDSCAPE / RECREATIONAL AREA

50m POOL

AQUATIC CENTRE

+RL10.50

RL10.50

LANDSCAPE

ENTRY/ EXIT

GRANDSTAND

BUILDING 3

REFUSE

COMBINED SETDOWN ZONE TO HATCHED AREA

PROPERTY BOUNDARY

FOOTPATH

RTW

PROPOSED WATER SERVICE. REFER TO DWG No. P004 FOR DETAILS.

CONCRETE CROSSOVER TO GLADSTONE REGIONAL COUNCIL STANDARDS

PAVEMENT TO JOIN NEATLY TO EXISTING

BUS STOP LOCATION

INDICATIVE COUNCIL BUS STOP

47.50

JOIN NEATLY TO EXISTING ISLAND

CHANNELISED RIGHT TURN TREATMENT

LAYOUT PLAN
SCALE 1:500

0 5 10 20 25
SCALE 1:500

REV.	DATE:	AMENDMENT:	BY:	APP:
C	01.09.21	GENERAL AMENDMENTS	SC	AvT
B	14.05.21	MINOR AMENDMENTS	MD	AvT
A	06.05.21	ORIGINAL ISSUE	MD	AvT

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DATUM: AHD	CHECKED: AvT
	APPROVED:

PROJECT: TANNUM SANDS MIXED USE PRECINCT OUTDOOR AQUATIC CENTRE

JOB No.: 21032-1

DRAWING TITLE: DRAINAGE AND PAVEMENT LAYOUT PLAN

DRAWING No.: P002 PRELIMINARY

REV.: C

PLOTTED: 01.09.2021

LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING EASEMENT BOUNDARY
- EXISTING CONTOUR - MAJOR
- EXISTING CONTOUR - MINOR
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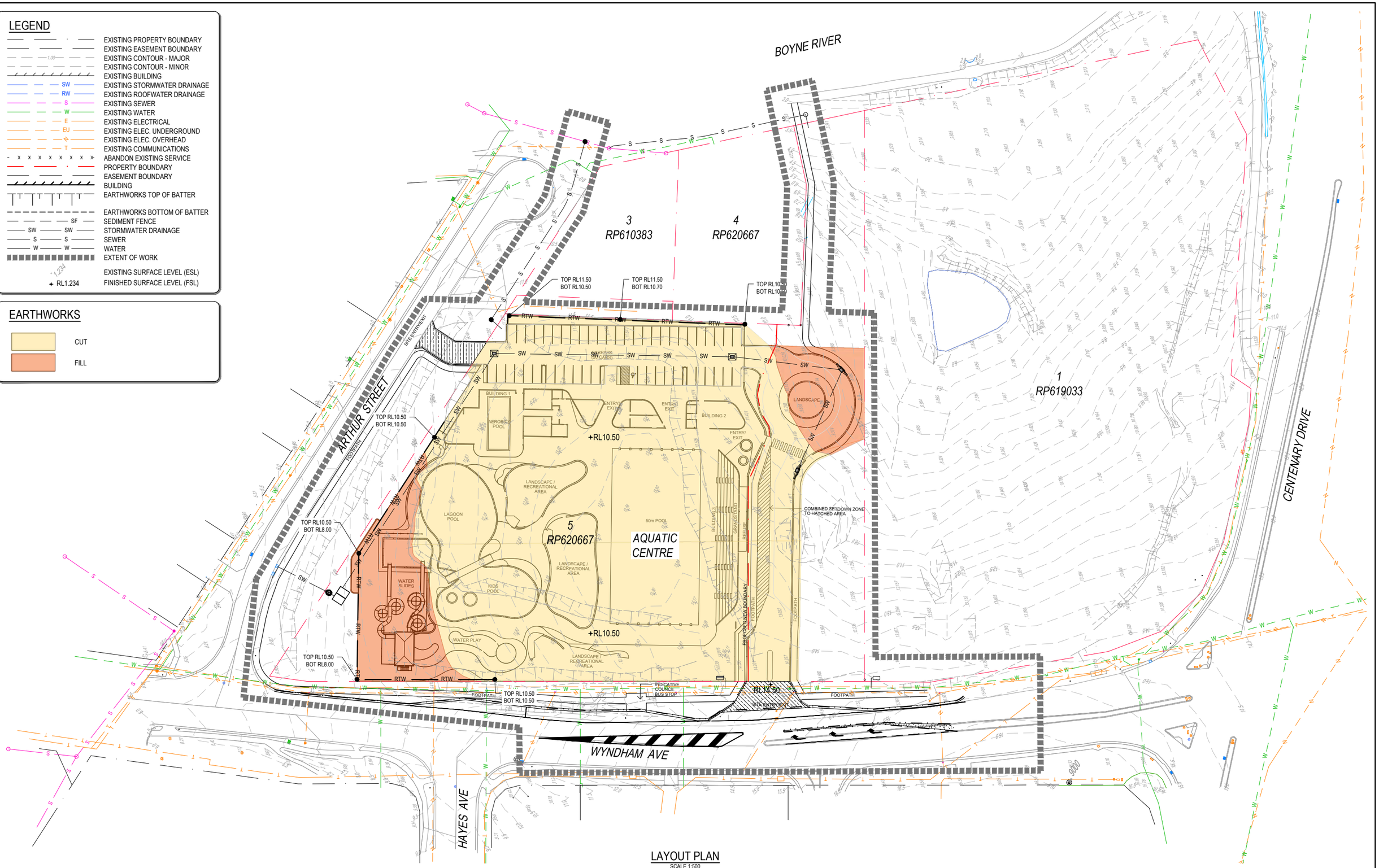
- S — SEWER
- W — WATER
- EXTENT OF WORK
- EXISTING SURFACE LEVEL (ESL)
- RL1.234 — FINISHED SURFACE LEVEL (FSL)

EARTHWORKS

- CUT
- FILL



LAYOUT PLAN
SCALE 1:500

0 5 10 20 25
SCALE 1:500

REV.	DATE:	AMENDMENT:	BY:	APP:
C	01.09.21	GENERAL AMENDMENTS	SC	AvT
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PROJECT: TANNUM SANDS MIXED USE PRECINCT OUTDOOR AQUATIC CENTRE

JOB No.: 21032-1

DRAWING TITLE: PRELIMINARY EARTHWORKS LAYOUT PLAN

DRAWING No.: P003 PRELIMINARY

REV.: C

P:\OTTED\ 01.09.2021

LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING EASEMENT BOUNDARY
- EXISTING CONTOUR - MAJOR
- EXISTING CONTOUR - MINOR
- EXISTING BUILDING
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- EXISTING ROOFWATER DRAINAGE
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- EXISTING ELECTRICAL
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- STORMWATER DRAINAGE
- SEWER
- WATER
- EXTENT OF WORK
- EXISTING SURFACE LEVEL (ESL)
- RL1.234 FINISHED SURFACE LEVEL (FSL)

BOYNE RIVER

EXISTING SEWER GRAVITY MAIN

PROPOSED SEWER MAINTENANCE HOLE

PROPOSED SEWER MAIN TO LOCAL AUTHORITY STANDARDS

HORIZONTAL BEND

PROPOSED SEWER MAINTENANCE HOLE

PROPOSED Ø150 SEWER PROPERTY CONNECTION HC TYPE B
CH3.94
IL10.30
JUIL8.30

LOT 1 SEWER PROPERTY CONNECTION TO BE CONFIRMED DURING FUTURE DEVELOPMENT. INDICATIVELY SHOWN

3 RP610383

4 RP620667

1 RP619033

5 RP620667

ARTHUR STREET

FOOTPATH

SITE ENTRY/EXIT

CARPARK (80 CARS)

BUILDING 1

AEROBICS POOL

ENTRY/ EXIT

BUILDING 2

LANDSCAPE

RL10.50

LANDSCAPE / RECREATIONAL AREA

LAGOON POOL

50m POOL

AQUATIC CENTRE

BUILDING 3

GRANDSTAND

RETAIL

COMBINED SETDOWN ZONE TO HATCHED AREA

CENTENARY DRIVE

WATER SLIDES

KIDS POOL

WATER PLAY

PEDESTRIAN/CYCLEWAY

WATER METER SIZED TO SUIT DEVELOPMENT

EXISTING WATER MAIN

LOT 1 WATER METER AND SERVICE CONNECTION TO BE CONFIRMED DURING FUTURE DEVELOPMENT. INDICATIVELY SHOWN

INDICATIVE COUNCIL BUS STOP

RL 14.50

SITE ENTRY/EXIT

WYNDHAM AVE

HAYES AVE

RTW

SW

S

W

RW

0 5 10 20 25
SCALE 1:500

LAYOUT PLAN
SCALE 1:500

REV.	DATE:	AMENDMENT:	BY:	APP:
A	01.09.21	ORIGINAL ISSUE	SC	AvT

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		APPROVED:	

PROJECT: TANNUM SANDS MIXED USE PRECINCT OUTDOOR AQUATIC CENTRE

JOB No.: 21032-1

DRAWING TITLE: SEWER AND WATER LAYOUT PLAN

DRAWING No.: P004 PRELIMINARY

REV.: A

P.OTTED: 01.09.2021

Appendix B - Erosion and Sediment Control Hazard Assessment Form

Erosion Hazard Assessment Form

Condition	Points	Score	Trigger value
AVERAGE SLOPE OF DISTURBANCE AREA [1]			
• not more than 3% [3% . 33H:1V]	0		
• more than 3% but not more than 5% [5% = 20H:1V]	1		
• more than 5% but not more than 10% [10% = 10H:1V]	(2)	**2**	**4**
• more than 10% but not more than 15% [15% . 6.7H:1V]	4		
• more than 15%	6		
SOIL CLASSIFICATION GROUP (AS1726) [2]			
• GW, GP, GM, GC	0		
• SW, SP, OL, OH	1	**3**	
• SM, SC, MH, CH	2		
• ML, CL, or if *imported fill* is used, or if soils are untested	(3)		
EMERSON (DISPERSION) CLASS NUMBER [3]			
• Class 4, 6, 7, or 8	0		
• Class 5	2	**4**	**6**
• Class 3, (default value if soils are untested)	(4)		
• Class 1 or 2	6		
DURATION OF SOIL DISTURBANCE [4]			
• not more than 1 month	0		
• more than 1 month but not more than 4 months	2	**4**	**6**
• more than 4 months but not more than 6 months	(4)		
• more than 6 months	6		
AREA OF DISTURBANCE [5]			
• not more than 1000 m^2	0		
• more than 1000 m^2 but not more than 5000 m^2	1		
• more than 5000 m^2 but not more than 1 ha	2	**4**	**4**
• more than 1 ha but not more than 4 ha	(4)		
• more than 4 ha	6		
WATERWAY DISTURBANCE [6]			
• No disturbance to a watercourse, open drain or channel	(0)		
• Involves disturbance to a constructed open drain or channel	1	**0**	**2**
• Involves disturbance to a natural watercourse	2		
REHABILITATION METHOD [7]			
Percentage of area (relative to total disturbance) revegetated by seeding without light mulching (i.e. worst-case revegetation method).			
• not more than 1%	0		
• more than 1% but not more than 5%	(1)	**1**	
• more than 5% but not more than 10%	2		
• more than 10%	4		
RECEIVING WATERS [8]			
• Saline waters only	(0)	**0**	
• Freshwater body (e.g. creek or freshwater lake or river)	2		
SUBSOIL EXPOSURE [9]			
• No subsoil exposure except of service trenches	0	**2**	
• Subsoils are likely to be exposed	(2)		
EXTERNAL CATCHMENTS [10]			
• No external catchment	(0)		
• External catchment diverted around the soil disturbance	1	**0**	
• External catchment not diverted around the soil disturbance	2		
ROAD CONSTRUCTION [11]			
• No road construction	0	**2**	
• Involves road construction works	(2)		
pH OF SOILS TO BE REVEGETATED [12]			
• more than pH 5.5 but less than pH 8	0	**1**	
• other pH values, or if soils are untested	(1)		
Total Score [13]		**23**	

Explanatory notes

Requirements: Specific issues or actions required by the proponent.

Warnings: Issues that should be considered by the proponent.

Comments: General information relating to the topic.

[1] **REQUIREMENTS:**
For sites with an average slope of proposed land disturbance greater than 10%, a preliminary ESCP must be submitted to the regulatory authority for approval during planning negotiations.

Proponents must demonstrate that adequate erosion and sediment control measures can be implemented on-site to effectively protect downstream environmental values.

If site or financial constraints suggest that it is not reasonable or practicable for the prescribed water quality objectives to be achieved for the proposal, then the proponent must demonstrate that alternative designs or construction techniques (e.g. pole homes, suspended slab) cannot reasonably be implemented on the site.

WARNINGS:
Steep sites usually require more stringent drainage and erosion controls than flatter grade sites.

COMMENTS:
The steeper the land, the greater the need for adequate drainage controls to prevent soil and mulch from being washed from the site.

[2] **REQUIREMENTS:**
If the actual soil K-factor is known from soil testing, then the Score shall be determined from Table 1.

If a preliminary ESCP is required during planning negotiations, then it must be demonstrated that adequate space is available for the construction and operation of any major sediment traps, including the provision for any sediment basins and their associated embankments and spillways. It must also be demonstrated that all reasonable and practicable measures can be taken to divert the maximum quantity of sediment-laden runoff (up to the specified design storm) to these sediment traps throughout the construction phase and until the contributing catchment is adequately stabilised against erosion.

WARNINGS:
The higher the point score, the greater the need to protect the soil from raindrop impact and thus the greater the need for effective erosion control measures. A point score of 2 or greater will require a greater emphasis to be placed on revegetation techniques that do not expose the soil to direct rainfall contact during vegetation establishment, e.g. turfing and *Hydromulching*.

COMMENTS:
Table 2 provides an *indication* of soil conditions likely to be associated with a particular Soil group based on a statistical analysis of soil testing across NSW. This table provides only an initial estimate of the likely soil conditions.

The left-hand-side of the table provides an indication of the type of sediment basin that will be required (Type C, F or D). The right-hand-side of the table provides an indication of the likely erodibility of the soil based on the Revised Universal Soil Loss Equation (RUSLE) K-factor.

Table 3 provides some general comments on the erosion potential of the various soil groups.

Table 1 – Score if soil K-factor is known

	RUSLE soil erodibility K-factor			
	K < 0.02	**0.02<K<0.04**	**0.04<K<0.06**	**K > 0.06**
Score	0	1	2	3

Table 2 – Statistical analysis of NSW soil data [1]

Unified Soil Class System	Likely sediment basin classification (%)			Probable soil erodibility K-factor (%) [2]			
	Dry	Wet		Low	Moderate	High	Very High
	Type C	Type F	Type D	K < 0.02	0.02<K<0.04	0.04<K<0.06	K > 0.06
GM	30	**58**	12	12	**51**	26	12
GC	**42**	33	25	13	**71**	17	0
SW	40	**48**	12	**49**	39	12	0
SP	**53**	32	15	**76**	18	5	1
SM	21	**67**	12	26	**48**	25	1
SC	26	**50**	24	16	**64**	18	2
ML	5	**63**	32	4	35	**45**	16
CL	9	**51**	39	12	**56**	19	13
OL	2	**80**	18	34	**61**	5	1
MH	12	41	**48**	15	19	**41**	25
CH	5	44	**51**	39	**43**	11	7

Notes: [1] Analysis of soil data presented in Landcom (2004).
[2] Soil erodibility based on Revised Universal Soil Loss Equation (RUSLE) K-factor.

Unified Soil Classification System (USCS)

GW Well graded gravels, gravel-sand mixtures, little or no fines
GP Poorly graded gravels, gravel-sand mixture, little or no fines
GM Silty gravels, poorly graded gravel-sand-silt mixtures
GC Clayey gravels, poorly graded gravel-sand-clay mixtures
SW Well graded sands, gravelly sands, little or no fines
SP Poorly graded sands, gravelly sands, little or no fines
SM Silty sands, poorly graded sand-silt mixtures
SC Clayey sands, poorly graded sand-clay mixtures
ML Inorganic silts & very fine sands, rock flour, silty or clayey fine sands with slight plasticity
CL Inorganic clays, low–medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
OL Organic silts and organic silt-clays of low plasticity
MH Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
CH Inorganic clays of high plasticity, fat clays
OH Organic clays of medium to high plasticity

Table 3 – Typical properties of various soil groups [1]

Soil Groups	Typical properties [2]
GW, GP	• Low erodibility potential.
GM, GC	• Low to medium erodibility potential. • May create turbid runoff if disturbed as a result of the release of silt and clay particles.
SW, SP	• Low to medium erodibility potential.
SM, SC	• Medium erodibility potential. • May create turbid runoff if disturbed as a result of the release of silt and clay particles.
MH, CH	• Highly variable (low to high) erodibility potential. • Will generally create turbid runoff if disturbed.
ML, CL	• High erodibility potential. • Tendency to be dispersive. • May create some turbidity in runoff if disturbed.

Note: [1] After Soil Services & NSW DLWC (1998).
[2] Any soil can represent a high erosion risk if the binding clays or silts are unstable.

Table 4 provides **general** guidelines on the suitability of various soil groups to various engineering applications.

Table 4 – Engineering suitability based on Unified Soil Classification [1]

Unified Soil Class	USC Group	Embankments		Fill	Slope stability	Untreated roads
		Water retaining	Non water retaining			
Well graded gravels	GW	Unsuitable	Excellent	Excellent	Excellent	Average
Poorly graded gravel	GP	Unsuitable	Average	Excellent	Average	Unsuitable
Silty gravels	GM	Unsuitable	Average	Good	Average	Average
Clayey gravels	GC	Suitable	Average	Good	Average	Excellent
Well graded sands	SW	Unsuitable	Excellent	Excellent	Excellent	Average
Poorly graded sands	SP	Unsuitable	Average	Good	Average	Unsuitable
Silty sands	SM	Suitable [2]	Average	Average	Average	Poor
Clayey sands	SC	Suitable	Average	Average	Average	Good
Inorganic silts	ML	Unsuitable	Poor	Average	Poor	Unsuitable
Inorganic clays	CL	Suitable [2]	Good	Average	Good	Poor
Organic silts	OL	Unsuitable	Unsuitable	Poor	Unsuitable	Unsuitable
Inorganic silts	MH	Unsuitable	Poor	Poor	Poor	Unsuitable
Inorganic clays	CH	Suitable [2]	Average	Unsuitable	Average	Unsuitable
Organic clays	OH	Unsuitable	Unsuitable	Unsuitable	Unsuitable	Unsuitable
Highly organic soils	Pt	Unsuitable	Unsuitable	Unsuitable	Unsuitable	Unsuitable

Notes: [1] Modified from Hazelton & Murphy (1992)
[2] Suitable only after modifications to soil such as compaction and/or erosion protection

[3] If the soils have not been tested for Emerson Class, then adopt a score of 4.

REQUIREMENTS:
Works proposed on sites containing Emerson Class 1 or 2 soils have a very high pollution potential and must submit a conceptual ESCP to the regulatory authority for review and/or approval (as required by the authority) during planning negotiations.

WARNINGS:
Class 3 and 5 soils disturbed by cut and fill operations or construction traffic are highly likely to discolour stormwater (i.e. cause turbid runoff). Chemical stabilisation will likely be required if these soils are placed immediately adjacent to a retaining wall. Any disturbed Class 1, 2, 3 and 5 soils that are to be revegetated must be covered with a non-dispersive topsoil as soon as possible (unless otherwise agreed by the regulatory authority).

Class 1 and 2 soils are highly likely to discolour (pollute) stormwater if exposed to rainfall or flowing water. Treatment of these soils with gypsum (or other suitable substance) will most likely be required. These soils should not be placed directly behind a retaining wall unless it has been adequately treated (stabilised) or covered with a non-dispersible soil.

[4] The duration of disturbance refers to the total duration of soil exposure to rainfall up until a time when there is at least 70% coverage of all areas of soil.

REQUIREMENTS:
All land developments with an expected soil disturbance period greater than 6 months must submit a conceptual ESCP to the regulatory authority for review and/or approval (as required by the authority) during planning negotiations.

COMMENTS:
Construction periods greater than 3 months will generally experience at least some significant storm events, independent of the time of year that the construction (soil disturbance) occurs.

[5] **REQUIREMENTS:**
Development proposals with an expected soil disturbance in excess of 1ha must submit a conceptual ESCP to the regulatory authority for review and/or approval (as required by the regulatory authority) during planning negotiations.

The area of disturbance refers to the total area of soil exposed to rainfall or dust-producing winds either as a result of:

(a) the removal of ground cover vegetation, mulch or sealed surfaces;
(b) past land management practices;
(c) natural conditions.

WARNINGS:
A *Sediment Basin* will usually be required if the disturbed area exceeds 0.25ha (2500m^2) within any sub-catchment (i.e. land flowing to one outlet point).

COMMENTS:
For soil disturbances greater than 0.25ha, the revegetation phase should be staged to minimise the duration for which soils are exposed to wind, rain and concentrated runoff.

[6] **REQUIREMENTS:**
All developments that involve earthworks or construction within a natural watercourse (whether that watercourse is in a natural or modified condition) must submit a conceptual ESCP to the regulatory authority for review and/or approval (as required by the regulatory authority) during planning negotiations.

Permits and/or licences may be required from the State Government, including possible submission of the ESCP to the relevant Government department.

[7] **REQUIREMENTS:**
No areas of soil disturbance shall be left exposed to rainfall or dust-producing winds at the end of a development without an adequate degree of protection and/or an appropriate action plan for the establishment of at least 70% cover.

COMMENTS:
Grass seeding without the application of a light mulch cover is considered the least favourable revegetation technique. A light mulch cover is required to protect the soil from raindrop impact, excessive temperature fluctuations, and the loss of essential soil moisture.

[8] **COMMENTS:**
All receiving waters can be adversely affected by unnatural quantities of sediment-laden runoff. Freshwater ecosystems are generally more susceptible to ecological harm resulting from the inflow of fine or dispersible clays than saline water bodies. The further inland a land disturbance is, the greater the potential for the released sediment to cause environmental harm as this sediment travels towards the coast.

