



Shire of Wyndham | East Kimberley
Kununurra Aquatic and Leisure Centre Redevelopment
Design Report

A photograph of a swimmer in a pool, viewed from above. The swimmer is wearing a red and black swimsuit and is in the middle of a stroke, with their arms extended. The pool is divided into lanes by blue, red, and white lane lines. The water is a deep blue color, and the lighting is somewhat dim, creating a moody atmosphere.

Content

3	Introduction
3	Project Team
4	Project Description
5	The Design Logic
10	Master Plan Drawings



INTRODUCTION

Donovan Payne Architects (dP(A)) has been engaged by the SHIRE of WYNDHAM | EAST KIMBERLEY to produce a master planning study of the existing Kununurra Leisure Centre. Following a site visit late July 2018, discussions with council and stakeholders, dP(A) produced a return brief outlining Client Objectives, Constraints, existing facilities and scope.

The return brief was used to inform the master plans and high-level cost estimates contained within this report.

PROJECT TEAM

Donovan Payne Architects – Scott Oswald, Architect

NBQSS – Neil Butler, Quantity Surveyor



PROJECT DESCRIPTION

The existing Kununurra Aquatic Leisure Centre is now over 30 years old. It no longer meets modern design/building code standards; nor does it meet the expectations of today's leisure-centre user groups. The Aquatic Facilities have reached the end of their serviceable life and require major rectification works.

The project is to produce a concept master plan for a new aquatic facility which will replace existing facilities; and to reconfigure, update and modify the existing sports centre to achieve more programmable areas with current NCC / DDA code compliance.

This report proposes a staged development of the current site and existing buildings into a modern community sports facility that meets the community needs. We propose three stages with a fourth stage being optional or future works.

Stage 1 – Aquatic Facilities.

Stage 2 – Zero depth water 'SplashPad'.

Stage 3 – Sports Centre Facilities.

Stage 4 – Addition Facilities (optional or future)



Bold Park - Street Signage



Craigie - Shaded Waterplay

THE DESIGN LOGIC

Site

Reduce the overall site footprint to create a larger development site North East of the recreation facilities.

Street Presence

Street signage along Coolibah Drive to provide way finding and signal the entry to the centre. It can be an advertising opportunity for centre programmes and community events.

Paved pedestrian access from Coolibah Drive as part of the way finding and street signage.

Aquatic facilities

The aquatic facilities, directly north and at the same level of the entry foyer, will improve visual surveillance by staff and provide universal access to all water bodies.

The facility includes an 8 lane x 50m pool with entry steps and universal-access ramp; Leisure Pool with zero beach access, variable depth water, walk lane/program pool for teaching, learn-to-swim, Turbo channel, relaxation grottos; dedicated Tots pool with separate water supply and filtration system to meet WA health standards for hygiene reasons.

All water bodies to have retractable shades to provide protection for users and reduce heating of the pools water, during hotter months.

In addition to the above facilities, a zero-depth waterplay facility which could provide a range of interactive spray features, such as a tipping bucket; water cannons; spray tunnels; water umbrellas and the like. Adjacent the main entry this facility would be fenced to provide both 'free' public access, facility user access or private use access (for children or adult parties).

The existing change facilities, both aquatic and dry-sports will be re-developed to current standards. Modern wet and dry change room facilities with DDA compliant and family change areas, providing change facilities for all users.

To the North West end of the site is a new plant room with adjacent covered service courtyard; pool equipment store with direct access to the main pool concourse; multi-purpose room (club room, meeting room, training room or party venue) with adjacent BBQ kitchen area.

Aquatic Landscaping

Landscaping for external pools is an important design exercise. It needs to be the subject of a detailed design approach, involving paving extent and type; extent of lawn and other foliage types; selection of appropriate trees species; shade structures; and the full range of landscape opportunities and details.

A high level landscaping plan has been indicated on the concept master plan, with opportunities for BBQ and picnic areas associated with the aquatic and splashpad facilities; and a nominal paving layout for the aquatic area has been indicated.



Ruth Everuss - Aquatic Landscaping



Bold Park - Roof mounted evacuated tube

Pool Heating

- **Solar heating evacuated tube**

Given the only times requiring heating of pools in the Kimberley would be in 'off season / dry season, when there is abundant solar insolation, an appropriate system to consider, would be solar evacuated tube. Given appropriate sizing, dependent on finalised water bodies surface and volume it would be possible to lift ambient water temperatures to a comfort level for lap swimmers of say; 26C - 27C.