For the purpose of this clause it is assumed that all sediment-laden runoff will eventually flow into saline waters. Thus, sediment-laden discharges that flow first into freshwater are likely to adversely affect both fresh and saline water bodies and are therefore considered potentially more damaging to the environment.

This clause does **not** imply that sediment-laden runoff will not cause harm to saline waters.

[9] **COMMENTS:**
This clause refers to subsoils exposed during the construction phase either as a result of past land practices or proposed construction activities. The exposure of subsoils resulting from the excavation of minor service trenches should not be considered.

[10] **WARNINGS:**
The greater the extent of external catchment, the greater the need to divert up-slope stormwater runoff around any soil disturbance.

COMMENTS:
The ability to separate “clean” (i.e. external catchment) stormwater runoff from “dirty” site runoff can have a significant effect on the size, efficiency and cost of the temporary drainage, erosion, and sediment control measures.

[11] **REQUIREMENTS:**
Permission must be obtained from the owner of a road reserve before placing any erosion and sediment control measures within the road reserve.

WARNINGS:
Few sediment control techniques work efficiently when placed on a road and/or around roadside stormwater inlets. Great care must be taken if sediment control measures are located on a public roadway, specifically:

- safety issues relating to road users;
- the risk of causing flooding on the road or within private property.

The construction of roads (whether temporary or permanent) will usually modify the flow path of stormwater runoff. This can affect how "dirty" site runoff is directed to the sediment control measures.

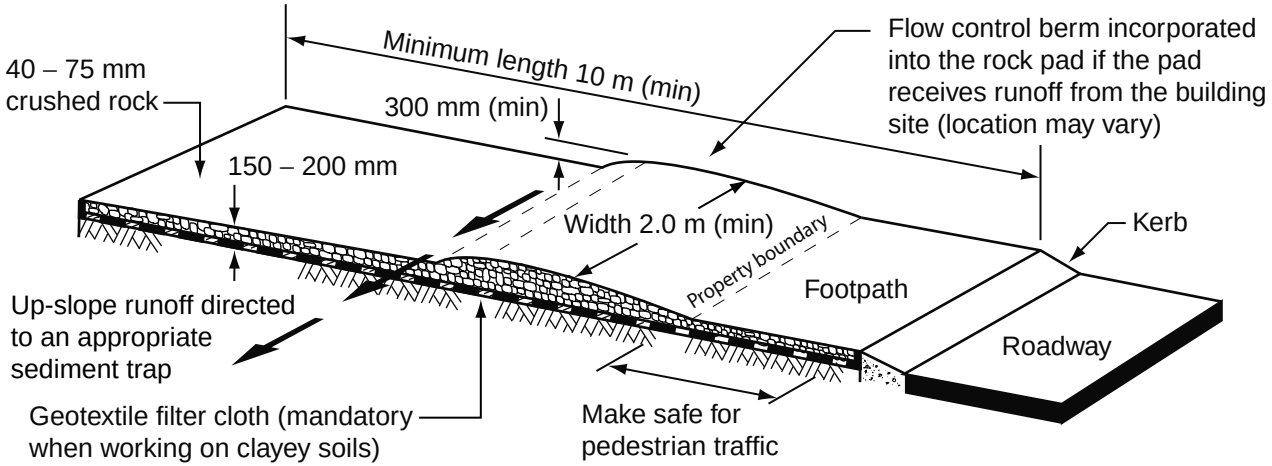
COMMENTS:
"On-road" sediment control devices are at best viewed as secondary or supplementary sediment control measures. Only in special cases and/or on very small projects (e.g. kerb and channel replacement) might these controls be considered as the "primary" sediment control measure.

[12] **WARNINGS:**
Soils with a pH less than 5.5 or greater than 8 will usually require treatment in order to achieve satisfactory revegetation. Soils with a pH of less than 5 (whether naturally acidic or in acid sulfate soil areas) may also limit the choice of chemical flocculants (e.g. Alum) for use in the flocculation of *Sediment Basins*.

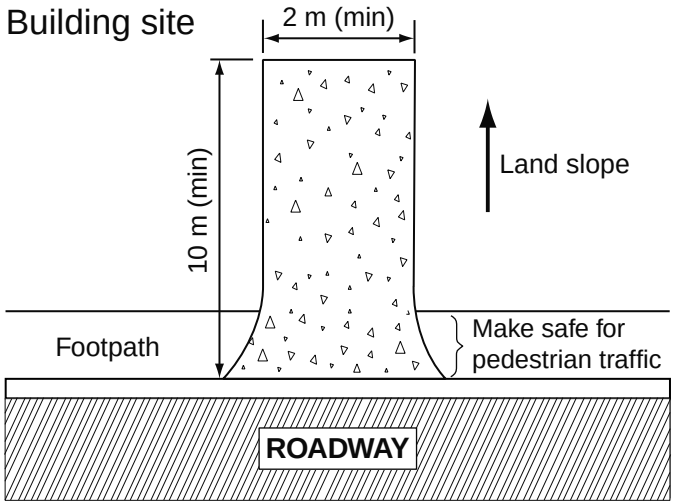
[13] **REQUIREMENTS:**
A preliminary ESCP must be submitted to the local government for approval during the planning phase for any development that obtains a total point score of 17 or greater or when any trigger value is scored or exceeded.

Appendix C - IECA (Australasia) Standard Drawings

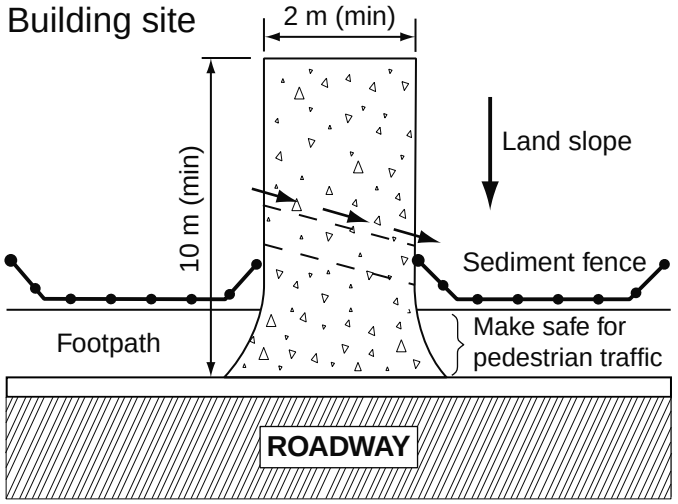
Available from: http://www.austieca.com.au/publications/book-6-standard-drawing



(a) Rock entry/exit pad for building sites



(b) Rock pad sloping away from road



(c) Rock pad sloping towards the road

CONSTRUCTION NOTES:

MATERIALS

ROCK: WELL GRADED, HARD, ANGULAR, EROSION RESISTANT ROCK, NOMINAL DIAMETER OF 40 TO 75mm.

FOOTPATH STABILISING AGGREGATE: 25 TO 50mm GRAVEL OR AGGREGATE (IF REQUIRED).

GEOTEXTILE FABRIC: HEAVY-DUTY, NEEDLE-PUNCHED, NON-WOVEN FILTER CLOTH ('BIDIM' A24 OR EQUIVALENT).

INSTALLATION

1. INSPECT ALL SITE ENTRY AND EXIT POINTS PRIOR TO FORECAST RAIN, DAILY DURING EXTENDED PERIODS OF RAINFALL, AFTER RUNOFF-PRODUCING RAINFALL, OR OTHERWISE AT FORTNIGHTLY INTERVALS.

2. IF SAND, SOIL, SEDIMENT OR MUD IS TRACKED OR WASHED ONTO THE ADJACENT SEALED ROADWAY, THEN SUCH MUST BE PHYSICALLY REMOVED, FIRST USING A SQUARE-EDGED SHOVEL, AND THEN A STIFF-BRISTLED BROOM, AND THEN BY A MECHANICAL VACUUM UNIT, IF AVAILABLE.

3. IF NECESSARY FOR SAFETY REASONS, THE ROADWAY SHALL ONLY BE WASHED CLEAN AFTER ALL REASONABLE EFFORTS HAVE BEEN TAKEN TO SHOVEL AND SWEEP THE MATERIAL FROM THE ROADWAY.

4. WHEN THE VOIDS BETWEEN THE ROCK BECOMES FILLED WITH MATERIAL AND THE EFFECTIVENESS OF THE ROCK PAD IS REDUCED TO A POINT WHERE SEDIMENT IS BEING TRACKED OFF THE SITE, A NEW 100mm LAYER OF ROCK MUST BE ADDED AND/OR THE ROCK PAD MUST BE EXTENDED.

5. ENSURE ANY ASSOCIATED DRAINAGE CONTROL MEASURES (e.g. FLOW CONTROL BERM) ARE MAINTAINED IN ACCORDANCE WITH THEIR DESIRED OPERATIONAL CONDITION.

6. DISPOSE OF SEDIMENT AND DEBRIS IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.

Drawn:	Date:		
GMW	May-10	Rock Pads for Building Sites	ESC-01

MATERIALS

FABRIC (LIGHT TRAFFIC AREAS):
HEAVY-DUTY, NEEDLE-PUNCHED, NON-WOVEN FILTER CLOTH ('BIDIM' A34 OR EQUIVALENT).

FABRIC (HEAVY TRAFFIC AREAS):
POLY-PROPYLENE, POLYAMIDE, NYLON, POLYESTER, OR POLYETHYLENE WOVEN OR NON-WOVEN REINFORCED FABRIC. THE FABRIC WIDTH SHOULD BE AT LEAST 700mm, WITH A MINIMUM UNIT WEIGHT OF 140g/m^2. FABRICS SHOULD CONTAIN ULTRAVIOLET INHIBITORS AND STABILISERS TO PROVIDE A MINIMUM OF 6 MONTHS OF USEABLE CONSTRUCTION LIFE (ULTRAVIOLET STABILITY EXCEEDING 70%).

INSTALLATION

1. REFER TO APPROVED PLANS FOR LOCATION AND DIMENSIONAL DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. ENSURE THAT THE INSTALLATION OF THE SEDIMENT TRAP WILL NOT CAUSE UNDESIRABLE SAFETY OR FLOODING ISSUES.

3. SELECT THE APPROPRIATE FABRIC FOR THE SITE CONDITIONS.

4. WRAP THE FABRIC AROUND OR OVER THE STORMWATER INLET GRATE IN SUCH A MANNER THAT PREVENTS ANY WATER ENTERING THE STORMWATER INLET WITHOUT PASSING THROUGH THE FABRIC.

5. ENSURE ALL OTHER FLOW ENTRY POINTS ARE COVERED WITH FABRIC SUCH THAT WATER CANNOT ENTER THE STORMWATER INLET WITHOUT PASSING THROUGH A SUITABLE FILTER.

6. TAKE ALL NECESSARY MEASURE TO MINIMISE SAFETY OR FLOODING RISK CAUSED BY OPERATION OF THE SEDIMENT TRAP.

MAINTENANCE

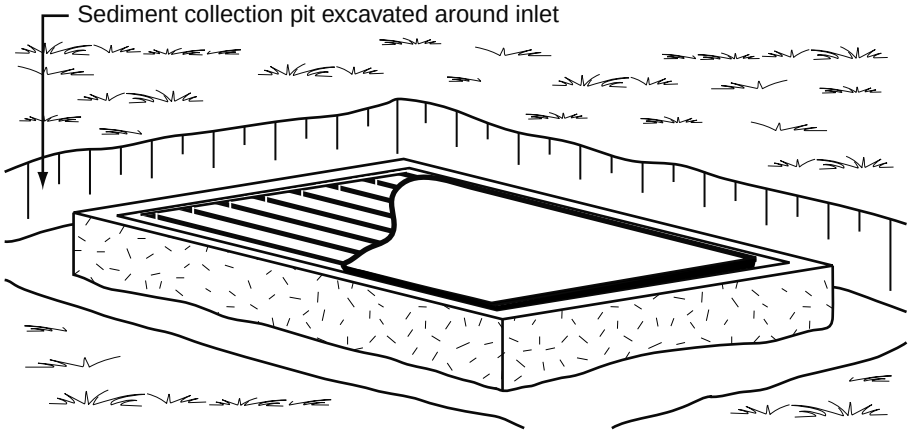
1. INSPECT THE BARRIER AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT AND MAKE REPAIRS AS NEEDED TO THE SEDIMENT TRAP.

2. REMOVE COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

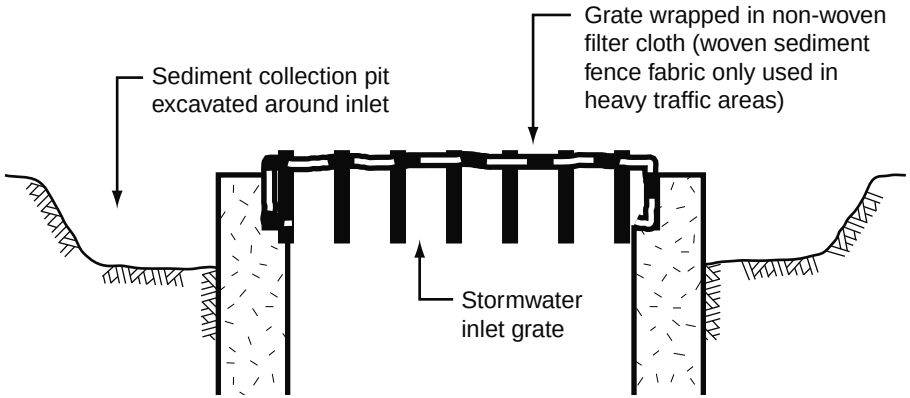
3. REPLACE THE FABRIC IF IT IS TORN OR DAMAGED.

4. SEDIMENT DEPOSITS SHOULD BE REMOVED IMMEDIATELY IF THEY REPRESENT A SAFETY RISK.

REMOVAL
1. WHEN THE UP-SLOPE DRAINAGE AREA HAS BEEN STABILISED, REMOVE ALL MATERIALS INCLUDED DEPOSITED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.



(a) Fabric wrap drop inlet protection with trench



(b) Typical details of excavated sediment collection trench

Drawn:	Date:		
GMW	May-10	Grated Stormwater (Field) Inlet Sediment Trap	ESC-02

MATERIALS

SOCKS: MINIMUM 200mm DIAMETER SYNTHETIC OR BIODEGRADABLE TUBES MANUFACTURED FROM NON-WOVEN OR COMPOSITE FABRIC SUITABLE FOR THE 'FILTRATION' OF COARSE SEDIMENTS.

FILL MATERIAL: STRAW, CANE MULCH, COMPOSTED MATERIAL (AS4454), COARSE SAND, OR CLEAN AGGREGATE.

STAKES: MINIMUM 25 x 25mm TIMBER.

INSTALLATION

1. REFER TO APPROVED PLANS FOR LOCATION AND INSTALLATION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. ENSURE THE SOCKS ARE PLACED INDIVIDUALLY OR COLLECTIVELY (AS A SINGLE SEDIMENT TRAP) SUCH THAT:
(i) LEAKAGE AROUND OR UNDER THE SOCKS IS MINIMISED;
(ii) ADJOINING SOCKS ARE TIGHTLY BUTTED OR OVERLAPPED AT LEAST 450mm;
(iii) THE SURFACE AREA OF POTENTIAL WATER PONDING UP-SLOPE OF EACH SEDIMENT TRAP IS MAXIMISED;
(iv) TO THE MAXIMUM DEGREE PRACTICAL, ALL SEDIMENT-LADEN WATER WILL PASS THROUGH THE FORMED POND BEFORE FLOWING OVER THE DOWN-SLOPE END OF THE SEDIMENT TRAP.

3. WHEN PLACED ACROSS THE INVERT OF MINOR DRAINS, ENSURE THE SOCKS ARE PLACED SUCH THAT:
(i) THE CREST OF THE DOWNSTREAM SOCK IS LEVEL WITH THE CHANNEL INVERT AT THE IMMEDIATE UPSTREAM SOCK (IF ANY);
(ii) EACH SOCK EXTENDS UP THE CHANNEL BANKS SUCH THAT THE CREST OF THE SOCK AT ITS LOWEST POINT IS LOWER THAN GROUND LEVEL AT EITHER END OF THE SOCK.

4. IF STAKES ARE REQUIRED TO ANCHOR THE SOCKS, THEIR SPACING DOES NOT EXCEEDING 1.2m OR SIX TIMES THE SOCK DIAMETER (WHICHEVER IS THE LESSER). A MAXIMUM STAKE SPACING OF 0.3m APPLIES WHEN USED TO FORM CHECK DAMS.

MAINTENANCE

1. INSPECT ALL FILTER SOCKS PRIOR TO FORECAST RAIN, DAILY DURING EXTENDED PERIODS OF RAINFALL, AFTER SIGNIFICANT RUNOFF PRODUCING STORMS OR OTHERWISE AT WEEKLY INTERVALS.

2. REPAIR OR REPLACE DAMAGED SOCKS.

3. THE BULK OF THE SEDIMENT COLLECTED BEHIND THE FILTER SOCKS SHOULD BE REMOVED BY SHOVEL AFTER EACH STORM EVENT.

4. REMOVE COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

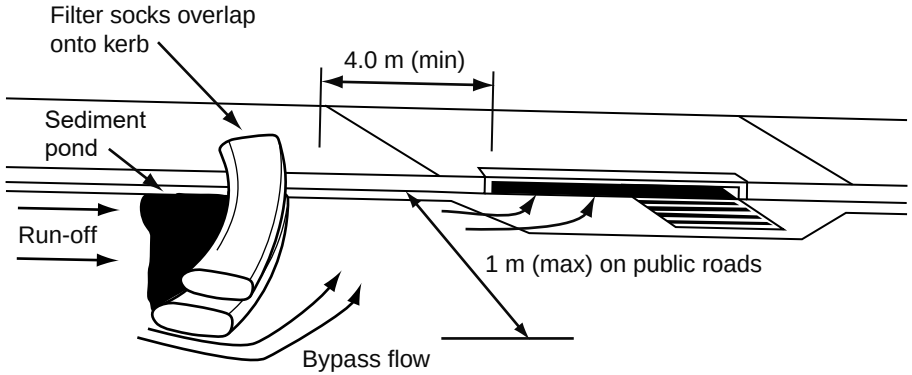
REMOVAL

1. ALL SAND, SOIL, SEDIMENT OR MUD MUST BE PHYSICALLY REMOVED FROM SEALED SURFACES, FIRST USING A SQUARE-EDGED SHOVEL, AND THEN A STIFF-BRISTLED BROOM, AND THEN BY A MECHANICAL VACUUM UNIT, IF AVAILABLE.

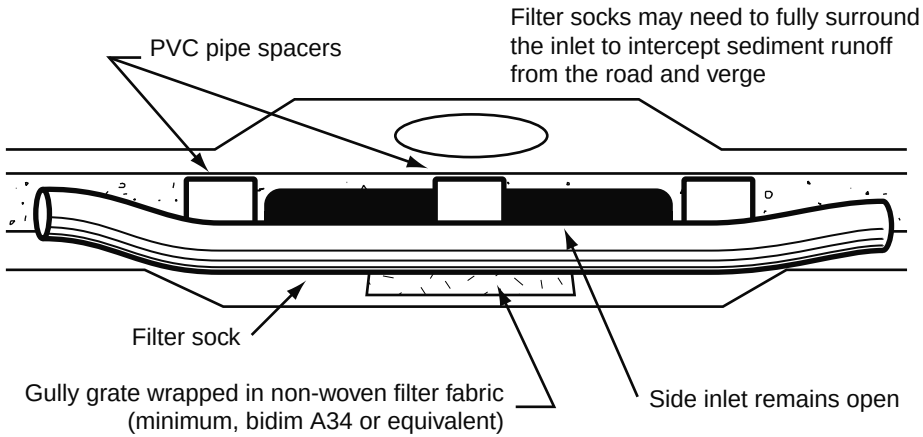
2. IF NECESSARY FOR SAFETY REASONS, THE SEALED SURFACE SHALL ONLY BE WASHED CLEAN AFTER ALL REASONABLE EFFORTS HAVE BEEN TAKEN TO SHOVEL AND SWEEP THE MATERIAL FROM THE SURFACE.

3. DISPOSE OF COLLECTED SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

4. ALL SYNTHETIC (PLASTIC) MESH OR OTHER NON READILY BIODEGRADABLE MATERIAL MUST BE REMOVED FROM THE SITE ONCE THE SLOPE OR DRAIN IS STABILISED, OR THE SOCKS HAVE DETERIORATED TO A POINT WHERE THEY ARE NO LONGER PROVIDING THEIR INTENDED DRAINAGE OR SEDIMENT CONTROL FUNCTION.

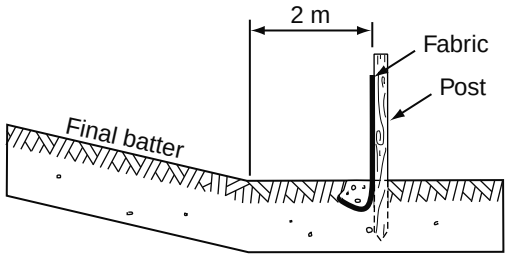


(a) On-grade kerb inlet sediment trap

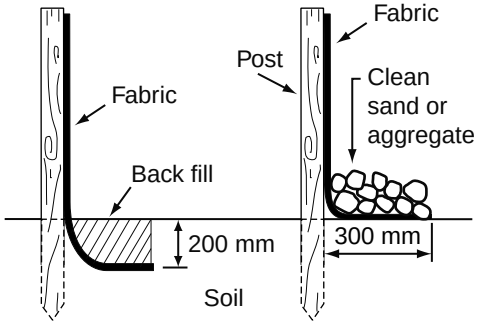


(b) Sag inlet sediment trap

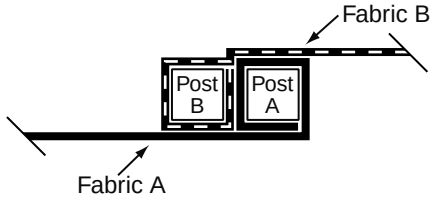
Drawn:	Date:		
GMW	Dec-09	Kerb Inlet Sediment Traps	ESC-03



(a) Location of fence relative to base of slope

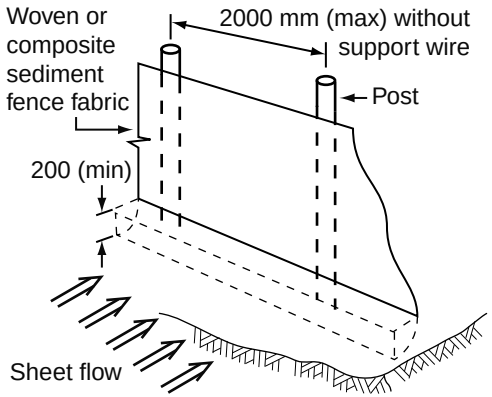


(b) Anchoring base of fabric

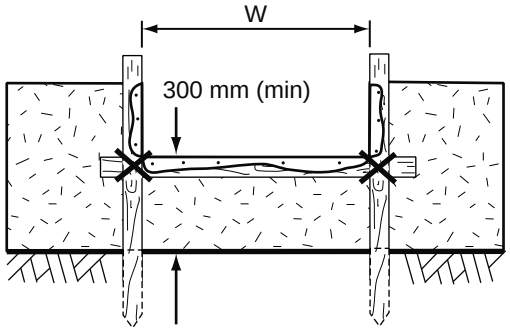


Fabric to fold around each stake one full turn.
Stake B to be drive tightly against Stake A.
The tops of both stakes to be secured with wire.

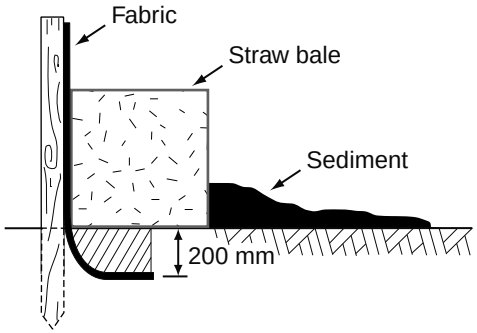
(c) Joining fabric - Method 1



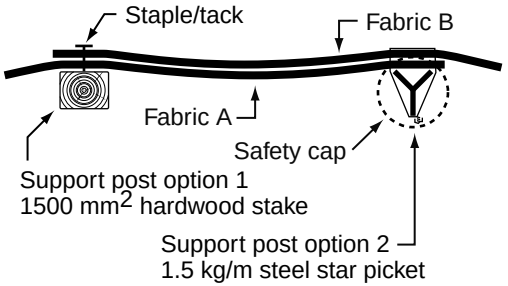
(d) Installation without backing support



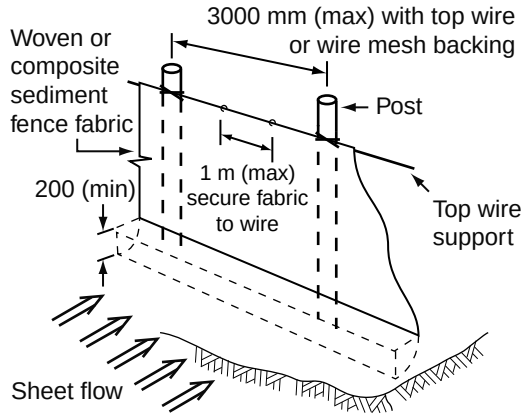
(e) Spill-through weir



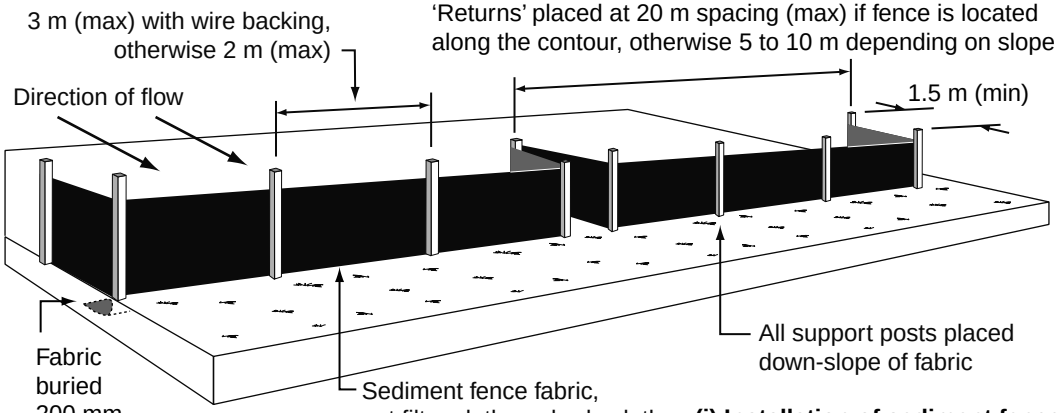
(f) Placement of up-slope straw bale



(g) Joining fabric - Method 2



(h) Installation with top wire support



(i) Installation of sediment fence

Notes:

1. Sediment fence to be installed along a line of constant ground elevation wherever practical.
2. Both end of the sediment fence to extend up the slope at least 1m.
3. Support post to be spaced a maximum 2m unless the fence is supported by a top wire or wire mesh backing, in which case 3m maximum spacing.
4. Fence 'returns' shall be installed at maximum 20m spacing if fence is installed along the contour, otherwise 5 to 10m maximum spacing.
5. Minimum 4 staples or tie wires per stake.

Drawn:	Date:		
GMW	Dec-09	Sediment Fence	ESC-04

MATERIALS

FABRIC: POLYPROPYLENE, POLYAMIDE, NYLON, POLYESTER, OR POLYETHYLENE WOVEN OR NON-WOVEN FABRIC, AT LEAST 700mm IN WIDTH AND A MINIMUM UNIT WEIGHT OF 140g/m^2. ALL FABRICS TO CONTAIN ULTRAVIOLET INHIBITORS AND STABILISERS TO PROVIDE A MINIMUM OF 6 MONTHS OF USEABLE CONSTRUCTION LIFE (ULTRAVIOLET STABILITY EXCEEDING 70%).

FABRIC REINFORCEMENT: WIRE OR STEEL MESH MINIMUM 14-GAUGE WITH A MAXIMUM MESH SPACING OF 200mm.

SUPPORT POSTS/STAKES: 1500mm^2 (MIN) HARDWOOD, 2500mm^2 (MIN) SOFTWOOD, OR 1.5kg/m (MIN) STEEL STAR PICKETS SUITABLE FOR ATTACHING FABRIC.

INSTALLATION

1. REFER TO APPROVED PLANS FOR LOCATION, EXTENT, AND REQUIRED TYPE OF FABRIC (IF SPECIFIED). IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, FABRIC TYPE, OR METHOD OF INSTALLATION CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

2. TO THE MAXIMUM DEGREE PRACTICAL, AND WHERE THE PLANS ALLOW, ENSURE THE FENCE IS LOCATED:
(i) TOTALLY WITHIN THE PROPERTY BOUNDARIES;
(ii) ALONG A LINE OF CONSTANT ELEVATION WHEREVER PRACTICAL;
(iii) AT LEAST 2m FROM THE TOE OF ANY FILLING OPERATIONS THAT MAY RESULT IN SHIFTING SOIL/FILL DAMAGING THE FENCE.

3. INSTALL RETURNS WITHIN THE FENCE AT MAXIMUM 20m INTERVALS IF THE FENCE IS INSTALLED ALONG THE CONTOUR, OR 5 TO 10m MAXIMUM SPACING (DEPENDING ON SLOPE) IF THE FENCE IS INSTALLED AT AN ANGLE TO THE CONTOUR. THE 'RETURNS' SHALL CONSIST OF EITHER:
(i) V-SHAPED SECTION EXTENDING AT LEAST 1.5m UP THE SLOPE; OR
(ii) SANDBAG OR ROCK/AGGREGATE CHECK DAM A MINIMUM 1/3 AND MAXIMUM 1/2 FENCE HEIGHT, AND EXTENDING AT LEAST 1.5m UP THE SLOPE.

4. ENSURE THE EXTREME ENDS OF THE FENCE ARE TURNED UP THE SLOPE AT LEAST 1.5m, OR AS NECESSARY, TO MINIMISE WATER BYPASSING AROUND THE FENCE.

5. ENSURE THE SEDIMENT FENCE IS INSTALLED IN A MANNER THAT AVOIDS THE CONCENTRATION OF FLOW ALONG THE FENCE, AND THE UNDESIRABLE DISCHARGE OF WATER AROUND THE ENDS OF THE FENCE.

6. IF THE SEDIMENT FENCE IS TO BE INSTALLED ALONG THE EDGE OF EXISTING TREES, ENSURE CARE IS TAKEN TO PROTECT THE TREES AND THEIR ROOT SYSTEMS DURING INSTALLATION OF THE FENCE. DO NOT ATTACH THE FABRIC TO THE TREES.

7. UNLESS DIRECTED BY THE SITE SUPERVISOR OR THE APPROVED PLANS, EXCAVATE A 200mm WIDE BY 200mm DEEP TRENCH ALONG THE PROPOSED FENCE LINE, PLACING THE EXCAVATED MATERIAL ON THE UP-SLOPE SIDE OF THE TRENCH.

8. ALONG THE LOWER SIDE OF THE TRENCH, APPROPRIATELY SECURE THE STAKES INTO THE GROUND SPACED NO GREATER THAN 3m IF SUPPORTED BY A TOP SUPPORT WIRE OR WEIR MESH BACKING, OTHERWISE NO GREATER THAN 2m.

9. IF SPECIFIED, SECURELY ATTACH THE SUPPORT WIRE OR MESH TO THE UP-SLOPE SIDE OF THE STAKES WITH THE MESH EXTENDING AT LEAST 200mm INTO THE EXCAVATED TRENCH. ENSURE THE MESH AND FABRIC IS ATTACHED TO THE UP-SLOPE SIDE OF THE STAKES EVEN WHEN DIRECTING A FENCE AROUND A CORNER OR SHARP CHANGE OF DIRECTION.

10. WHEREVER POSSIBLE, CONSTRUCT THE SEDIMENT FENCE FROM A CONTINUOUS ROLL OF FABRIC. TO JOIN FABRIC EITHER:
(i) ATTACH EACH END TO TWO OVERLAPPING STAKES WITH THE FABRIC FOLDING AROUND THE ASSOCIATED STAKE ONE TURN, AND WITH THE TWO STAKES TIED TOGETHER WITH WIRE; OR
(ii) OVERLAP THE FABRIC TO THE NEXT ADJACENT SUPPORT POST.

11. SECURELY ATTACH THE FABRIC TO THE SUPPORT POSTS USING 25 X 12.5mm STAPLES, OR TIE WIRE AT MAXIMUM 150mm SPACING.

12. SECURELY ATTACH THE FABRIC TO THE SUPPORT WIRE/MESH (IF ANY) AT A MAXIMUM SPACING OF 1m.

13. ENSURE THE COMPLETED SEDIMENT FENCE IS AT LEAST 450mm, BUT NOT MORE THAN 700mm HIGH. IF A SPILL-THOUGH WEIR IS INSTALLED, ENSURE THE CREST OF THE WEIR IS AT LEAST 300mm ABOVE GROUND LEVEL.

14. BACKFILL THE TRENCH AND TAMP THE FILL TO FIRMLY ANCHOR THE BOTTOM OF THE FABRIC AND MESH TO PREVENT WATER FROM FLOWING UNDER THE FENCE.

ADDITIONAL REQUIREMENTS FOR THE INSTALLATION OF A SPILL-THROUGH WEIR

1. LOCATE THE SPILL-THROUGH WEIR SUCH THAT THE WEIR CREST WILL BE LOWER THAN THE GROUND LEVEL AT EACH END OF THE FENCE.

2. ENSURE THE CREST OF THE SPILL-THROUGH WEIR IS AT LEAST 300mm THE GROUND ELEVATION.

3. SECURELY TIE A HORIZONTAL CROSS MEMBER (WEIR) TO THE SUPPORT POSTS/ STAKES EACH SIDE OF THE WEIR. CUT THE FABRIC DOWN THE SIDE OF EACH POST AND FOLD THE FABRIC OVER THE CROSS MEMBER AND APPROPRIATELY SECURE THE FABRIC.

4. INSTALL A SUITABLE SPLASH PAD AND/OR CHUTE IMMEDIATELY DOWN-SLOPE OF THE SPILL-THROUGH WEIR TO CONTROL SOIL EROSION AND APPROPRIATELY DISCHARGE THE CONCENTRATED FLOW PASSING OVER THE WEIR.

MAINTENANCE

1. INSPECT THE SEDIMENT FENCE AT LEAST WEEKLY AND AFTER ANY SIGNIFICANT RAIN. MAKE NECESSARY REPAIRS IMMEDIATELY.

2. REPAIR ANY TORN SECTIONS WITH A CONTINUOUS PIECE OF FABRIC FROM POST TO POST.

3. WHEN MAKING REPAIRS, ALWAYS RESTORE THE SYSTEM TO ITS ORIGINAL CONFIGURATION UNLESS AN AMENDED LAYOUT IS REQUIRED OR SPECIFIED.

4. IF THE FENCE IS SAGGING BETWEEN STAKES, INSTALL ADDITIONAL SUPPORT POSTS.

5. REMOVE ACCUMULATED SEDIMENT IF THE SEDIMENT DEPOSIT EXCEEDS A DEPTH OF 1/3 THE HEIGHT OF THE FENCE.

6. DISPOSE OF SEDIMENT IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

7. REPLACE THE FABRIC IF THE SERVICE LIFE OF THE EXISTING FABRIC EXCEEDS 6-MONTHS.

REMOVAL

1. WHEN DISTURBED AREAS UP-SLOPE OF THE SEDIMENT FENCE ARE SUFFICIENTLY STABILISED TO RESTRAIN EROSION, THE FENCE MUST BE REMOVED.

2. REMOVE MATERIALS AND COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.

3. REHABILITATE/REVEGETATE THE DISTURBED GROUND AS NECESSARY TO MINIMISE THE EROSION HAZARD.

Drawn:	Date:		
GMW	May-10	Sediment Fence	ESC-05

Appendix D – Gladstone Regional Council Development Code

Operational Works Code

9.3.6.3 Assessment criteria

Table 9.3.6.3.1—Operational Works Code

Table 9.3.6.3.1—Operational Works Code		
Performance outcomes	**Acceptable outcomes**	**Response**
Earthworks		
PO1 Earthworks are undertaken in a manner that: (a) produces stable landforms and structures (b) maintains natural landforms (c) minimises height of retaining walls and batter faces (d) does not unduly impact on the amenity or privacy for occupants of the site or on adjoining land, and (e) does not unduly impact on the amenity of the streetscape.	**AO1.1** Earthworks and retaining walls comply with the *Engineering Design Planning Scheme Policy.*	All earthworks and retaining walls have been designed generally in accordance with the relevant standards and specifications with the *Engineering Design Planning Scheme Policy.*
	AO1.2 Retaining walls are certified by a Registered Professional Engineer of Queensland.	Retaining walls will be certified by a Registered Professional Engineer of Queensland (RPEQ) as required.
	AO1.3 The extent of filling or excavation with a depth of 200mm or greater does not exceed 40% of the site.	Proposed filling or excavation with depth of 200mm or greater for the development will exceed 40% of the site. However, the earthworks have been designed to provide stable landforms and structures and maintain the natural landforms as much as possible. Earthworks will be further detailed in the detailed design stage and will provide earthworks volumes designed to reduce the balance of cut and fill quantities to a minimal amount.
	AO1.4 Excavating or filling is no greater than 1m, and height or depth and the combined height of retaining walls and fences does not exceed 2m.	Excavation or filling will be required to exceed 1m in some areas of the site and height or depth (including combined height of retaining walls and fences) will exceed 2m. The exceeded heights have been designed to reduce the exceeded amounts to

Table 9.3.6.3.1—Operational Works Code		
Performance outcomes	**Acceptable outcomes**	**Response**
		as minimal as possible and are only nominated where practicable.
	AO1.5 Soil to be used for filling if stockpiled for more than 1 month is stabilised and grassed.	Where soil to be used for filling is stockpiled on site for more than a month, it will be stabilized and grassed.
	AO1.6 Retaining walls are set back from any boundary and are stepped or terraced so that landscaping can soften the visual impact.	Retaining walls will be set back from property boundaries where practicable and will utilize landscape to enhance visual aspects. Retaining walls nominated have been designed to prevent impact on the amenity and/or the privacy of adjacent properties and streetscape.
PO2 Earthworks maintain the efficiency of the road network and do not adversely impact upon residents or road infrastructure, including not creating any difficulty for access to the site.	**AO2** No acceptable outcome is nominated.	Proposed earthworks have been designed to maintain the efficiency of the road network and prevent impact upon residents and road infrastructure. Existing road infrastructure within the area of the proposed earthworks will be provided with appropriate protection measures during construction to prevent impacts from the proposed works. Proposed accesses for the development have been designed to minimise altercations to existing grades and surface levels within the road corridor and in accordance with the relevant Capricorn Municipal Development Guidelines and Gladstone Regional Council Planning Scheme specifications and standards. Access to the site has been investigated and designed for the anticipated traffic volumes generated from the development and located to not cause adverse impacts to the existing road network. Refer to the Traffic Impact Assessment provided by Bitzios Consulting.

Table 9.3.6.3.1—Operational Works Code		
Performance outcomes	**Acceptable outcomes**	**Response**
PO3 Earthworks do not result in the contamination of land or water, and avoids risk to people and property.	**AO3** No contaminated material or acid sulfate soil is used as fill.	Any fill used will be select clean fill and free from contaminates.
PO4 Earthworks do not generate a dust nuisance.	**AO4** No acceptable outcome is nominated.	Dust suppression on the site during construction is addressed in the preliminary erosion and sediment control plan. Planned measures will ensure no dust emissions from the site or from construction vehicles entering and leaving the site.
Bridge and culvert work		
PO5 Bridges and culverts for flood immunity minimise traffic disruption, improve public safety, consider fauna habitat movement and allow for bikeways during and after construction.	**AO5** No acceptable outcome is nominated.	Not applicable to this development.
Road design		
PO6 Roads providing access to the site are provided, constructed and maintained to a standard which is adequate for the traffic type and volume likely to be generated by the activities on site.	**AO6** External road works are provided in accordance with the requirements of the *Engineering Design Planning Scheme Policy*.	Roads that will provide access to the proposed development exist. Proposed external works on Wyndham Avenue have been designed for the required traffic type and volume likely to be generated by development. All roadworks will be provided, constructed and maintained in accordance with relevant standards and specifications of the *Engineering Design Planning Scheme Policy*. Refer to the Traffic Impact Assessment report provided by Bitzios Consulting.

Table 9.3.6.3.1—Operational Works Code		
Performance outcomes	**Acceptable outcomes**	**Response**
Erosion and sediment control		
PO7 Earthworks do not create or worsen any flooding, drainage issues, ponding or an increase in flow directions or volumes, on the site or adjoining or nearby sites to ensure that: (a) environmental values and water quality objectives of receiving waters within or downstream of the proposal are protected or enhanced during the construction, operation and maintenance phases, and (b) The release of sediment–laden stormwater for all land disturbances is minimised through the use of all reasonable and practicable erosion and sediment control measures with degraded areas reinstated.	**AO7** Earthworks comply with flooding, drainage and erosion sediment control requirements of the *Engineering Design Planning Scheme Policy.*	Earthworks have been designed to achieve compliance with flooding, drainage and erosion and sediment control requirements and in accordance with the *Engineering Design Planning Scheme Policy*.
PO8 Construction activities for the development avoid or minimise adverse impacts on stormwater quality.	**AO8** The release of sediment–laden stormwater is avoided for the nominated design storm, and minimised when the nominated design storm is exceeded, by addressing design objectives listed below in Table 9.3.5.3.2 (construction phase) or local equivalent, for: (a) drainage control (b) erosion control (c) sediment control, and (d) water quality outcomes. Note—An Erosion and Sediment Control Plan (ESCP) is prepared by a suitably qualified person that demonstrates: • erosion and sediment control practices (including any proprietary erosion and sediment control products) are designed, installed, constructed, operated, monitored and maintained, and any other erosion and sediment control practices are carried out in accordance with local conditions; or • how stormwater quality will be managed in accordance with an acceptable regional or local guideline so that target	Please refer to main body of the accompanying engineering report for details of temporary, construction stormwater controls and erosion and sediment controls.

Table 9.3.6.3.1—Operational Works Code		
Performance outcomes	**Acceptable outcomes**	**Response**
	contaminants are treated to a design objective at least equivalent to this Acceptable outcome.	
PO9 Progressive rehabilitation of disturbed areas within the site is undertaken, as part of the completion of each stage of development, or where there are no stages, prior to the issuing of certificates of classification for building work or certificates of completion for operational work.	**AO9** No acceptable outcome is nominated.	Disturbed areas within the site will be rehabilitated, prior to the issuing of certificates of classification for building work or certificates of completion for operational works.
PO10 Development provides for a comprehensive rehabilitation program which ensures that disturbed areas are stabilised, temporarily and long term, within reasonable timeframes to minimise erosion on site and sediment discharge from the site.	**AO10** Development provides the following: (a) Erosion control is undertaken in a staged manner, such that disturbed areas are exposed for 30 days or less, in accordance with the Engineering Design Planning Scheme Policy (b) Grading and reshaping of the disturbed areas to provide controlled and stable drainage flow paths (c) High velocity flows are diverted away from disturbed areas, and (d) The site is long term stabilised by preparing the site for planting, re–spreading stored topsoil stripped from the site or new topsoil, planting the disturbed area with native species of grasses, ground covers and trees, and placing mulch.	Long term and temporary methods of rehabilitation and restoration of disturbed areas will be implemented during construction in accordance with the Engineering Design Planning Scheme Policy. Disturbed areas will be graded and reshaped to control and stabilize drainage flow paths and divert high velocity flows area from the disturbed areas. Long term stabilization will be implemented during construction by preparing the site for planting, stripping and replacing topsoil.
PO11 Premises in rural areas adopt a comprehensive approach to soil erosion and sedimentation management by: (a) avoiding land clearing or earthworks in the riparian corridor to a designated stream (b) avoiding land clearing and earthworks on land with a slope steeper than 15% (c) minimising the extent of disturbance on, or the stabilisation of slopes steeper than 10% (or 1:10)	**AO11** No acceptable outcome is nominated.	Not applicable to this development.