Although requiring definitive design to size collector areas and pumping systems, a notional estimate of cost for such an evacuated tube solar heating system would be in the order of \$300,000 (metro prices).

Such a system should assist in providing enough additional heat to enable operations of both water bodies, however it would also be prudent to provide a 'back-up' heating system, such as a heat pump unit to assist to maintain temperatures if and when sunny conditions do not prevail and temperatures are not able to be maintained by solar alone. This may add an additional \$60-70K to capital investment.

The final cost being influenced by heating requirements, affected by whether sunshades are retracted in the 'dry season' to aid solar gain and whether insulated thermal pool blankets would be used to prevent overnight heating losses. Both those variables would influence the final collector area and cost.

The cost of running such a system is principally only the cost of energy for the pumping of water through the system and the cost of maintenance.

- **Heat Pumps**

Heat pumps are the most efficient way of utilising electrical energy to provide pool water heating. As with the solar collector system above, the final costs of the system installation and operation are influenced by water surface areas, volumes and heat gains (shades removal) and losses (use of blankets). As a rough guide, such a system would be in the order of some \$250K but would have the ongoing costs of electrical energy. The final cost of such systems is a design exercise in itself and a study of energy demands and losses would be needed to establish the parameters.

- **Boiler**

Gas boilers are an accepted method of pool water heating. The heat is available quickly, on-demand and the capital cost of boilers is low by comparison with alternative technologies.

As an indicative cost comparison a large gas boiler could be installed for a cost in the order of \$70-90K. However although the energy conversion efficiency of boilers is becoming more efficient, the cost of gas is increasing. The Town of Kununurra does not have reticulated gas and would require gas supply in large tanks which would be more expensive.



Bold Park Aquatic Centre - Main Entry

Water Treatment

- **Chlorine Gas disinfection**

Chlorine gas remains the preferred method of pool water disinfection. It is easier to manage water balance and residual chlorine levels, although it is problematic in terms of safety and storage compliance requirements. Given the location in the Kimberley and the size of the pool water bodies proposed, it is likely that a storage capacity in the order of 500kg would be required to meet usage and delivery schedules. Storage of chlorine requires compliance and approval as a dangerous goods and must be stored in a purpose build facility with adequate isolation of public areas.

- **Salt water pool and disinfection**

A salt water pool operates at a salt concentration of about 10% that of sea water and provides a very pleasant and non-irritating quality of water.

The salt content provides enough chlorine to be released by electrolysis to maintain chlorine levels adequate to satisfy WA Health requirements for residual chlorine.

Such systems require only the addition of salt and electrical energy and are becoming more popular and reliable and would be recommended for the Kununurra Pool.

WA Health requires a backup disinfection system for salt water pools.

The salt water cell need regular six monthly maintenance by a qualified person.

- **Sodium hypochlorite – liquid chlorine**

Liquid chlorine systems are principally inhibited by the viability of the chlorine levels remaining after transport and storage. Given the comparative remoteness of Kununurra and time between deliveries, the storage tanks would require to be greater than in more accessible metro areas and the quality of the stored sodium chlorite would be further compromised by length of storage time and ambient temperatures. Both of which diminish available chlorine levels.

- **Calcium hypochlorite – solid chlorine**

This is a comparable chlorine delivery system to liquid chlorine and which could be considered to get around the major issues associated with transport and storage. However, these dry chlorine systems do result in a speedier build-up of total dissolved solids, which compromise water quality and clarity and as a result, require more regular dilution and subsequently higher water use in the overall system.

- **Ultra Violet (UV) disinfection**

UV is an effective disinfectant but under WA Health regulations, cannot be used as a stand-alone system. However, it does have some benefits when used in supplement to other chlorine based systems. It does enable the residual levels of chlorine to be reduced, thus reducing overall chlorine use and the water quality appears more 'polished' in clarity and provides less irritation to sensitive skins. The benefits of UV are more apparent in indoor pools where there is a greater sensitivity to airborne chlorine levels. The cost of installing UV is likely not justified in the Kununurra Pools development.



Existing Recreation Facility

The main entry, in a similar location to the original 1984 design, directly faces Coolibah Drive and carpark, with a paved link to Coolabah Drive. This entry provide a clear "arrival" signal; and leads through to the entry foyer.