Table 9.3.6.3.1—Operational Works Code		
Performance outcomes	**Acceptable outcomes**	**Response**
(d) managing and controlling surface drainage by using natural flow paths (e) rehabilitating disturbed areas as soon as practical after completion of works by re–establishing the vegetation including seeding with native grasses, ground covers and trees and spreading mulch over the surface, and (f) constructing ponds or small dams off natural flow paths, for collection of surface drainage from areas disturbed for prolonged periods, such as depots, quarries, and stock sales yards.		
Weed control		
PO12 Weed control practices and plant and equipment cleaning and inspection protocols are: (a) implemented to avoid the introduction and spread of weeds along transport routes and delivery points, and (b) undertaken to control existing declared weeds and pest animals prior to the commencement of and during works.	**AO12** Reasonable steps have been taken to ensure that the vehicle or 'thing' being moved by road is free of reproductive material of any Class 1, 2 or 3 declared weeds. For example, compliance with the *Queensland Guideline for Limiting Weed Seed Spread (DNR 2000).*	Appropriate weed control practices and equipment cleaning and inspecting will be implemented during construction to avoid the spread of weeds along transport routes and delivery points. Site investigation is to confirm any existing declared weeds and/or pest animals prior to construction, so that suitable control methods are implemented for control of any pest species identified on site.
Amenity, acoustic and air quality		
PO13 Development is planned, designed and managed to ensure emissions and odours from activities achieve the appropriate air quality and noise objectives (measured at the receptor). Note—These levels are in accordance with the Environmental Protection (Air) Policy 2008, and Environmental Protection (Noise) Policy 2008.	**AO13** No acceptable outcome is nominated.	Design and planning of the development has been undertaken to ensure emissions and odors from activities on site achieve the required air quality and noise objectives, in accordance with the specifications within the Environmental Protection (Air) Policy 2008 and the Environmental Protection (Noise) Policy 2008.

Table 9.3.6.3.1—Operational Works Code		
Performance outcomes	**Acceptable outcomes**	**Response**
PO14 Development does not generate vibration from activities that will affect the amenity of surrounding land uses.	**AO14** The development does not result in vibration impacts outside of the development site.	Site construction activities will ensure that ground-borne vibration is minimized and limited to the site.
Lighting		
PO15 External lighting is provided in urban areas to ensure a safe environment.	**AO15** Technical parameters, design, installation, operation and maintenance of outdoor lighting comply with the requirements of *AS4282 – Control of the Obtrusive Effects of Outdoor Lighting.*	It is proposed to retain and utilize the existing street lighting available in the area of the site. Where external lighting is proposed, the design, installation, operation and maintenance of new external lighting will be in accordance with the requirements of AS4282 – *Control of the Obtrusive Effects of Outdoor Lighting.*
PO16 Outdoor lighting does not cause undue disturbance to any person, activity or fauna because of emission, either directly or by reflection.	**AO16** The vertical illumination resulting from direct, reflected or other incidental light coming from a site does not exceed 8 lux when measured at any point 1.5m outside of the boundary of the property at any level from ground level up.	Outdoor lighting from the development will be designed to not exceed 8 lux when measured at any point 1.5m outside of the property boundary (at any level). Design of outdoor lighting will ensure that emissions direct or by reflection, will not cause disturbance to its surroundings.
Operational works and electricity infrastructure		
PO17 The excavation, filling or laying of pipes within the vicinity of electricity supply infrastructure will not create potential damage or hazard. Note—Development involving filling, or excavation or laying of metal pipes on land contiguous to electricity supply infrastructure should be referred to the relevant electricity entity for safety advice on the proposed development.	**AO17.1** Excavation or filling does not occur within: (a) 10m of any tower, pole, foundation, ground anchorage or stay supporting electric lines or associated equipment (b) 5m of a substation site boundary (c) 2m of a padmount substation, or (d) 1m of a padmount transformer or an underground cable.	Excavation or filling within the area of existing electrical supply infrastructure will implement suitable protection and safety measures to ensure that potential damage or hazards are prevented. No excavation or filling will be required withing 5m of a substation site boundary, 2m of a padmount substation or 1m of a padmount transformer. Prior to construction, any works on land contiguous to electricity supply infrastructure will involve thorough site investigation and notifying the asset owner for safety advice.

Table 9.3.6.3.1—Operational Works Code		
Performance outcomes	**Acceptable outcomes**	**Response**
	AO17.2 The laying of metal pipes does not occur within: (a) 5m of any pole, tower, foundation, ground anchorage or stay supporting electric lines or associated equipment (b) 15m of any substation site boundary, or (c) 5m of, and parallel to, an electric line shadow.	Development works involving the laying of metal pipes within the area of existing electrical supply infrastructure will implement suitable protection and safety measures to ensure that potential damage or hazards are prevented. Prior to construction, any works on land contiguous to electricity supply infrastructure will involve thorough site investigation and notifying the asset owner for safety advice.

Appendix E – Gladstone Regional Council Water Boundary Conditions

GLADSTONE REGIONAL COUNCIL

Contact Officer: Shaunte Farrington
Our Ref: DA/24/2021; CSR 659200

18 August 2021

Shaun Carroll
vT Consulting Engineers
PO Box 26
Carina QLD 4152

Dear Mr Carroll

RE: WATER BOUNDARY CONDITIONS REQUEST FOR DA/24/2021 ON HAMPTON DRIVE, BOYNE ISLAND

Thank you for your customer service request for boundary conditions for water to be used for modelling purposes for Development Application DA/24/2021 at Lot 1 RP 619033 on Hampton Drive, Boyne Island. The proposal is for a Material Change of Use – Outdoor sport and recreation (Aquatic Centre) and Reconfiguration of a Lot (2 into 2).

Water

The water modelling information has been prepared using Council's latest information for the Lake Awoonga water network. The below table details model information used:

Proposed Connection Point:	Wyndham Avenue (between Hayes Avenue and Centenary Drive); existing DN150
Reservoir Supply Area:	Boyne Island Zone
Model Node ID:	B_2772
Node Elevation (m AHD):	15.32

Water Model Results:

Planning Horizon:	2021				
Scenario:	Average Day		Peak Day		Fireflow
	Minimum Pressure (m)	Maximum Pressure (m)	Minimum Pressure (m)	Maximum Pressure (m)	Residual Pressure (m)
Pressure at Node B_2772	53.7	54.9	53.4	54.9	52.8

Note: Location of Node B_2772 is shown in the Enclosure. The closest model node to the proposed connection point was taken.

- No development demand has been applied to the model on Lot 1 RP 619033.
- There has been no assessment undertaken on the internal network within the development.
- Residential fireflow of 30 L/s adopted based on land use as per Planning Guidelines for Water Supply and Sewerage (Queensland Government Department of Energy and Water Supply 2014).
- The 2021 scenario represents the existing network and no future scenarios have been modelled.
- Council can provide modelled pressure at each time step in the model if required.

The information provided is based on the best available information at the time of publication and is subject to variation over time.

Network models are verified with limited data and conditions in the field may vary from modelling assumptions.

Field investigations and inspections should be undertaken to satisfy the user that the data is suitable for its intended purpose.

Standards

The water and sewer assessments are to be completed using InfoWater and InfoSWMM (respectively). All network models and an assessment report detailing all assumptions are to be submitted as part of the development application process for review.

Council's water and sewer modelling standards are outlined in the Capricorn Municipal Development Guidelines (CMDG) *Water Supply Network D11 Design & Construction Guideline* and/or *Sewerage Network D12 Design & Construction Guideline*, which can be located online at http://www.cmdg.com.au/Guidelines/DesignSpecifications/DesignSpecifications.html.

Note: The *CMDG Water Supply Network D11 Design & Construction Guideline* provides details on minimum standards when assessing water networks. The Urban Average Daily Consumption (Table D11.07.01 Design Demands) has been revised down from 450 L/EP/d to 312 L/EP/d. 2.6 EP/dwelling assumed. CMDG has not been updated with this revision.

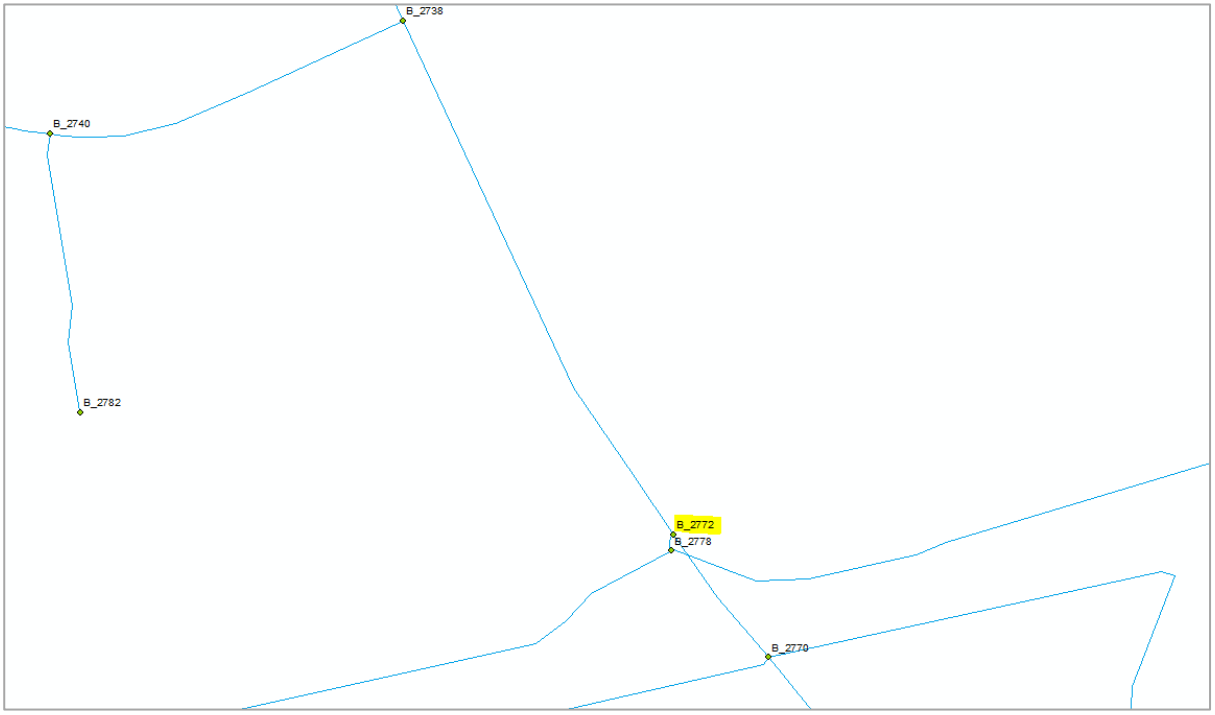
If you require any further information, please do not hesitate to contact Council via email: info@gladstone.qld.gov.au or by phone on 4970 0700, quoting the applicable Development Application Number DA/24/2021.

Yours sincerely

SCOTT MCDONALD
ACTING MANAGER ASSET PLANNING & MANAGER ASSET DESIGN

Enc: Location of Water Model Node

Enclosure - Location of Water Model Node



LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING EASEMENT BOUNDARY
- EXISTING CONTOUR - MAJOR
- EXISTING CONTOUR - MINOR
- EXISTING BUILDING
- SW — EXISTING STORMWATER DRAINAGE
- RW — EXISTING ROOFWATER DRAINAGE
- S — EXISTING SEWER
- W — EXISTING WATER
- E — EXISTING ELECTRICAL
- EU — EXISTING ELEC. UNDERGROUND
- EXISTING ELEC. OVERHEAD
- T — EXISTING COMMUNICATIONS
- ABANDON EXISTING SERVICE
- PROPERTY BOUNDARY
- EASEMENT BOUNDARY
- BUILDING
- EARTHWORKS TOP OF BATTER
- EARTHWORKS BOTTOM OF BATTER
- SF — SEDIMENT FENCE
- SW — STORMWATER DRAINAGE
- S — SEWER
- W — WATER
- EXTENT OF WORK
- EXISTING SURFACE LEVEL (ESL)
- + RL1.234 — FINISHED SURFACE LEVEL (FSL)

BOYNE RIVER

3
RP610383

4
RP620667

1
RP619033

5
RP620667

CONSTRUCTION ENTRY/EXIT WITH CATTLE GRID

SEDIMENT CATCH DRAIN

TEMPORARY SEDIMENT BASIN

SEDIMENT FENCE TO BE ERECTED AROUND SITE. TYPICAL

SEDIMENT CATCH DRAIN

SEDIMENT FENCE TO BE ERECTED AROUND SITE. TYPICAL

1m WIDE SEDIMENT WEIR

SEDIMENT FENCE

STOCKPILE LOCATION (INDICATIVE ONLY)

TEMPORARY SEDIMENT BASIN

SEDIMENT CATCH DRAIN

ARTHUR STREET

AQUATIC CENTRE

CENTENARY DRIVE

WYNDHAM AVE

HAYES AVE

LAYOUT PLAN
SCALE 1:500

0 5 10 20 25
SCALE 1:500

REV.	DATE:	AMENDMENT:	BY:	APP:
A	06.05.21	ORIGINAL ISSUE	MD	AvT

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SCALE:	AS SHOWN	DRAWN:	MD
SHEET SIZE:	A1	DESIGN:	MD
DATUM:	AHD	CHECKED:	AvT
		APPROVED:	

PROJECT: TANNUM SANDS MIXED USE PRECINCT OUTDOOR AQUATIC CENTRE

JOB No.: 21032-1

DRAWING TITLE: PRELIMINARY EROSION AND SEDIMENT CONTROL LAYOUT PLAN

DRAWING No.: P001 PRELIMINARY

REV.: A

PLOTTED: 06.05.2021

LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING EASEMENT BOUNDARY
- EXISTING CONTOUR - MAJOR
- EXISTING CONTOUR - MINOR
- EXISTING BUILDING
- EXISTING STORMWATER DRAINAGE
- EXISTING ROOFWATER DRAINAGE
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- SEWER
- WATER
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- EXISTING SURFACE LEVEL (ESL)
- RL1.234 FINISHED SURFACE LEVEL (FSL)

BOYNE RIVER

3 RP610383

4 RP620667

5 RP620667

1 RP619033

PROPOSED SEWER. REFER TO DWG No. P004 FOR DETAILS.

CONCRETE CROSSOVER TO GLADSTONE REGIONAL COUNCIL STANDARDS

STORMWATER QUANTITY DETENTION TANK. 31.1m³ PLUS 100mm FREEBOARD TO BE PROVIDED. PRECAST DETENTION TANK TO MANUFACTURERS SPECIFICATIONS. INCLUDING TANK, HEAVY DUTY CLASS D BOLT DOWN LID, BAFFLES AND WEIRS. REFER TO SWMP FOR DETAILS. TYPICAL

PROPOSED Ø600 RCP FOR STORMWATER DISCHARGE

BREAK INTO AND CONNECT TO EXISTING ON ROAD GULLY PIT

PROPOSED STORMWATER ACCESS CHAMBER

STORMWATER QUALITY IMPROVEMENT DEVICE TO MANUFACTURERS SPECIFICATIONS. INCLUDING TANK, HEAVY DUTY CLASS D BOLT DOWN LID, BAFFLES AND WEIRS. REFER TO SWMP FOR DETAILS. TYPICAL

BARRIER KERB AND CHANNEL TO BE CONSTRUCTED ALONG SITE FRONTAGE

PAVEMENT WIDENING

ARTHUR STREET

HAYES AVE

WYNDHAM AVE

CENTENARY DRIVE

SITE ENTRY/EXIT

CARPARK (50 CARS)

GULLY PIT

BUILDING 1

BUILDING 2

AEROBICS POOL

LAGOON POOL

WATER SLIDES

KIDS POOL

WATER PLAY

LANDSCAPE / RECREATIONAL AREA

50m POOL

AQUATIC CENTRE

+RL10.50

RL10.50

LANDSCAPE

ENTRY/ EXIT

GRANDSTAND

BUILDING 3

REFUSE

COMBINED SETDOWN ZONE TO HATCHED AREA

PROPERTY BOUNDARY

FOOTPATH

RTW

PROPOSED WATER SERVICE. REFER TO DWG No. P004 FOR DETAILS.

CONCRETE CROSSOVER TO GLADSTONE REGIONAL COUNCIL STANDARDS

PAVEMENT TO JOIN NEATLY TO EXISTING

BUS STOP LOCATION

INDICATIVE COUNCIL BUS STOP

47.50

JOIN NEATLY TO EXISTING ISLAND

CHANNELISED RIGHT TURN TREATMENT

LAYOUT PLAN
SCALE 1:500

0 5 10 20 25
SCALE 1:500

REV.	DATE:	AMENDMENT:	BY:	APP:
C	01.09.21	GENERAL AMENDMENTS	SC	AvT
B	14.05.21	MINOR AMENDMENTS	MD	AvT
A	06.05.21	ORIGINAL ISSUE	MD	AvT

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SCALE: AS SHOWN	DRAWN: MD
SHEET SIZE: A1	DESIGN: MD
DATUM: AHD	CHECKED: AvT
	APPROVED:

PROJECT: TANNUM SANDS MIXED USE PRECINCT OUTDOOR AQUATIC CENTRE

JOB No.: 21032-1

DRAWING TITLE: DRAINAGE AND PAVEMENT LAYOUT PLAN

DRAWING No.: P002 PRELIMINARY

REV.: C

PLOTTED: 01.09.2021

LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING EASEMENT BOUNDARY
- EXISTING CONTOUR - MAJOR
- EXISTING CONTOUR - MINOR
- EXISTING BUILDING
- SW — EXISTING STORMWATER DRAINAGE
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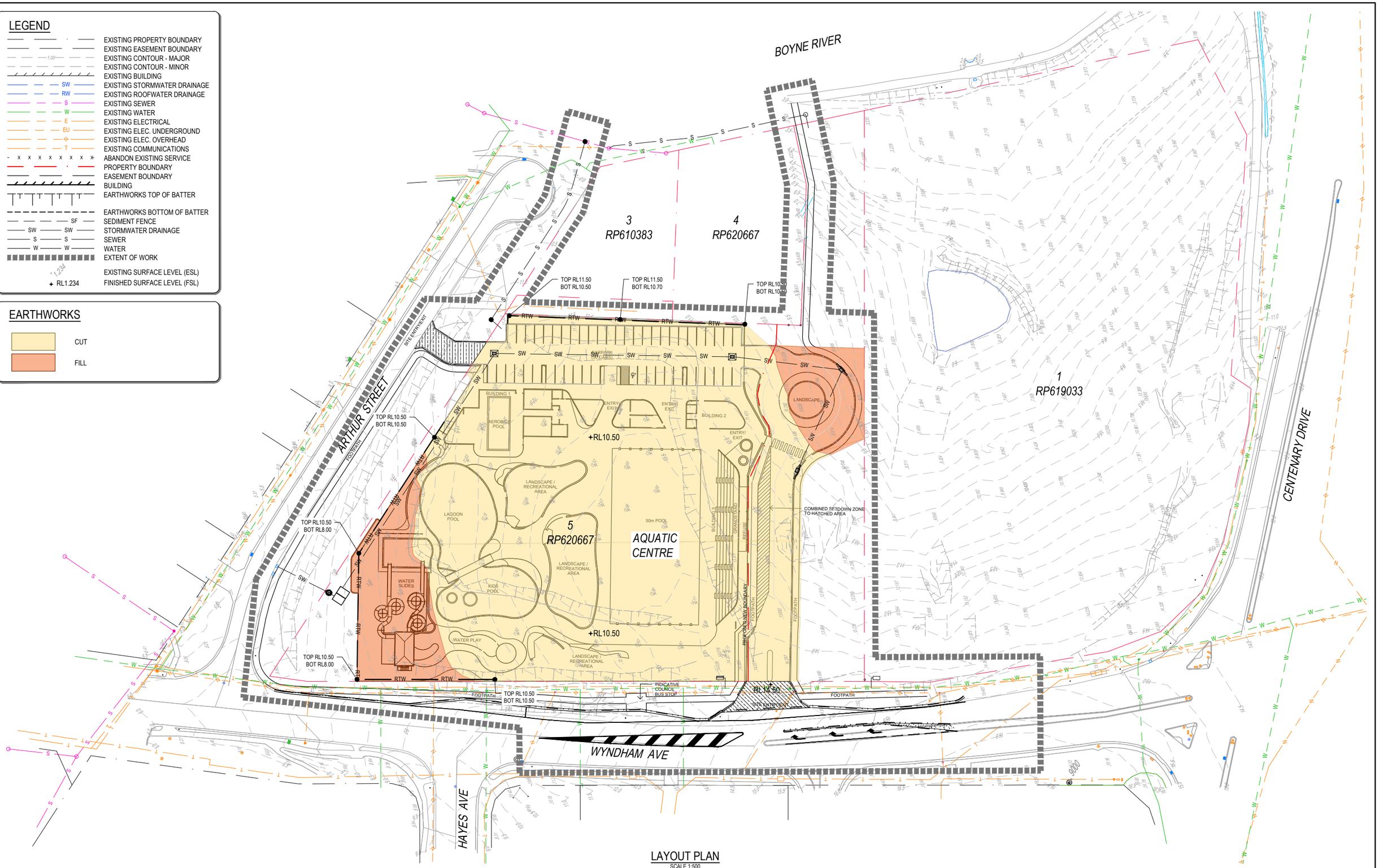
- S — SEWER
- W — WATER
- EXTENT OF WORK
- EXISTING SURFACE LEVEL (ESL)
- RL1.234 — FINISHED SURFACE LEVEL (FSL)

EARTHWORKS

- CUT
- FILL



LAYOUT PLAN
SCALE 1:500

0 5 10 20 25
SCALE 1:500

REV.	DATE:	AMENDMENT:	BY:	APP:
C	01.09.21	GENERAL AMENDMENTS	SC	AvT
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		APPROVED:	

PROJECT: TANNUM SANDS MIXED USE PRECINCT OUTDOOR AQUATIC CENTRE

JOB No.: 21032-1

DRAWING TITLE: PRELIMINARY EARTHWORKS LAYOUT PLAN

DRAWING No.: P003 PRELIMINARY

REV.: C

P:\OTTED\ 01.09.2021

LEGEND

- EXISTING PROPERTY BOUNDARY
- EXISTING EASEMENT BOUNDARY
- EXISTING CONTOUR - MAJOR
- EXISTING CONTOUR - MINOR
- EXISTING BUILDING
- EXISTING STORMWATER DRAINAGE
- EXISTING ROOFWATER DRAINAGE
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- SEWER
- WATER
- EXTENT OF WORK
- EXISTING SURFACE LEVEL (ESL)
- RL1.234 FINISHED SURFACE LEVEL (FSL)

BOYNE RIVER

EXISTING SEWER GRAVITY MAIN

PROPOSED SEWER MAINTENANCE HOLE

PROPOSED SEWER MAIN TO LOCAL AUTHORITY STANDARDS

HORIZONTAL BEND

PROPOSED SEWER MAINTENANCE HOLE

PROPOSED Ø150 SEWER PROPERTY CONNECTION HC TYPE B
CH3.94
IL10.30
JUIL8.30

LOT 1 SEWER PROPERTY CONNECTION TO BE CONFIRMED DURING FUTURE DEVELOPMENT. INDICATIVELY SHOWN

3 RP610383

4 RP620667

1 RP619033

5 RP620667

ARTHUR STREET

FOOTPATH

SITE ENTRY/EXIT

CARPARK (80 CARS)

BUILDING 1

AEROBICS POOL

ENTRY/ EXIT

BUILDING 2

LANDSCAPE

RL10.50

LANDSCAPE / RECREATIONAL AREA

LAGOON POOL

50m POOL

AQUATIC CENTRE

BUILDING 3

GRANDSTAND

RETAIL

COMBINED SETDOWN ZONE TO HATCHED AREA

CENTENARY DRIVE

WATER SLIDES

KIDS POOL

WATER PLAY

PEDESTRIAN/CYCLEWAY

WATER METER SIZED TO SUIT DEVELOPMENT

EXISTING WATER MAIN

LOT 1 WATER METER AND SERVICE CONNECTION TO BE CONFIRMED DURING FUTURE DEVELOPMENT. INDICATIVELY SHOWN

INDICATIVE COUNCIL BUS STOP

RL 14.50

SITE ENTRY/EXIT

WYNDHAM AVE

HAYES AVE

RTW

SW

S

W

RW

0 5 10 20 25
SCALE 1:500

LAYOUT PLAN
SCALE 1:500

REV.	DATE:	AMENDMENT:	BY:	APP:
A	01.09.21	ORIGINAL ISSUE	SC	AvT

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		APPROVED:	

PROJECT: TANNUM SANDS MIXED USE PRECINCT OUTDOOR AQUATIC CENTRE

JOB No.: 21032-1

DRAWING TITLE: SEWER AND WATER LAYOUT PLAN

DRAWING No.: P004 PRELIMINARY

REV.: A

P.OTTED: 01.09.2021

TANNUM SANDS MIXED-USE PRECINCT STAGE 1 – RESPONSE TO COUNCIL IR

JHA

ABN 48 612 666 172

Sydney | Brisbane | Melbourne

Level 23, 101 Miller St
North Sydney NSW 2060

PO Box 3
North Sydney NSW 2059
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ATTN:	Dean Van Deventer
PROJECT NUMBER:	210135
PROJECT NAME:	Tannum Sands Mixed Use Precinct – Stage 1
DATE:	27/08/2021

INTRODUCTION

JHA prepared an Acoustic Report for Development Application for the Tannum Sands Mixed Use Precinct – Stage 1 of the proposed development[1] in support of the planning application.

This letter provides JHA's response to the comments received from Council with respect to the content of the Acoustic Report for DA. It shall be noted that at the time of preparing the above Acoustic Report, design / operational details of different items were unknown or not defined, and therefore only general comments were provided.

JHA has updated the Acoustic Report and included preliminary noise impact assessments for the proposed Tannum Sands Mixed Use Precinct for the related comments below.

GLADSTONE REGIONAL COUNCIL

Recommendations from Gladstone Regional Council (shown in blue font below and are copy-pasted) to ZenDev Pty Ltd, dated 23rd June 2021 are as follows:

4. The proposal seeks to operate between 4am and 8:30pm, however as stated in several documents, specific noise generation cannot be assumed until the detailed design stage. Council has concerns on how the proposed development will adequately address the Centre Zone's requirements on protecting adjoining residential amenity, in particular noise generation from the site.

Furthermore, the common material is silent on what activities would occur in the early morning and late evening sessions, where and what type of plant equipment will be provided for the Aquatic Centre, and other patron generated noise and background music.

Please provide further commentary and supporting evidence that the expected noise generated from the subject site will not adversely impact the adjoining residential land.

JHA's Response:

Based on the proposed locations of the mechanical plantrooms, preliminary noise impact assessments of the mechanical plant have been carried out. A worst-case scenario has been assumed for the noise assessment, and it includes the maximum allowable cumulative noise emissions from the external mechanical plants to the nearest residential receivers.

Noise emissions are limited in order to comply with the Environmental Protection (Noise) Policy 2019. Preliminary noise assessments of the mechanical plant locations can be found in Section 5.1 of the updated Acoustic Report for DA.

[1] Tannum Sands Mixed Use Precinct – Noise Impact Assessment for DA by JHA Engineers. Ref: 210135-AC-DA-RPT [D], dated 27/08/2021.

Acoustic assessment of all mechanical plant shall continue during the design phases of the project in order to confirm any noise control measures to achieve the relevant noise criteria at the nearest noise sensitive receivers.

Preliminary noise impacts of indoor gymnasium and indoor swimming pool have been carried out. A worst-case scenario has been assumed for these noise assessments, and they include the maximum allowable cumulative noise emissions from these buildings to the nearest residential receivers. These noise impact assessments also provide minimum recommendations for façade sound insulation ratings.

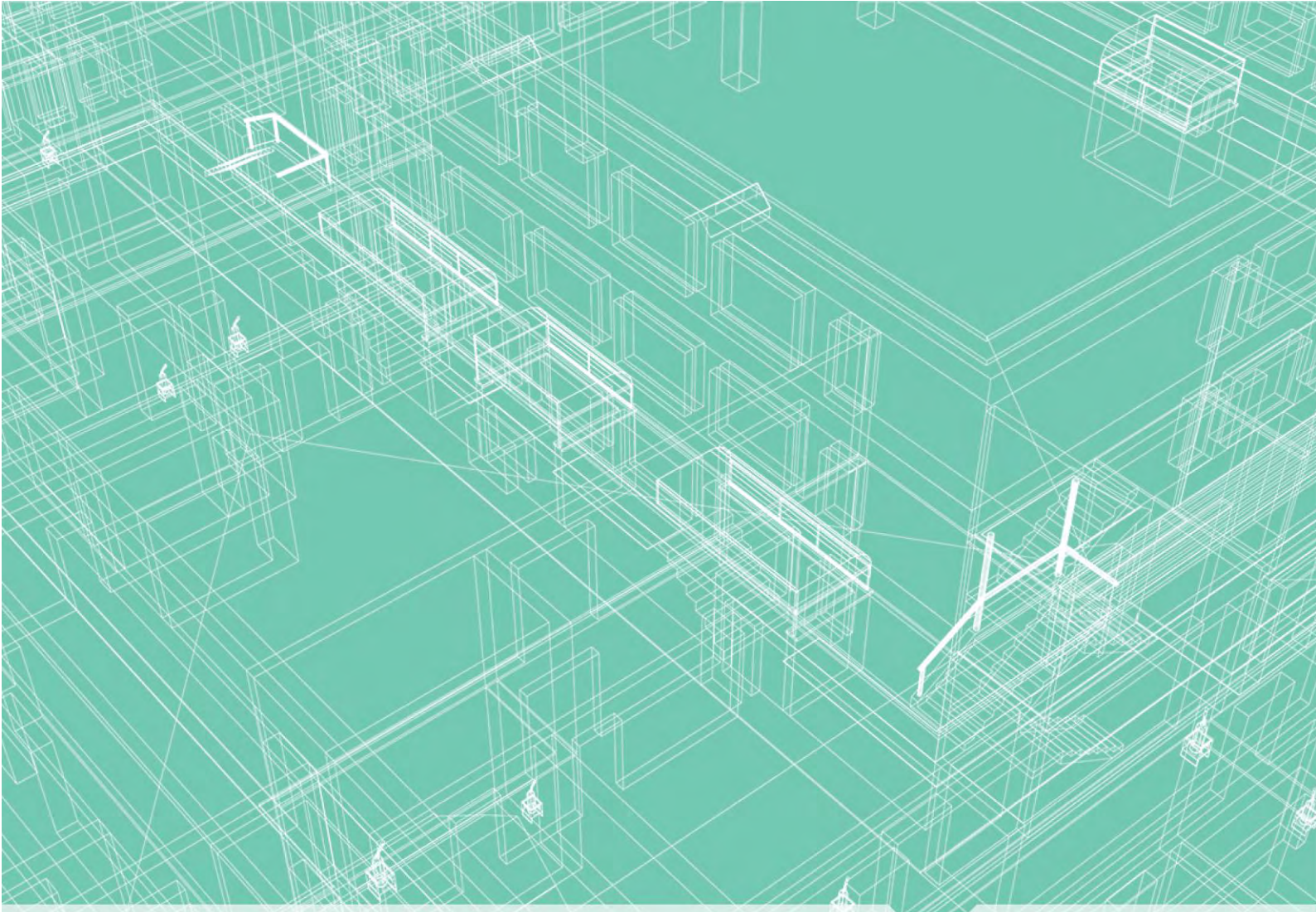
Noise emissions are limited in order to comply with the Environmental Protection (Noise) Policy 2019. Preliminary noise assessments of the gymnasium and indoor can be found in Section 5.3 and 5.4 of the updated Acoustic Report for DA.

Acoustic design of the façade, other external building elements and ventilation openings of the indoor gymnasium and indoor swimming pool will need to be considered throughout the design stages in order to meet the noise level criteria in the nearest noise sensitive receivers.

A description of proposed early morning activities including patronage of the amenities and maintenance can be found in Section 5.5 of the Acoustic Report. Recommendations have been made regarding early morning outdoor activities to limit the noise generation from the proposed site so as to not adversely affect the amenity of nearest residential receivers.

Yours sincerely,

Jorge Reverter
Acoustic Group Manager, MAAS



ACOUSTIC REPORT FOR DEVELOPMENT APPLICATION

TANNUM SANDS MIXED USE PRECINCT – STAGE 1

BOYNE ISLAND

ACOUSTIC SERVICES

JHA

JHASERVICES.COM

This report is prepared for the nominated recipient only and relates to the specific scope of work and agreement between JHA and the client (the recipient). It is not to be used or relied upon by any third party for any purpose.

DOCUMENT CONTROL SHEET

Project Number	210135
Project Name	Tannum Sands Mixed Use Precinct – Stage 1
Description	Noise Impact Assessment for Development Application
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	DATE					

CONTENTS

1 INTRODUCTION

JHA Consulting Engineers has been engaged by ZenDev Pty Ltd to provide a noise impact assessment for a proposed mixed use precinct development in Boyne Island, QLD. The proposed site is located in 2 Centenary Drive, Boyne Island, QLD.

The proposal involves the construction of a new aquatic centre, on a portion of the block. Construction will be in stages and this noise impact assessment report has been prepared for the aquatic centre – Stage 1. An acoustic assessment has been undertaken and it is detailed in this report along with the findings and recommendations. This report has been prepared as part of the Development Application to be submitted to the Gladstone Regional Council.

The objectives of this acoustic assessment are:

- Identify the nearby sensitive receivers that are at risk of potential noise impact as a result of the proposed development.
- Carry out noise surveys to determine existing ambient and background noise levels on site plus external noise sources.
- Establish the appropriate noise level and vibration criteria in accordance with the relevant standards, guidelines and legislation for the following issues:
  - Noise emissions from mechanical plant from the development to the surrounding receivers.
  - Noise emissions from the public address system.
  - Noise emissions from the gymnasium.
  - Noise emissions from indoor swimming pool.
  - Noise generated by outdoor early morning activities.
  - Noise generated by car movements.
- Carry out an acoustic assessment to determine whether the relevant criteria can be achieved and, where applicable, comment on noise control measures required to achieve compliance with the relevant noise level criteria.

This report provides:

- A statement of compliance with the relevant statutory criteria for the proposed use development within the vicinity of the nearest potentially affected receivers.
- Recommendations for noise mitigation measures for the proposed development in order to meet the relevant criteria when compliance is not achieved.

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

- Noise data collected on site through the use of a noise logger and a hand held spectrum analyser.
- Architectural and landscape drawings prepared by Kearny Architecture.

This document complies with JHA Consulting Engineers accreditations ISO 9001:2015 Quality Management System and ISO 14001:2015 Environmental Management System.

2 DESCRIPTION OF THE PROPOSAL

Boyne Island is a coastal town in the Gladstone Region, Queensland and belongs to the Local Government Area of Gladstone Region, being approximately 500km north of Brisbane. The development site is located at 2 Centenary Drive, Boyne Island and is legally known as Lot 5 RP620667.

The site is located within a residential and commercial environment, being characterised by low levels of activity during the day. The proposed development is bordered by Arthur Street to the North, Wyndham Avenue to the West and Lot 1 RP619033 to the South. To the East, the proposed development is bordered by the Boyne River and two residential receivers.

Figure 1: Aerial view of site showing the location of the proposed development (dotted red line), Tannum Mixed Use Precinct development site boundary (purple line), existing residential receivers (blue shading), commercial receivers (green shading) and community centre (cyan shading).

A summary of the nearest sensitive receivers surrounding the site location is shown in Table 1, including the approximate distances from the site boundary to receiver boundaries.

ID	*Sensitive Receiver*	*Receiver Type*	*Distance (m)*
1	1-3 Arthur Street	Residential	<5
2	Arthur Street North Catchment	Residential	15
3	Wyndham Avenue Catchment	Residential	45
4	Boyne Tannum Community Centre	Community	25
5	Commercial Catchment	Commercial	25

Table 1: Nearest sensitive receivers surrounding the site location.

The proposed aquatic centre will comprise the following:

- 50m pool.
- Lagoon pool.
- Kids pool.
- Aerobics pool.
- Gym
- Water play and water slides.
- One ancillary building and a Grandstand.
- Landscape works.
- Customer car park (50 spaces).

Figure 2 show the aerial view of the proposed development.

Figure 2: Proposed development layout.

It is noted that if noise impacts associated with the proposed development are controlled at the nearest noise sensitive receivers, then compliance with the recommended noise criteria at all noise sensitive receivers will be achieved.

3 SITE MEASUREMENTS

3.1 GENERAL

Attended and unattended noise surveys were conducted in order to establish the ambient and background noise levels of the site and surrounds. JHA carried out the surveys, in accordance with the QLD Department of Environment and Science – Noise Measurement Manual. The long term and short term noise monitoring location is shown in Figure 3.

Figure 3: Long-term (red boxes) and short-term (blue boxes) noise monitoring locations.

The locations were secure and considered to be representative of the typical existing ambient and background noise levels at the nearest noise sensitive receivers.

3.2 UNATTENDED NOISE MONITORING

Long-term noise monitoring was carried out from Thursday 15th April to Thursday 22nd April 2021 with two Rion NL-21 noise loggers (01054192 & 553892). The noise loggers recorded L_{A1}, L_{A10}, L_{Aeq} and L_{A90} noise parameters at 10-minute intervals during the measurement period. The calibration of the noise loggers were checked before and after use and no deviations were recorded.

The noise loggers were installed at locations L1 and L2 as shown in Figure 3. The locations were secure and considered to be representative of the typical ambient and background noise levels. The microphones were mounted 1.5 metres above the ground and windshields were used to protect the microphones.

The Ambient Background Levels (ABLs) have been established with the methodology of 10th percentile background noise level (L_{A90}) for each period of each day. The median of these levels is then presented as the RBL for each assessment period.

These RBLs and ABLs are shown in Table 2 for each time period.

Date	*Ambient Background Levels, dB(A)*					
	Logger L1			*Logger L2*		
	Day 7am-6pm	*Evening 6pm-10pm*	*Night 10pm-7am*	*Day 7am-6pm*	*Evening 6pm-10pm*	*Night 10pm-7am*
15/04/2021	---	58	50	---	58	54
16/04/2021	47	65	58	49	60	53
17/04/2021	48	61	60	40	58	53
18/04/2021	48	68	63	49	55	54
19/04/2021	48	67	53	50	59	49
20/04/2021	53	50	50	52	54	52
21/04/2021	50	54	58	51	54	52
22/04/2021	52	57	57	54	50	51
23/04/2021	50	60	47	52	51	51
24/04/2021	50	67	56	52	51	53
25/04/2021	49	56	46	51	49	51
26/04/2021	52	48	48	51	50	48
27/04/2021	51	50	48	53	54	48
RBL	**50**	**58**	**53**	**51**	**54**	**52**

Table 2: Results of long-term noise monitoring.

Table 3 and Table 4 below provides a summary of the minimum, maximum and average of statistical noise levels recorded.

Parameter	Period	Noise Levels, dB(A)		
		Minimum	Maximum	Average
L_{A1}	Day 7am-6pm	56	89	64
	Evening 6pm-10pm	52	75	61
	Night 10pm-7am	42	69	57
L_{A10}	Day 7am-6pm	52	75	58
	Evening 6pm-10pm	48	74	57
	Night 10pm-7am	35	62	53
L_{A90}	Day 7am-6pm	42	68	49
	Evening 6pm-10pm	37	71	56
	Night 10pm-7am	32	67	50
L_{Aeq}	Day 7am-6pm	49	76	56
	Evening 6pm-10pm	44	73	56
	Night 10pm-7am	34	60	52

Table 3: Results of long-term noise monitoring Logger L1.

Parameter	Period	Noise Levels, dB(A)		
		Minimum	Maximum	Average
L_{A1}	Day 7am-6pm	56	89	64
	Evening 6pm-10pm	52	75	61
	Night 10pm-7am	42	68	57
L_{A10}	Day 7am-6pm	52	75	58
	Evening 6pm-10pm	48	74	57
	Night 10pm-7am	35	62	53
L_{A90}	Day 7am-6pm	41	58	49
	Evening 6pm-10pm	35	70	51
	Night 10pm-7am	31	55	47
L_{Aeq}	Day 7am-6pm	49	76	56
	Evening 6pm-10pm	44	73	56
	Night 10pm-7am	34	60	52

Table 4: Results of long-term noise monitoring Logger L2.

3.3 ATTENDED NOISE MONITORING

On Thursday 15th April 2021 short-term noise surveys were carried out during day time period. Short-term noise measurements were carried out with a Rion NL-52 hand held Sound Level Meter. The calibration of the SLM was checked before and after each use and no deviations were recorded.

The SLM microphone was mounted 1.5 metres above the ground and a windshield was used to protect the microphone. Measurements were undertaken in the free-field – i.e. more than 3 metres away from any building façade or vertical reflective surface. Weather conditions were calm and dry during the attended noise monitoring.

Short-term noise monitoring was carried out to obtain representative third-octave band noise levels of the site. From observations during the site visit, it is noted that ambient and background noise levels are dominated by traffic noise along Wyndham Avenue and Centenary Drive. Observations included noise associated with pedestrian activities, powered gardening equipment, occasional low level mechanical hum from commercial developments and some suspected high frequency noise from the adjacent dock. A summary of the results of the short-term noise monitoring is shown in Table 5.

Location	*Date and Time*	*Parameter*	*Sound Pressure Level, dB re 20μPa*								
			Overall dB(A)	*Octave Band Centre Frequency, Hz*							
				63	*125*	*250*	*500*	*1k*	*2k*	*4k*	*8k*
M1	15/04/2021 13:17 – 13:27	$L_{10,\ 10min}$	**52**	64	60	50	44	46	41	37	32
		$L_{eq,\ 10min}$	**46**	61	55	45	38	41	37	33	28
		$L_{90,\ 10min}$	**43**	54	50	39	35	37	35	31	27
M2	15/04/2021 13:29 – 13:39	$L_{10,\ 10min}$	**51**	61	58	47	45	47	44	40	31
		$L_{eq,\ 10min}$	**47**	56	53	43	41	43	39	35	27
		$L_{90,\ 10min}$	**46**	54	51	42	40	42	37	33	24
M3	15/04/2021 13:42 – 14:52	$L_{10,\ 10min}$	**61**	67	66	60	57	56	49	46	39
		$L_{eq,\ 10min}$	**56**	63	60	55	53	52	45	41	34
		$L_{90,\ 10min}$	**52**	58	55	51	48	48	40	35	29
M4	15/04/2021 13:55 – 14:05	$L_{10,\ 10min}$	**63**	71	69	63	60	58	50	47	41
		$L_{eq,\ 10min}$	**57**	65	63	58	54	52	45	42	36
		$L_{90,\ 10min}$	**54**	58	55	52	50	50	41	35	27

Table 5: Short-term noise levels measured on site.

4 RELEVANT NOISE STANDARDS AND GUIDELINES

4.1 STANDARDS AND GUIDELINES

The following standards and guidelines are considered relevant to the project and have been referenced in developing the project noise level criteria.

- Environmental Protection (EP) Act 1994.
- Environmental Protection (Noise) Policy (EPP) 2019.
- Department of Environment and Heritage Protection. Noise Control Guideline. Planning for noise control. 2011.
- Our Place Our Plan Gladstone Regional Council Planning Scheme Version 2.

4.2 ENVIRONMENTAL PROTECTION (EP) ACT 1994

The EP Act defines an environmental value as *"a quality or physical characteristic of the environment that is conducive to ecological health or public amenity or safety; or another quality of the environment identified and declared to be an environmental value under an environmental protection policy or regulation"*.

The Environmental Protection (EP) Act provides the regulatory framework for the protection of the environment in QLD. The EP Act is relevantly about planning matters and ensuring that "environmental impact" associated with the proposed development is properly considered and reasonable before granting development consent to develop.

Default noise standards are set in Division 3 of Chapter 8 General environmental offences, Part 3B – Offences relating to noise standards.

4.3 ENVIRONMENTAL PROTECTION (NOISE) POLICY (EPP) 2019

The Environmental Protection policy provides a robust framework for the acoustic environment and states acoustic quality objectives to be achieved and maintained. These are required to provide an effective operation of the EP Act and enable to achieve the object of the EP Act.

The applicable acoustic quality objectives from Schedule 1 of the policy are presented in Table 6 for assessment of noise associated with the proposed development.

Sensitive receptor	*Time of day*	*Acoustic quality objectives (measured at the receptor), dB(A)*			*Environmental value*
		$L_{Aeq,adj,1h}$	$L_{A10,adj,1h}$	$L_{A1,adj,1h}$	
Residence (for outdoors)	7am to 10pm	50	55	65	Health and wellbeing
Residence (for indoors)	7am to 10pm	35	40	45	Health and wellbeing
	10pm to 7am	30	35	40	Health and wellbeing, in relation to the ability to sleep

Table 6: Determination of the acoustic quality objectives.

4.4 GLADSTONE REGIONAL COUNCIL PLANNING SCHEME

Section 6.2.8 of the Our Place Our Plan Gladstone Regional Council Planning Scheme Version 2 sets the planning requirements for Sport and Recreation developments. Noise requirements related with the development are as follows:

"...

Amenity

PO3. Development provides adequate separation, screening and buffering from any adjoining residential premises or residential zone so that residential privacy and amenity are not adversely affected.

AO3.1. Development that shares a boundary with a residential premises or residential zone requires a minimum boundary setback of 6m for:

(a) temporary structures including markets

(b) active outdoor use or sporting areas

(c) site access points

(d) car parking areas, and

(e) servicing or outdoor storage areas.

AO3.2. Development that shares a boundary with a residential premises or residential zone must ensure all buildings:

(a) are setback a minimum of 15m from that common boundary, and

(b) include a minimum 1.8m high solid screen fence along that common boundary, or

(c) a landscaped buffer area consisting of dense screen planting of a minimum 3m width along that common boundary.

PO5. Development must not unreasonably affect the amenity of the surrounding area.

AO5. Hours of operation are limited between 7am and 10pm each day.

..."

5 NOISE IMPACT ASSESSMENT AND RECOMMENDATIONS

Noise emissions from the proposed development have the potential to impact existing residential receivers surrounding the site. For the purpose of this noise impact assessment, the noise sources are assumed as follows:

- Noise emissions from mechanical plant to the surrounding receivers.
- Noise from the gymnasium
- Noise emissions from the public address system.
- Noise from the indoor (aerobic) swimming pool
- Noise from early morning activities
- Noise generated by car movements.

Each of these noise sources has been considered in the noise impact assessment. The acoustic environment has considered the following:

- Noise levels have been considered as continuous over the assessment time period to provide the worst-case scenario.
- Distance attenuation, building reflections and directivity.
- Lowest measured background noise levels at the nearest receiver have been used to provide a worst-case scenario.

5.1 MECHANICAL PLANT

Noise from the proposed development mechanical plant rooms should be controlled to ensure external noise emissions are not intrusive and do not impact on the amenity of the noise sensitive receivers. Two plant rooms have been identified at this stage of the development planning:

- Beneath the stands on the south side of the outdoor 50m pool.
- On the northern exterior of the indoor swimming pool building (Building 1).

At this stage, mechanical plant selections have not been made; therefore, it is not possible to undertake a detailed assessment of the mechanical plant noise emissions. However, a preliminary assessment has been carried out for the mechanical plant.

5.1.1 OUTDOOR 50M SWIMMING POOL

The following assumptions have been made for the noise assessment of the plant room beneath the grandstand south of the outdoor 50m pool:

- The location of the external plant is as per Figure 4.
- The nearest noise sensitive receiver is a proposed development to the South.
- Worst-case scenarios will be used for assessment (i.e., night time period noise criteria)
- Building reflections and directivity will impact the noise level at the receivers.
- Building façade sound insulation performance is limited to 10dB due to assumed ventilation openings.

Figure 4: Location of plant (red outline with yellow shading) beneath grandstand on western boundary of proposed development.

The noise assessment of the mechanical plant room beneath the grandstand is summarised in Table 7.

Calculation	*Overall A-weighted noise level, in dB(A)*
	Proposed Development to the South
L_{Aeq} at 1m of mechanical plant boundary, dB(A)	71
Distance attenuation, dB	31
Resulting level at receiver boundary, dB(A	40
Noise Level Criterion, dB(A) / Complies?	40 / Yes

Table 7: Noise assessment of external mechanical plant to the nearest noise sensitive receivers.

Based on the above assessment, noise emissions from the outdoor 50m pool mechanical plant will not impact the amenity of the surrounding noise sensitive receivers if the noise emissions from the swimming pool plant are limited to 71dB(A) at 1 metre from the plant boundary.

5.1.2 INDOOR AEROBIC POOL BUILDING

The following assumptions have been made in the noise assessment of the plant room on the exterior of the indoor aerobic pool building:

- The location of the external plant is as per Figure 5.
- The nearest noise sensitive residential receiver is 2 Arthur Street to the North.
- Worst-case scenarios will be used for assessment (i.e., night time period noise criteria)
- Building reflections and directivity.
- Acoustic louvres are proposed around the plant.

Figure 5: Location of plant (red outline with yellow shading) on the exterior of the indoor aerobic pool building.

The noise assessment of the mechanical plant room of the indoor pool building is summarised in Table 8.

Calculation	*Overall A-weighted noise level, in dB(A)*
	Proposed Development to the South
L_{Aeq} at 1m of mechanical plant boundary, dB(A)	75
Distance attenuation, dB	29
Assumed noise reduction of acoustic louvres, dB	6
Resulting level at receiver boundary, dB(A	40
Noise Level Criterion, dB(A) / Complies?	40 / Yes

Table 8: Noise assessment of external mechanical plant to the nearest noise sensitive receivers.

Based on the above assessment, noise emissions from the indoor pool mechanical plant will not impact the amenity of the surrounding noise sensitive receivers if the noise emissions from the mechanical plant are limited to 75dB(A) at 1 metre from the plant boundary and acoustic louvres are included around the plantroom..

Noise controls will need to be incorporated with the design of the mechanical plant rooms to ensure that the cumulative noise levels from plant to the nearest noise sensitive receivers meets the noise level criteria as per Section 4.

Usual design noise controls that may need to be implemented will typically include, but are not limited to:

- Strategic location and selection of mechanical plant to ensure the cumulative noise levels at the receiver boundaries are met.
- Selection of appropriate quiet plant.
- Acoustic noise control measures to be put in place to minimise noise impacts such as:
  - In-duct attenuation.
  - Noise enclosures as required.
  - Sound absorptive panels.
  - Acoustic louvres as required.
  - Noise barriers as required.

Acoustic assessment of all mechanical plant shall continue during the detailed design phase of the project in order to confirm any noise control measures to achieve the relevant noise criteria at the nearest noise sensitive receivers. If new or replacement mechanical plant is proposed, then further acoustic assessment is required.

5.2 PUBLIC ADDRESS

Noise from public address system should be controlled to ensure external noise emissions are not intrusive and do not impact on the amenity of nearby noise sensitive receivers.

At this stage, a public address system selection has not been made; therefore, it is not possible to undertake a detailed assessment of the public address noise emissions.

There are numerous reports of community concern arising from inadequate design and installation as well as inappropriate use of public address systems. An appropriate design, installation and use of those systems enables:

- Meet the proponent's objectives of proper administration of aquatic centre and ensuring safety of staff and users, and
- Avoid interfering unreasonably with the comfort and repose of occupants of nearby residences.

It is anticipated that the noise impact to the nearest sensitive receivers will be negligible if following measures are implemented:

- Low-powered horn-type speakers shall be located and orientated to provide a good coverage of the aquatic centre areas whilst being directly away from residences and near sensitive receivers. System coverage shall be reviewed during the detailed design phase.
- Speakers shall be mounted with a downward angle and as close to the floor as possible.

- The noise level of the systems shall be adjusted on site so they will be clearly audible on the site without being excessive. The systems shall initially be set sot that the noise at nearby residences and sensitive receivers do not exceed noise level criteria.
- Once the appropriate noise level has been determined on site, the systems shall be limited to these noise levels so that staff cannot increase the noise levels.

5.3 GYMNASIUM

Noise from the proposed indoor gymnasium should be controlled to ensure external noise emissions are not intrusive and do not impact on the amenity of the nearby noise sensitive receivers, particularly during early morning – 4.00am to 7.00am. The gymnasium is located in Building 2, at the south east corner of the proposed development, and will operate between the hours of 4.00am to 8.30pm.

The noise assessment has considered the following assumptions:

- The location of the gymnasium is as per Figure 6.
- The nearest noise sensitive receiver is 3 Arthur Street.
- Worst-case scenarios will be used for assessment (i.e., night time period noise criteria between 4.00am and 7.00am).
- Noise levels have been considered as continuous over a 15-minute assessment period to provide the worst-case scenario.
- Noise levels within the gym are based on typical noise levels of gym activities – with music playing.
- Building reflections and directivity will impact the noise level at the receivers.

Figure 6: Location of gymnaium (red outline with yellow shading) on the south-eastern corner of the proposed development.

Noise emissions from the use of the gym activities have been assessed at the nearest noise sensitive receiver and the noise impact assessment has been based on the following methodology:

$$L_{ext} = L_{int} - R_{comp} + 10\log_{10}(S) - 20\log_{10}(r) - 14$$

where:

L_{ext} is the resultant sound pressure level at the receiver, dB(A)

L_{int} is the internal noise level, dB(A)

R_{comp} is the composite sound reduction for the façade, dB

S is the surface area of the façade, m^2

R is the distance to the receiver's boundary from the façade, m

Predicted noise impact assessment at the nearest residential receiver is summarised in Table 9.

Calculation	*Overall A-weighted noise level, in dB(A)*
Reverberant Sound Pressure Level (L_{int})	85
Composite Sound Reduction of Façade (R_{comp})	-20
Correction for Surface Area of Façade (S)	15
Correction for Distance to Receiver (r)	-26
Resulting Sound Pressure Level at Residential Receiver	40
Noise Criteria. Complies?	40 / Yes

Table 9: Predicted noise levels at the nearest residential receives for the use of indoor gymnasium.

Based on the results, noise emissions from the indoor gymnasium are expected to comply with the night-time noise level criteria if a typical building façade design is proposed with a minimum thickness of 10.38mm for the façade glazing. Acoustic design of the façade, other external building elements and ventilation openings will need to be considered throughout the design stages in order to meet the noise level criteria in the nearest noise sensitive receivers.

5.4 INDOOR SWIMMING POOL

Noise from the indoor swimming pool should be controlled to ensure external noise emissions do not impact the amenity of the noise sensitive receivers particularly during early morning – 4.00am to 7.00am. The indoor pool is proposed in Building 1 in the North-East corner of the development, and will operate between the hours of 4.00am to 8.30pm.

Noise emissions from the use of the indoor pool activities have been assessed at the nearest noise sensitive receiver.

The noise assessment has considered the following assumptions:

- The location of the gymnasium is as per Figure 7.
- The nearest noise sensitive receiver is 2 Arthur Street.
- Worst-case scenarios will be used for assessment (i.e., night time period noise criteria between 4.00am and 7.00am).
- Noise levels have been considered as continuous over a 15-minute assessment period to provide the worst-case scenario.

- Noise levels within the indoor pool are based on typical noise levels of pool activities – with music playing.
- Building reflections and directivity will impact the noise level at the receivers.

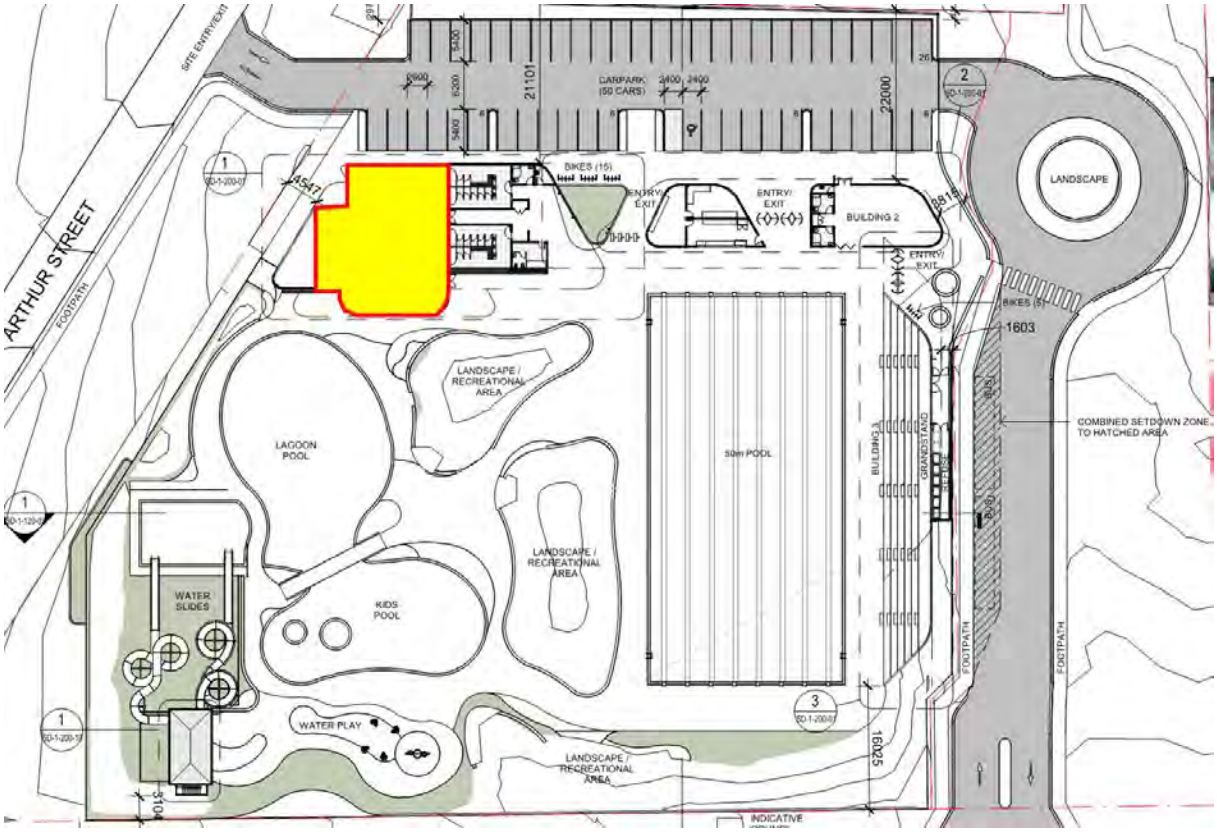

Figure 7: Location of indoor pool (red outline with yellow shading) on the North-Eastern corner of the proposed development.

Noise emissions from the use of the indoor pool activities have been assessed at the nearest noise sensitive receiver and the noise impact assessment has been based on the methodology described in Section 5.3. Predicted noise impact assessment at the nearest residential receiver is summarised in Table 9.

Calculation	*Overall A-weighted noise level, in dB(A)*
Reverberant Sound Pressure Level (L_{int})	85
Composite Sound Reduction of Façade (R_{comp})	-20
Correction for Surface Area of Façade (S)	15
Correction for Distance to Receiver (r)	-30
Resulting Sound Pressure Level at Residential Receiver	**36**
Noise Criteria. Complies?	**40** / Yes

Table 10: Predicted noise levels at the nearest residential receives for the use of indoor swimming pool.

Based on the results, noise emissions from the indoor swimming pool are expected to comply with the night-time noise level criteria if a typical building façade design is proposed with a minimum thickness of 10.38mm for the façade glazing. Acoustic design of the façade, other external building elements and ventilation openings will need to be considered throughout the design stages in order to meet the noise level criteria in the nearest noise sensitive receivers.

5.5 OUTDOOR EARLY MORNING ACTIVIES

The 50m outdoor swimming pool will be open from 5.00am to 7.00am for training of swimming teams and/or users. Noise emission from the use will be from coaches along the swimming pool, which could impact the amenity of the nearest residential receivers. People swimming laps in the pool is a reasonably limited noise source and it is not considered to have an unduly or unreasonably impact on the residential amenity of nearby residential receivers.

The following are recommended restrictions for the outdoor 50m swimming pool to minimise the impact on the amenity of the nearest noise sensitive receivers.

- A maximum of 30 persons in the swimming pool before between 5.00am and 7.00am.
- Music is not allowed between 5.00am and 7.00am.
- Coaches' whistles should not be used between 5.00am and 7.00am.
- Outdoor group training classes not be held on-site between 5.00am and 7.00am.

It is understood that the proposed opening time of the facilities is 4.00am and some maintenance activities are expected to take place at this time. Among these activities is the removal of the pool blankets which is not considered a loud process, and therefore should not cause an impact on the amenity of nearby sensitive receivers. No other maintenance should take place before 7.00am.

The use of the swimming pool could continue to operate during these hours in a reasonable and satisfactory manner without undue disturbance to the residential amenity of the area provided some activities of the swimming pool are restricted.

5.6 CAR MOVEMENTS

To minimise any potential noise impact associated with car movements arriving at or departing the aquatic centre, plus as per Gladstone Regional Council Planning Scheme requirements for developments adjacent to residential premises – refer to Section 4.4, a minimum 1.8m high solid barrier shall be included along the common boundary of the site and residential receivers to the East.

The acoustic barrier shall have a minimum surface mass of 12kg/m^2. The acoustic barrier shall be continuous with no gaps and shall be close fitting to the ground. All bracing and structural support required to comply with loadings and building regulations shall be provided. Figure 8 shows the extent and location of the acoustic barrier.

Figure 8: Extent and location of acoustic barrier (green line).

6 MANAGEMENT AND COMPLIANCE

Limiting noise nuisance from a premise generally requires management on an ongoing basis. Strategies for the proposed development should consider the following:

- A policy of open communication with affected neighbours will be utilised so that action can be taken in the event of a noise complaint.
- Use of public address system within the aquatic centre shall be minimised whenever possible.
- To minimise impacts on the surrounding amenity, Waste Collection/Delivery Vehicle movements are recommended to occur during the day-time.
- Early morning outdoor activity restrictions should be implemented to minimise noise emissions if required.

7 SUMMARY AND CONCLUSIONS

A noise assessment has been carried out for a proposed aquatic centre in Boyne Island, QLD. This report forms part of the documentation package to be submitted to Gladstone Regional Council as part of the Development Application process.

This report establishes relevant noise level criteria, details the acoustic assessment and provides comments and recommendations for the proposed development.

The noise assessment has adopted methodology from relevant guidelines, standards and legislation to assess noise impact. The noise impacts have been predicted at the nearest noise sensitive receiver boundaries, taking in account distance attenuation, building reflections and directivity.

At this stage, mechanical plant selections have not been made. However, preliminary noise assessments have been carried out. Noise emissions from the 50m outdoor swimming pool plant shall be limited to 71dB(A) when measured at 1m of the plant boundary. Noise emissions from the indoor swimming pool plant shall be limited to 75dB(A) at 1m of the plant boundary. Generic recommendations have been provided to minimise the impact of external noise emissions associated with the mechanical plant of the proposed development to the nearest sensitive receivers. Acoustic assessment of all mechanical plant shall continue during the detailed design phase of the project in order to confirm any noise control measures to achieve the relevant noise criteria at the nearest noise sensitive receivers.

At this stage, a public address system has not been selected. Therefore, generic recommendations have been provided to minimise the impact of external noise emissions associated with the public address system of the proposed development to the nearest sensitive receivers.

At this stage sound insulation and glazing selections have not been made for the gymnasium and indoor aerobic pool. Minimum glazing requirements have been recommended to protect the amenity of the nearby noise sensitive receivers. An acoustic assessment of all proposed insulation and glazing shall continue through the design phase to ensure amenity requirements are met.

Restrictions should be made to the outdoor early morning activities including maintenance and patronage of the outdoor pool. Recommendations have been made to limit the impact of these activities on the amenity of the nearby noise sensitive receivers, such as limited numbers of pool-users, no outdoor group classes; and the use of amplified music and whistles are prohibited.

A minimum 1.8m high solid barrier shall be included along the common boundary of the car park site and adjacent residential receivers. The acoustic barrier shall have a minimum surface mass of 12kg/m^2, be continuous with no gaps and be close fitting to the ground.

The information presented in this report shall be reviewed if any modifications to the features of the development specified in this report occur, including and not restricted to selection of mechanical plant, modifications to the building and introduction of any additional noise sources.

Based on the information presented in this report, relevant objectives will be satisfied and therefore approval is recommended to be granted.

MRA ENVIRONMENTAL

YOUR TRUSTED ENVIRONMENTAL PARTNER

WASTE MANAGEMENT PLAN - OUTDOOR SPORT AND RECREATION (AQUATIC CENTRE)

Lot 1 & 5 Hampton Drive
Boyne Island, Qld 4680

CLIENT

ZenDev Pty Ltd

August 2021 - V1

DOCUMENT INFORMATION

Contact Details:

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ABN: 21 082 910 218

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Client Details:

Client:	ZenDev Pty Ltd
Client contact:	Dean van Deventer
Client Phone:	07 3175 0620

Document Details:

Title:	Waste Management Plan Outdoor Sport and Recreation (Aquatic Centre) Lot 1 & 5 Hampton Drive Boyne Island Qld 4680 described as Lot 1 RP 619033 & Lot 5 RP 620667
Project Number:	MRA21-156

Revision	Date	Author	Reviewed By	Issued By
V.1	31 August 2021	M Rigby	A Reiser	M Rigby

Destination	Draft	Final
ZenDev Pty Ltd		V.1
MRA Environmental		V.1

LIMITATIONS

Mark Rigby & Associates Pty Ltd (MRA Environmental) has prepared this Waste Management Plan for the sole use of ZenDev Pty Ltd to support a Development Application for the proposed Aquatic Centre development located at Lot 1 & 5 Hampton Drive, Boyne Island QLD 4680.

Specifically, this report supports the Development Application and relates to the waste storage and collection activities for the operational phase of the planned development in accordance with the Gladstone Regional Council's Planning Scheme Policy SC6.11 Waste Management. This WMP will be submitted to Council in response to the Information Request dated 23 June 2021 received in relation to the initial Development Application DA/24/2021.

This report is for the sole use of ZenDev Pty Ltd in relation to the Development Application submitted to Gladstone Regional Council. It may not contain sufficient information for the purposes of other parties, for other uses or at other locations.

We have performed our services for this project in accordance with our current professional standards. No other warranty, expressed or implied, is made as to the professional advice included in this submission.

Opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions. The report also contains comments and information provided by others. MRA Environmental cannot take responsibility for advice provided by any third party.

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FIGURES

ATTACHMENTS

1.0 GLOSSARY OF TERMS

Bin carting route – the proposed route to move bins between the storage point and the servicing point.

Bulk bins – bins fitted with lids and side pockets to allow them to be serviced by a front-lift truck.

Clinical or related waste – waste that has the potential to cause disease, including, for example, animal waste, discarded sharps, human tissue waste or laboratory waste.

Commercial accommodation – for the purposes of this report means commercial development that includes a domestic or residential component, such as Retirement facility, Community care centre, Rooming accommodation, Short term accommodation or Resort complex.

Commercial premises – for the purpose of this report means any of the following types of premises:

- a Hotel, Short term accommodation, Tourist park, Food and drink outlet;
- an assembly building, institutional building, Childcare centre, Educational establishment;
- premises where a sport or game is ordinarily played in public;
- an exhibition ground, show ground or racecourse; or
- an Office, Shop or other premises where business or work other than a manufacturing process is carried out.

Commercial waste – means waste, other than green waste, recyclable waste, and interceptor waste or waste discharged to a sewer, produced as a result of the ordinary use or occupation of commercial developments.

Common servicing point – a common area where more than two dwellings/tenancies stand their wheelie bins for servicing.

Common storage point – a common area where more than two dwellings/tenancies store their wheelie bins.

Constructed hardstand area – a hardstand area, for example a concrete pad which has been constructed for bin storage.

Digesters and dehydrators - machines specifically designed to reduce food waste volumes to allow for efficient disposal. Digesters typically process the material into sludge while dehydrators remove liquid from food waste generating a fertiliser as the end product. Disposal of end product can be used on either internal gardens or on external gardens/farms.

Drive-on service – where the waste collection vehicle services bulk bins on site, bins are to be positioned for direct access/servicing without the need for manual handling by the waste vehicle driver or other person.

General waste – waste, other than domestic clean-up waste, green waste, recyclable waste, interceptor waste or waste discharged to a sewer, produced as a result of the ordinary use or occupation of domestic or commercial premises.

Glass crushers - machines that can reduce the volume of glass waste by up to 75%, saving valuable space.

Hazardous waste - solid waste that is toxic or contains toxic material, for example, light bulbs, fluorescence lights, batteries.

Internal servicing roadway – is a driveway, private roadway or other path intended for use by vehicles, in which the waste collection vehicle is required to use to service a bin.

Mixed-use development – for the purpose of this report, any building or development complex used, or intended to be used, for residential purposes in combination with other commercial uses (e.g. Offices, Food and drink outlets etc).

Non-serviced area – an area within the boundaries of Gladstone Regional Council which is not serviced by Council's waste collection contractor.

Organic waste - is waste that comes from plants or animal that is biodegradable for example green waste and food waste.

Recycling chute - a duct in which recycling descends from one point to another.

Recyclable waste – for a local government's area, means clean and inoffensive waste that is declared by the local government to be recyclable waste for the area. In the Gladstone Regional Council the following wastes are deemed recyclable:

- all household plastics, bottles and containers;
- aluminium and steel cans and aerosols;
- bottles and jars made only of glass;
- clean cardboard, newspaper, loose paper, junk mail, magazines and cartons.

Related waste – means waste that constitutes, or is contaminated with, chemicals, cytotoxic drugs, human body parts, pharmaceutical products or radioactive substances.

Roll-on roll-off bin (Ro-Ro bin) – large steel open top skip bins or enclosed bins. Bins are collected by a hook-lift truck.

Solid waste – any general or recyclable waste, be it commercial or domestic. Solid waste does not include waste discharges to sewer/water or the atmosphere.

Servicing point – the designated area allocated to the temporary storage of waste bins for the period of servicing only. The point may be within or external to a development.

Storage point – the area allocated to the permanent storage of waste bins. This is the normal location of the waste bins and excludes the period where the bin is serviced. A storage point may be a common storage point or an individual bin storage point.

Waste – includes anything, other than a resource that is:

- left over, or an unwanted by-product from an industrial, commercial, domestic or other activity; or
- surplus to the industrial, commercial, domestic or other activity generating the waste.

Waste carting distance – the distance required for a person to transport their waste from the nearest point of exit of their dwelling/tenancy to a storage point (or in the case of a multi-level building, to the nearest waste disposal point).

Waste chute – a duct in which waste descends from one point/level to a collection bin.

Waste disposal point – the point where waste is disposed of into the chute, also known as waste hopper. It consists of a fixed frame and hood unit, covered with a hinged or pivoted door.

Waste storage room – the room at the base of the chute used for the storage of waste bins.

Wheelie bin – two wheeled mobile garbage bins, made from high density polyethylene (HDPE). Wheelie bins are collected by a side-lift truck

2.0 INTRODUCTION

2.1 BACKGROUND

MRA Environmental (MRA) has been commissioned by ZenDev Pty Ltd to prepare a Waste Management Plan (WMP) for the proposed Outdoor Sport and Recreation (Aquatic Centre) development located at Lot 1 & 5 Hampton Drive, Boyne Island QLD 4680.

A Development Permit for a Material Change of Use and Reconfiguring a Lot has been lodged for the development. This included an Outdoor Sport and Recreation (Aquatic Centre) that comprised a series of swimming pools, water slides, landscaped recreational areas around these pools, a café/ kiosk, gym, change rooms and associated offices (refer **Figure 2**).

This Waste Management Plan (WMP) has been prepared for the development and is to be submitted to the Gladstone Regional Council (Council) in response to an Information Request resulting from an initial assessment of the Development Application (DA). Item 9 of the Information Request required a Waste Management Plan to be provided for the development.

This WMP ensures that the waste generation, storage and collection activities for the operational phase of the development are generally in accordance with the Council's Development Design Code and the Waste Management Planning Scheme Policy.

2.2 SITE DETAILS

The subject site has a total area of 33,438m^2 and is situated at Lot 1 & 5 Hampton Drive, Boyne Island QLD on land described as Lot 1 RP 619033 & Lot 5 RP 620667 (Refer **Figure 1**). The Aquatic Centre is located on Lot 1 with an area of 11,216m^2 with the balance being Lot 2 with an area of 22,222m^2.

2.3 PURPOSE & SCOPE OF REPORT

This report represents a Waste Management Plan for the operational phase of the development, which includes:

- Details on the anticipated type and quantity of waste (**Section 3.0**);
- Details of the waste storage room requirements and waste storage bins (**Section 4.0**); and
- Details of the proposed waste collection arrangements (**Section 5.0**).

2.4 WMP OBJECTIVES & STRUCTURE

The structure of this report is as follows:

- An introduction including the site details, summary, purpose and scope of the report along with the objectives and structure;
- Development figures including the site location and outlining the waste storage and servicing infrastructure and locations;
- Waste quantities including the type of waste, quantities of waste based on the proposed development;
- Proposed waste storage and servicing areas including waste storage infrastructure and locations within the development; and
- Details of the waste collection including servicing frequencies, the waste servicing area and collection vehicle access.

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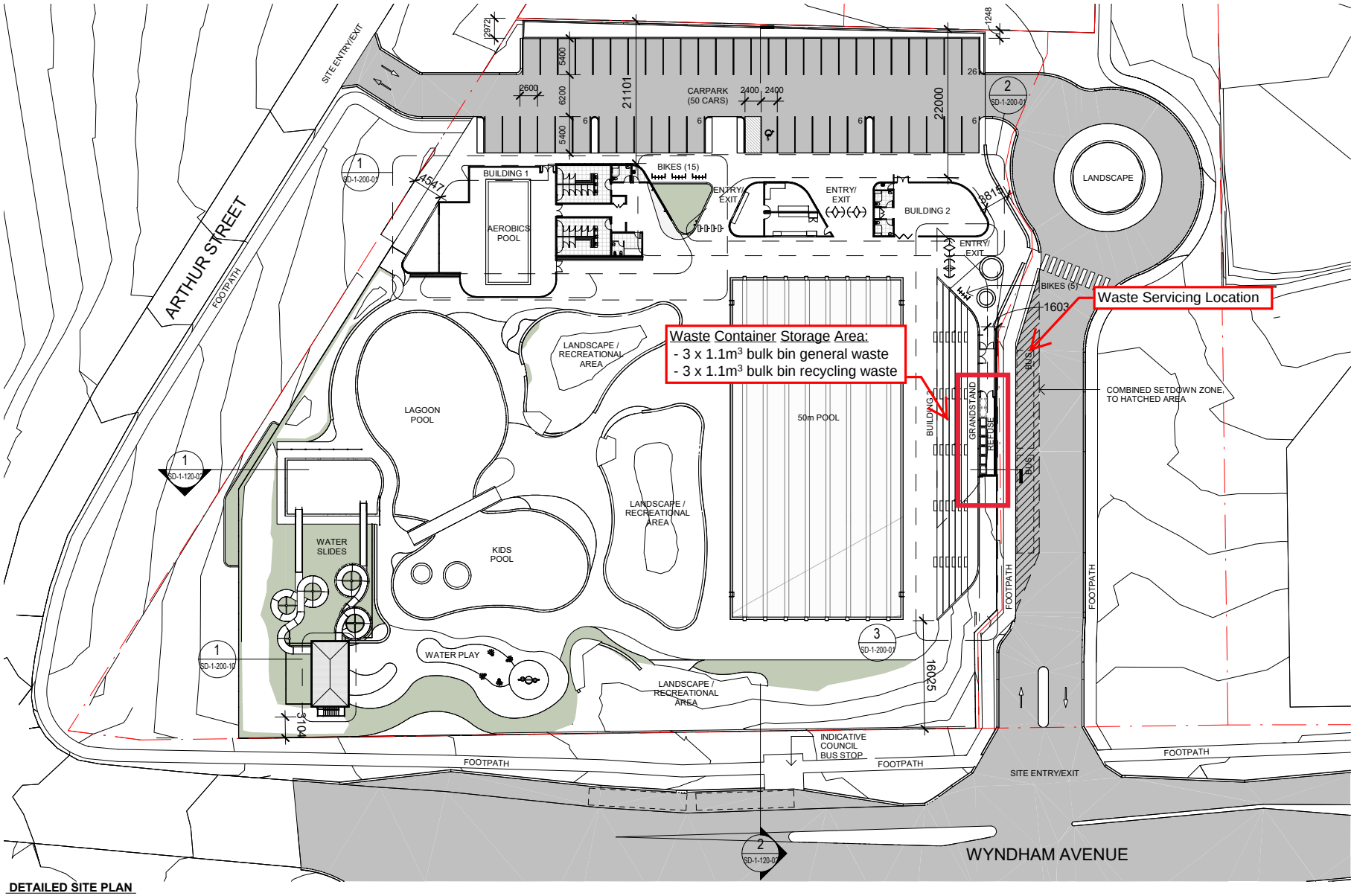
DESIGNED JR	SCALE NTS	CLIENT ZENDEV PTY LD	JOB NUMBER MRA21-156
DRAWN JR	LEVEL DATUM -	PROJECT WASTE MANAGEMENT PLAN 1 & 5 HAMPTON DRIVE, BOYNE ISLAND QLD	DRAWING Figure 001
CHECKED AR	SHEET SIZE A4		
APPROVED AR	CAD FILE	TITLE SITE LOCATION	
DATE AUGUST 2021	ISSUE FINAL		REV FINAL



DETAILED SITE PLAN
1 : 500

REV.	DATE	DESCRIPTION	APRV.
E	29.04.2021	REVISED DA ISSUE	MF
F	13.05.2021	REVISED DA ISSUE	MF
G	14.05.2021	REVISED DA ISSUE	BK
H	25.08.2021	DA RFI	MF

PROJECT: TANNUM MIXED USE PRECINCT
DRAWING NAME: DETAILED SITE PLAN
DRAWING NO.: SD-1-100-03 H
SCALE 1 : 500
25.08.2021
PROJECT NO. 1019
25/08/2021 12:51:47 PM

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DESIGNED: MR	SCALE: AS SHOWN	CLIENT: ZENDEV PTY LD	JOB NUMBER: MRA21-156
DRAWN: MR	LEVEL DATUM: -	PROJECT: WASTE MANAGEMENT PLAN 1 & 5 HAMPTON DRIVE, BOYNE ISLAND QLD	DRAWING: Figure 002
CHECKED: AR	SHEET SIZE: A4		
APPROVED: AR	CAD FILE:	TITLE: SITE LAYOUT, WASTE STORAGE POINT AND BULK BIN SERVICING POINT	REV: FINAL
DATE: AUGUST 2021	ISSUE: FINAL		

3.0 WASTE QUANTITIES

3.1 TYPE OF WASTE

Based on the proposed land uses identified in **Section 2.1, Table 1** below outlines the predicted types of waste that are expected to be generated from the proposed development.

Table 1: Predicted waste types to be generated from the proposed development

Tenancy Type	Predicted Waste Types
Outdoor Sports and Recreation, Kiosk / Café, Gym	General Waste and Recycling Waste

3.2 WASTE QUANTITIES

Calculations of the anticipated waste quantities have been separated into the general waste and recycling components. Where waste generation rates are included in the Waste Management Planning Scheme Policy (specifically the kiosk / café and offices) these have been used to calculate waste volumes. Where no waste generation rates are prescribed in the Policy, industry best practice and experience with other developments of this nature have been used.

Importantly, the quantity of waste likely to be generated from this development can vary greatly due to seasonal influences and one-off events such as swimming carnivals. Also, it has been acknowledged that some patrons will bring their own food which will generate waste in addition to that calculated from the kiosk / café. This has been catered for within the waste generation calculations, selection of bin types and bin numbers. Sufficient space has been provided for these bins, with periods of high demand accommodated for by an increase in servicing frequency as opposed to requiring additional bin numbers and ultimately more storage space.

Once the development is operational, the collection frequency should be reviewed to ensure that collection frequency is sufficient but not excessive.

3.3 COMMERCIAL WASTE GENERATION

The proposed development consists of an Outdoor Sport and Recreation (Aquatic Centre) facility with associated kiosk/ café, water slides, landscaped recreational areas around these pools, gym, offices and change rooms. The development will be provided with general waste and recycling bins to manage the anticipated waste quantities.

The calculated waste quantities for general waste and recycling for the proposed development are outlined below in **Table 2** and **Table 3**.

Table 2: Anticipated general waste quantities from the sports & recreation facility

Tenancy Type	Approximate Floor Space (m^2)	Total Required Waste Capacity (L/day)	Estimated Waste Generation (m^3/week)	Estimated Daily Waste Generation (m^3/day)
Outdoor Sports & Recreation	536	160.80	1.13	0.16
Kiosk / Café	30	24.0	0.17	0.02
Gym	122	24.40	0.17	0.02
Office	60	6.00	0.04	0.01
Outdoor Area	2500	250	1.75	0.25
TOTAL	3248	465.20	3.26	0.46

Table 3: Anticipated recycling quantities from the sports & recreation facility

Tenancy Type	Approximate Floor Space (m^2)	Total Required Waste Capacity (L/week)	Estimated Recycling Generation (m^3/week)	Estimated Daily Recycling Generation (m^3/day)
Outdoor Sports & Recreation	536	214.40	1.50	0.21
Kiosk / Café	30	12	0.08	0.01
Gym	122	48.80	0.34	0.05
Office	60	24	0.17	0.02
Outdoor Area	2500	250	1.75	0.25
TOTAL	3248	549.20	3.84	0.55

3.4 TOTAL WASTE CAPACITY

The Outdoor Sport & Recreation facility is expected to generate approximately **0.46m^3/day** of general waste and approximately **0.55m^3/day** of recycling waste.

4.0 WASTE & RECYCLING STORAGE

This section outlines the general design criteria for the waste storage point, as required by *the Waste Management Planning Scheme Policy* along with a description of the proposed bins to be used.

4.1 COMBINED WASTE STORAGE AND SERVICING POINT

It is proposed that there will be a combined Waste Storage and Servicing Point at the rear of the grandstand adjacent to the main entrance driveway housing both the general waste and recycling waste bins (Refer **Figure 2**). General waste and recycling will be contained in 1.1m^3 bulk bins.

Staff from the facility will place waste directly into their respective general waste or recycling bulk bin as required. The waste storage point will also act as the servicing point and is discussed in more detail in **Section 5.2** below.

The combined waste storage and servicing point must be designed and constructed to meet the requirements listed below:

1. Designed to allow the bins to be easily manoeuvred for servicing (no steps or lips);
2. Screened to ensure bins are not visible from a public place or sensitive land use to minimise their visual impact on the streetscape and surrounding areas;
1. Safe access to the waste container storage area;
2. To minimise the amount of general waste disposed of to landfill, provide adequate storage for recyclable waste that users can safely and easily access;
3. Constructed hardstand area with a solid concrete base or acceptable equivalent;
4. Roofed and designed to prevent entry to rainwater;
5. Graded to fall to a drainage point within the storage point;
6. Drainage point connected to sewer via a trapped gully and in accordance with trade waste requirements;
7. Provided with a hose-cock for cleaning; and
8. Sealed and air-conditioned to prevent odours impacting on patrons using the grandstand.

4.2 PROPOSED WASTE BINS

To ensure that the design of the combined waste storage and servicing point is sufficient, the details of the type of waste and number of bulk bins provided to accommodate the general waste and recycling generated from this development is outlined in **Table 4**.

Table 4: Details of waste and bins for the sports recreation facility

Waste Type	Bins Proposed in Storage Area	Minimum Collection Frequency
General Waste	3 x 1.1m^3 General Waste Bulk Bins	Once a week with an increase in frequency based on demand.
Recycling Waste	3 x 1.1m^3 Recycling Waste Bulk Bins	Once a week with an increase in frequency based on demand

Note: if necessary, where more frequent servicing is required the number of bins could be reduced and frequency increased accordingly. Liaise with the commercial waste contractors as necessary.

4.3 DIMENSIONS OF WASTE CONTAINERS

Table 5 below provides dimensions of the Bulk Bins to be used on-site.

Table 5: Details of waste storage bins

Bin Type	Volume	Height (mm)	Depth (mm)	Width (mm)	Collection Vehicle Type
Bulk bin	1.1m^3	1465	1070	1360	Rear Lift Truck

4.4 DRAINAGE AND BIN WASH

Appropriately sized bin wash facilities (including access to a hose-cock) will be provided in the combined waste storage and servicing point (Refer to **Figure 2**).

The area will be graded to a central drainage point that is connected to sewer via a trapped gully in accordance with trade waste requirements. The area will also be roofed and designed to prevent infiltration of stormwater to the sewer system. It will be the responsibility of the site management/contracted cleaning staff to wash bins and maintain the cleanliness of the combined waste storage and servicing point.

5.0 DETAILS OF COLLECTION

5.1 FREQUENCY

Waste servicing frequencies for general waste and recycling bulk bins for the development have been outlined in **Table 4.** The general waste and recycling bulk bins are anticipated to be serviced once a week. The weekly service is based on 3 x 1.1m^3 bins for general and recycling waste. This frequency can be increased where an increase in waste generation occurs during summer periods and other high usage times.

Also, under normal operating circumstances the bin numbers could be reduced and servicing frequency increased if needed. These decisions come down to operational needs, however, sufficient spatial allocation has been provided for the storage of bins for a weekly service.

5.2 COMBINED WASTE STORAGE AND SERVICING POINT

As previously mentioned in **Section 4.1**, the location of the waste storage point and bulk bin servicing point are combined behind the grandstand and adjacent to the main entrance driveway. This has been designed to minimise potential adverse odour impacts on the adjoining residential zoned land and from vehicle servicing (Refer to **Figure 2**). Bulk bins will be serviced at the kerbside by the engaged commercial waste contractor who will enter the site to collect the bins and return them to the waste storage area. Advice has been received from a waste contractor servicing the area that these arrangements are acceptable to them (refer **Attachment A**).

The entrance and roundabout have been constructed to cater for large buses as such this servicing location would be suitable for the rear loading waste collection vehicle.

5.3 COLLECTION VEHICLE ACCESS

The combined waste storage and servicing point has been located to allow for easy access by collection vehicles and has been provided with sufficient turnaround area and clearance heights. **Table 6** details the dimensions of the Rear Lift waste collection vehicles that will be used to service the development.

Table 6: Rear Lift truck dimensions

Parameter	Front Lift truck
Height (m)	3.9
Width (m)	2.5
Length (m)	9.84
Working Height (m)	3.9*
Min Turning Circle (m^2)	11.5 (wall-wall)
Min Turning Circle (m^3)	10.5 (kerb-kerb)

*Note that the waste collection vehicle clearance height (working height) is to be calculated according to the following formula as a minimum:

SUITABLE CLEARANCE = VEHICLE OPERATING DIMENSION + 100mm + CLEARANCE FOR SERVICES + CALCULATION FOR ROADWAY GRADIENT

6.0 SUMMARY

The main objectives of this report are to provide details for optimal waste management in the operational phase of the development.

Details of this Waste Management Plan are summarised below:

- The subject site is located at Lot 1 & 5 Hampton Drive, Boyne Island QLD 4680 on land described as Lot 1 RP 619033 & Lot 5 RP 620667;
- It is proposed to develop an Outdoor Sport and Recreation (Aquatic Centre) facility with associated, kiosk / café, water slides, landscaped recreational areas around these pools, gym, offices and change rooms;
- The waste for the proposed development is expected to consist of general waste and recycling waste;
- The proposed development is expected to generate approximately **0.47m^3/day** of general waste and approximately **0.55m^3/day** of recycling waste;
- 1.1m^3 bulk bins will be used for the general waste and comingled recyclables;
- General waste and recycling waste will be delivered to the combined waste storage and servicing point directly by staff/contracted cleaning personnel;
- The combined waste storage and servicing point is located at the rear of the grandstand adjacent to the main entrance roadway. Waste containers will be serviced from the kerb side of the main entrance;
- Appropriately sized bin wash facilities (including access to a hose-cock) will be provided in the combined waste storage and servicing point; and
- It will be the responsibility of site management/contracted cleaning personnel to wash bins, and to maintain the cleanliness of the combined waste storage and servicing point.

ATTACHMENT A

Waste Contractor Advice in Relation to Servicing the Waste Containers

From: Rob Cusbert <Rob.Cusbert@jjswaste.com.au>
Sent: Monday, 23 August 2021 4:08 PM
To: mrigby@mraenvironmental.com.au
Subject: Re: P5064 | Boyne Island Aquatic Centre - Waste - Information Request

Mark
Have spoken to our Gladstone office and confirm no issues with service requirements.
Regards
Rob

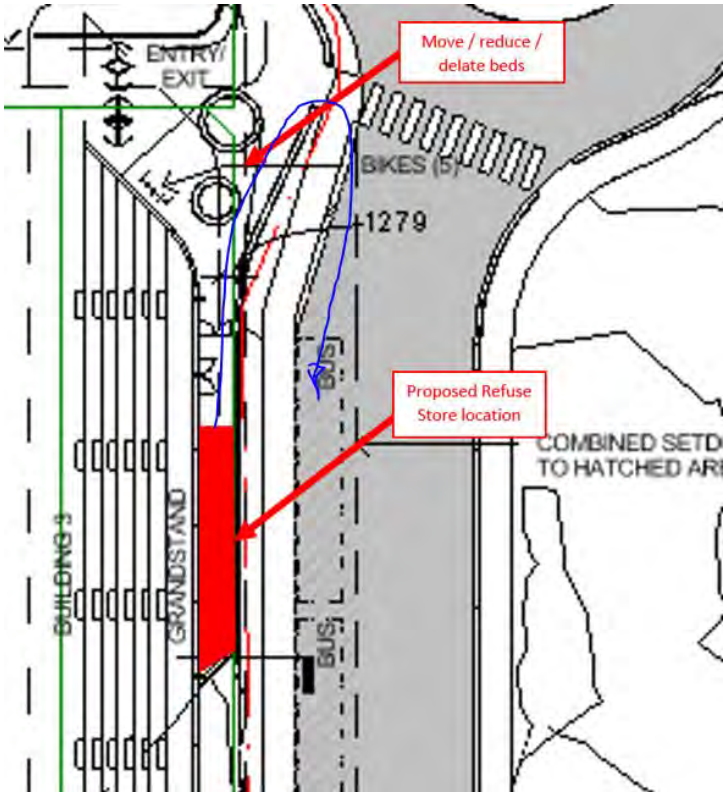
Sent from my Samsung Galaxy smartphone.

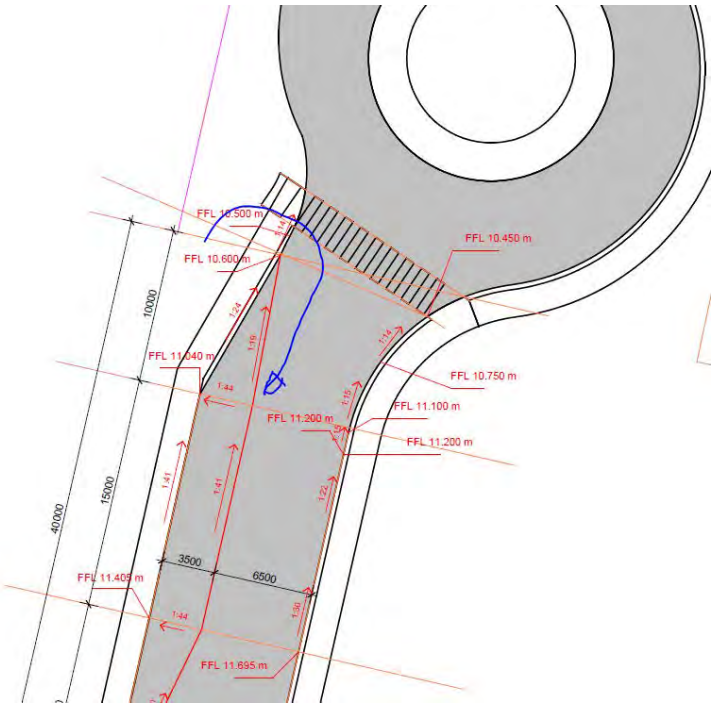
-------- Original message --------
From: Mark Rigby <mrigby@mraenvironmental.com.au>
Date: 23/8/21 9:51 am (GMT+10:00)
To: Rob Cusbert <Rob.Cusbert@jjswaste.com.au>
Subject: FW: P5064 | Boyne Island Aquatic Centre - Waste - Information Request

Hi Rob as discussed can you advise if JJs would service 1.1m3 bins as per the below (1st graphic) for the proposed Boyne Is Aquatic Centre. Apparently it is around 35m distance to the bin store room behind the grandstand.

There is a grade of 1:24 on the footpath at the front to get to the truck that will stand where the 'Bus' is shown, is this ok (see second graphic).

The adjacent land grade does not permit coming directly out of the waste room to the refuse truck which will be located in a loading zone. Thanks Rob.





Regards

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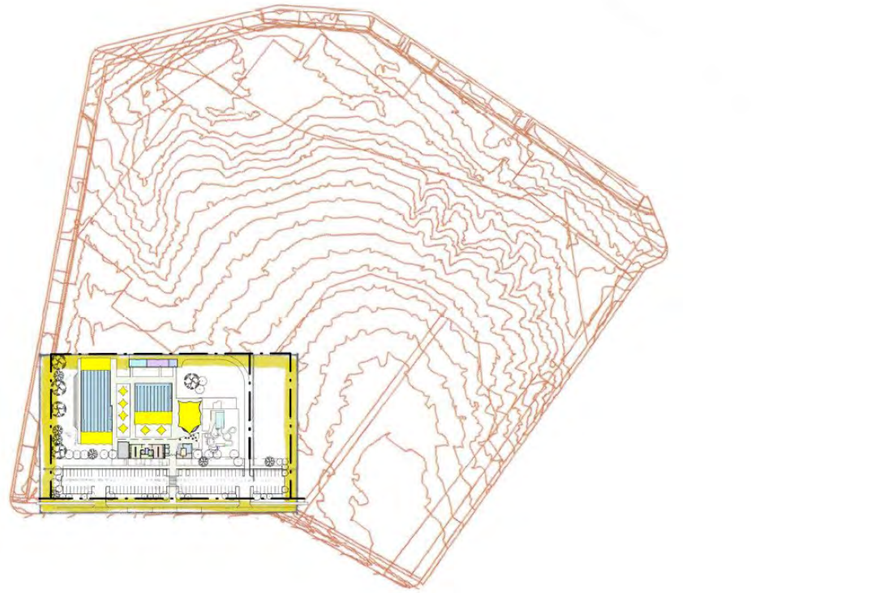
OPTIONS ANALYSIS – SITE COMPARISSON



FACILITY DESIGN GROUP
Architecture & Construction

PROJECT: BOYNE TANUM AQUATIC RECREATION CENTRE

CLIENT:

DRAWING TITLE: SITE PLAN 1

DRAWING No. A050 | REVISION

SCALE 1 : 2000 | DATE 6/5/20 | JOB No. Project Number

20 Dunn Street, Tannum Sands

Wyndham Ave and Arthur Street

SEPTEMBER 19, 2021

ZENDEV PTY LTD

Site	Flooding Impact	Hazards	Ownership	Cost to Council	Biodiversity	Scale of Land Area	Road Access	Public Transport	Active Transport	Accessibility (residential Population)	Potential land use conflict	Proximity to education	Proximity to centre activities	spill over economic benafit	Servicing	Total
GRC's site: 20 Dunn Street Tannum Sands	5	2	5	3	2	5	4	3	3	4	4	5	4	3	3	**55**
Subject Site: Arthur Street & Wyndham Avenue	5	5	4	4	5	4	5	5	5	5	5	5	5	5	5	**72**

20 Dunn Street, Tannum

Flooding

20 Dunn Street, Tannum

Not affected by Flood Hazard Overlays.

Note: the subject property is made up of 3 lots, on of which is 20 Dunn Street and as shown to the right – is effected by Flood overlay mapping. It is noted that the proposed Aquatic Centre is to be constructed on the other side of the property off Coronation Drive and that this is unlikely to effect the property.

SCORE: 5

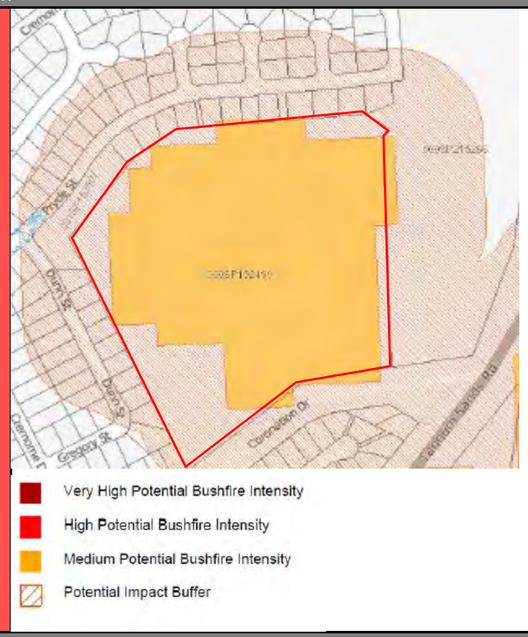
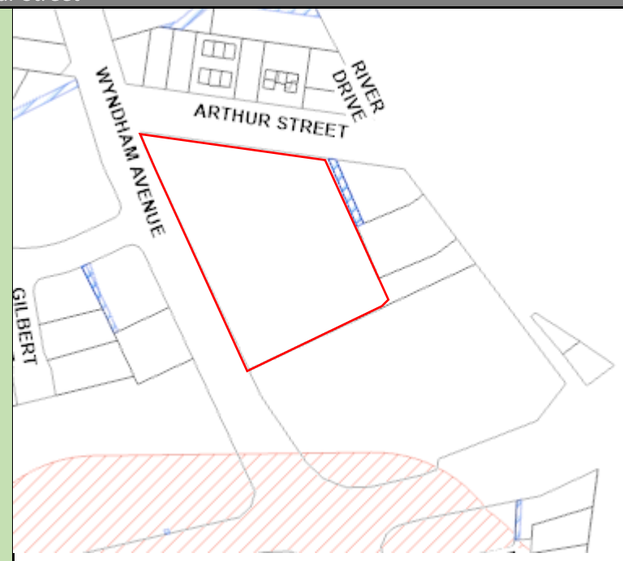
Wyndham Ave and Arthur Street

Wyndham Ave and Arthur Street

Proposed lot 1 which is subject to this Aquatic Centre Development application is not affected by Flood Hazard Overlays

SCORE: 5

Hazards

20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
Site subject to bushfire hazard		No hazards	
SCORE: 2		SCORE: 5	

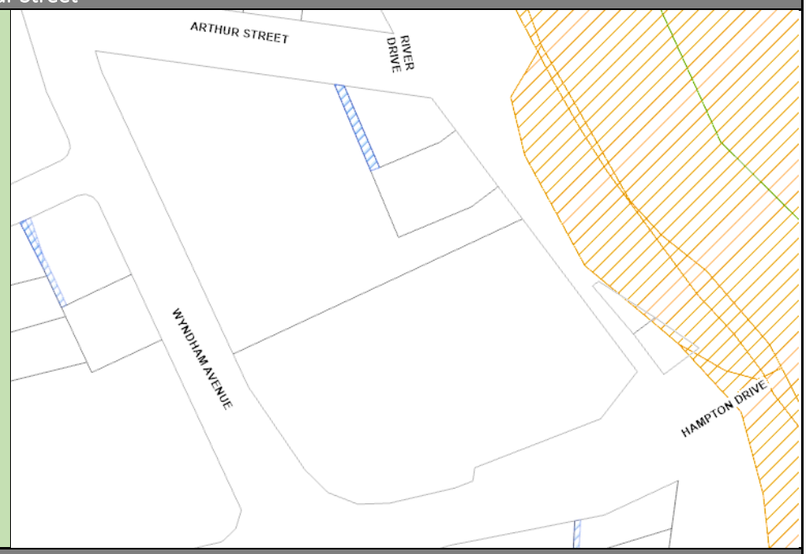
Ownership

20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
Site is owned by Council		Site is in private ownership with the developer actively seeking to partner with Council	
SCORE: 5		SCORE: 4	

Cost to Council

20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
Requirement to build, operate and maintain		Construction cost by others, operation cost by GRC as a commercial tenant	
SCORE: 3		SCORE: 4	

Biodiversity

20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
Site is significantly vegetated and include in biodiversity overlays		No biodiversity values	
SCORE: 2		SCORE: 5	

Size of land

20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
Sufficient land size.		Sufficient land size.	
SCORE: 5		SCORE: 4	

Road Access

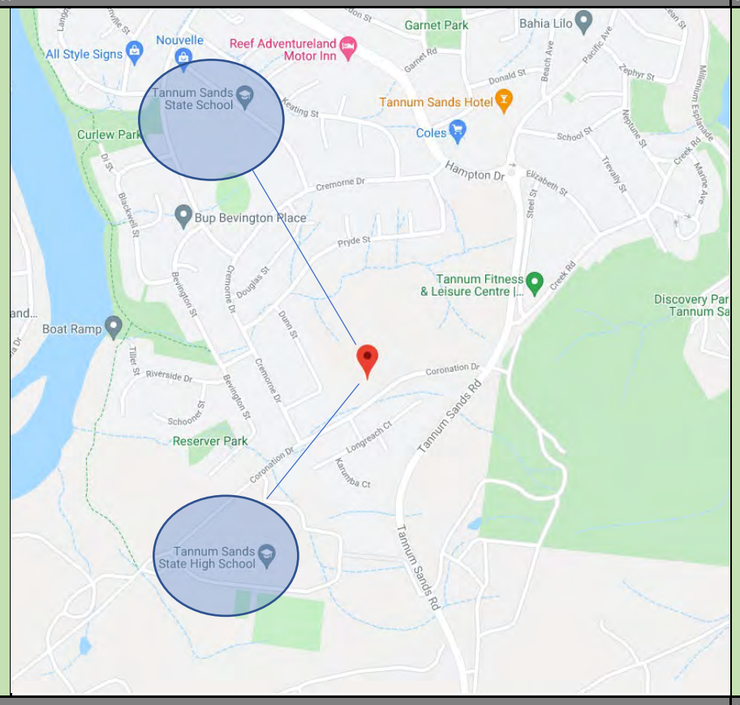
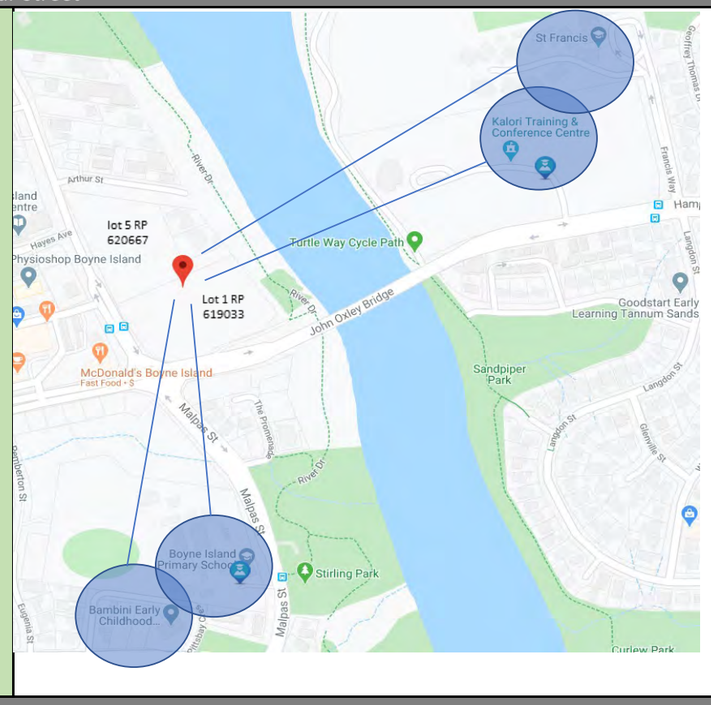
20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
Large road frontage however the proposed access is not visible from the main road. (Tannum Sands Road)	As shown in **Figure 6-4**, the site has direct road frontage to Coronation Drive along its southern boundary, with no existing driveways that provide vehicular access to the site. 	Large road frontage with Access from 3 Street frontages plus potential for future access from the Boyne River. The development application also proposes an internal road with road side parking and a Buss pick-up/ drop off zone and a taxi parking/ pick-up area.	
SCORE: 4		SCORE: 5	

Public transport

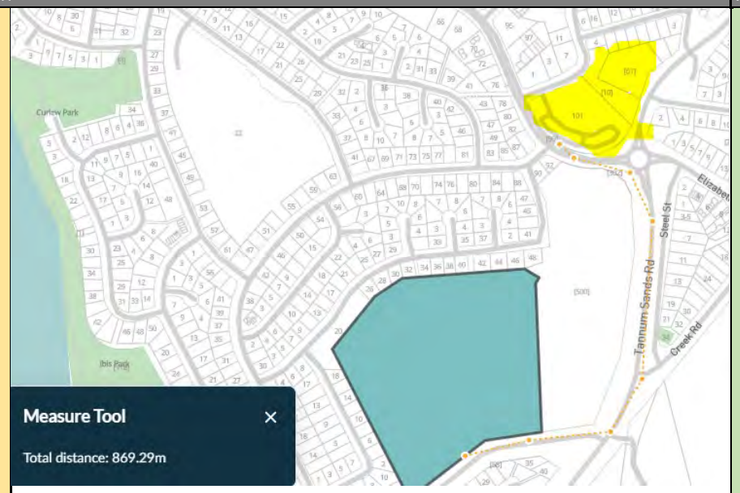
20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
No bus stop with in 400m radius (approx. 800m walking distance)		Located within immediate proximity of bus stop	
SCORE: 3		SCORE: 4	

Active transport

20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
Site is not improved with footpaths, embankments & swales along the road frontage may limit ability to establish footpaths, and narrow verge / hard shoulder for cycling. No pedestrian crossings. No footpaths along opposite side of the road.		Site has direct access to Turtle Way bikeway. Centenary Drive and Arthur Street frontages are already improved with footpaths. Wyndham Ave frontage is relatively level and able to establish footpaths. Existing pedestrian crossing located at Arthur St / Wyndham Ave, and signalised lights crossing at Centenary Dr / Wyndham Ave. Footpaths along the opposite side of Wyndham Ave.	

SCORE: 3		SCORE: 5	
Accessibility residential population			
20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
Immediate residential population but with poor active transport infrastructure, see above.		Immediate residential population but with good active transport infrastructure, see above.	
SCORE: 4		SCORE: 5	
Proximity to educational facilities			
20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
Tannum Sands State School, approximately 250 metres north-west of the site, Tannum Sands State High School, approximately 300 metres south-west of the site.		Approximately 300m to Boyne Island State School and Boyne Island Primary School	
SCORE: 5		SCORE: 5	
Potential land use conflict			
20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
Site has direct shared boundary with 11 dwellings. 20 Dunn Street is considered suitable for residential development and is zoned Emerging Community.		Site has direct shared boundary with 2 dwellings. The subject site is already in the Centre Zone with high anticipated visitors expected to frequent the site once developed.	
SCORE: 4		SCORE: 5	

Proximity to centre activities

20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
Tannum Sands Shopping Centre, approximately 800 metres north-east of the site		Site is located within a centre zone and is acknowledged within the Strategic Framework as the Boyne Island Centre Development. The site is adjacent the existing Boyne Plaza Shopping Centre.	 *Source: MapInfo; Nearmap*
SCORE: 4		SCORE: 5	

Likelihood of spill over economic benefits

20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
Site is not located within close proximity of an existing centre, recreation, entertainment, or community facilities		Site is located within a centre, within close proximity of the Boyne Tannum Community Centre, Boyne Tannum HookUp and has opportunity as part of a larger masterplan for the site to contribute to a mixed used (sport and recreation, entertainment, tourism, residential and retail) centre	
SCORE: 3		SCORE: 5	

Servicing

20 Dunn Street, Tannum		Wyndham Ave and Arthur Street	
The site is not currently connecter to sewer, and the development will require upgrades to the downstream gravity mains from a 150mm diameter to a 225mm diameter		The site is connected to all necessary urban infrastructure and no upgrades are required.	