The large entry foyer area with combination reception/control bench and kiosk servery will be the main hub to the centre which has visual access to aquatic facilities, gymnasium and sports hall. A new Administration area, Managers Office, Staff Break-out/meeting room with First Aid adjacent will consolidate the staff areas into a central location, enabling staffing and management efficiencies.

This new arrangement will be the central hub to the recreation facilities, providing staff with visual access to both, aquatic and dry sports zones. Café style seating internally and externally at the main entry provides a gathering / meeting place for people before and after programmes.

Re-configure underutilized male and female change area south of existing gymnasium into three Family/Universal Access change areas to allow the gymnasium area to slide south, allowing for the above mentioned entry foyer. Size and shape of the gymnasium will remain the same. A possible future extension to the east, increasing the gymnasium footprint by 70m².

Additional storage to the south west corner of the building in the form of a large insulated building which provide separate lockable storage units, with access from both the sports hall and squash courts as well as external access.



Additional Facilities

Additional facilities (optional), budget dependent.

New Community Hall

Re-configure existing council administration area into a multi-purpose community hall with male, female, universal access toilets and tea prep facilities.

Emergency Evacuation Centre Kitchen

Re-configure one of the underutilized off-stage change facilities into a commercial kitchen suitable for an emergency evacuation centre. Can be used for catering function.

Update and convert the second off-stage change room into a unisex change facility.

Fully Shaded Playground

Fully shaded and fence playground adjacent main entry.

Gymnasium extension

Additional 70m² of gymnasium floor space.



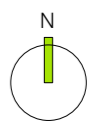
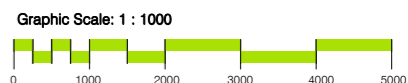
Master Plan Drawings

Mandurah Aquatic Centre - Splash Pad and zero beach entry



LEGEND

- 1** EXISTING SPORTS CENTRE
- 2** PROPOSED NEW AQUATIC AREAS
- 3** PROPOSED NEW SERVICE AREAS
- 4** PROPOSED NEW AQUATIC AMENITIES
- 5** EXISTING UNUSED SHIRE OFFICES
- 6** EXISTING CAR PARKING
- 7** PROPOSED DEVELOPMENT SITE





LEGEND

stage 1 - Aquatic Facilities

- 1** 8 LANE 50M POOL including DDA compliant ramp and entry stairs
- 2** PROGRAMME AND LEISURE POOL including walk lanes, Learn to Swim, Turbo Channel, Zero beach entry
- 3** TOTS POOL
- 4** RENOVATED CHANGE ROOM AND TOILET AREA to include
 - Aquatic Male and Female Change Facilities
 - Dry sports Male and Female Change Facilities
 - Aquatic Family / Universal Access Change Facility
 - Dry sports Family / Universal Access Change Facility
- 5** MULTI-PURPOSE ROOM
 - Club Room
 - Training Room
 - Function Room
 - Meeting Room
- 6** COVERED OUTDOOR BBQ KITCHEN AREA
- 7** POOL STORE
- 8** POOL PLANT ROOM with outdoor service courtyard and new back of house service entry to the existing stage.
- 9** SCHOOL ENTRY
- 10** EXISTING 25M POOL to be demolished post completion of the new pools

General aquatic notes

- Extend site to the north over Agate Lane.
- All water bodies to have retractable shade sails.
- Existing 25m pool to stay in operation until the completion of stage 1.

stage 2 - Zero depth water 'SplashPad'

- 12** ZERO DEPTH WATER 'SPLASHPAD'
 - shade sails
 - 1.2m control fence to Aquatic centre
 - 2.1m high fence with sliding gate to allow public access from main entry
 - plant room building to side of existing council building
- 13** BBQ HUTS

stage 3 - Sport Centre Facilities

- 14** RE-CONFIGURED ENTRY AND RECEPTION
New entry doors facing the carpark, new entry foyer area with combination reception/control bench with kiosk servery.
- 15** OFFICE AND ADMINISTRATION AREA
New administration area, Managers Office, Staff Break-out/meeting room and First Aid.
- 16** GYMNASIUM
Gymnasium to move south and remains the same size as the existing.
- 17** FAMILY / UNIVERSAL ACCESS CHANGE
New Unisex Family / Universal Access change facilities.
- 18** CONSOLIDATED USER GROUP STORAGE
Large consolidated storage area with separate user group storage areas.

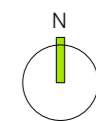
stage 4 - Additional Facilities

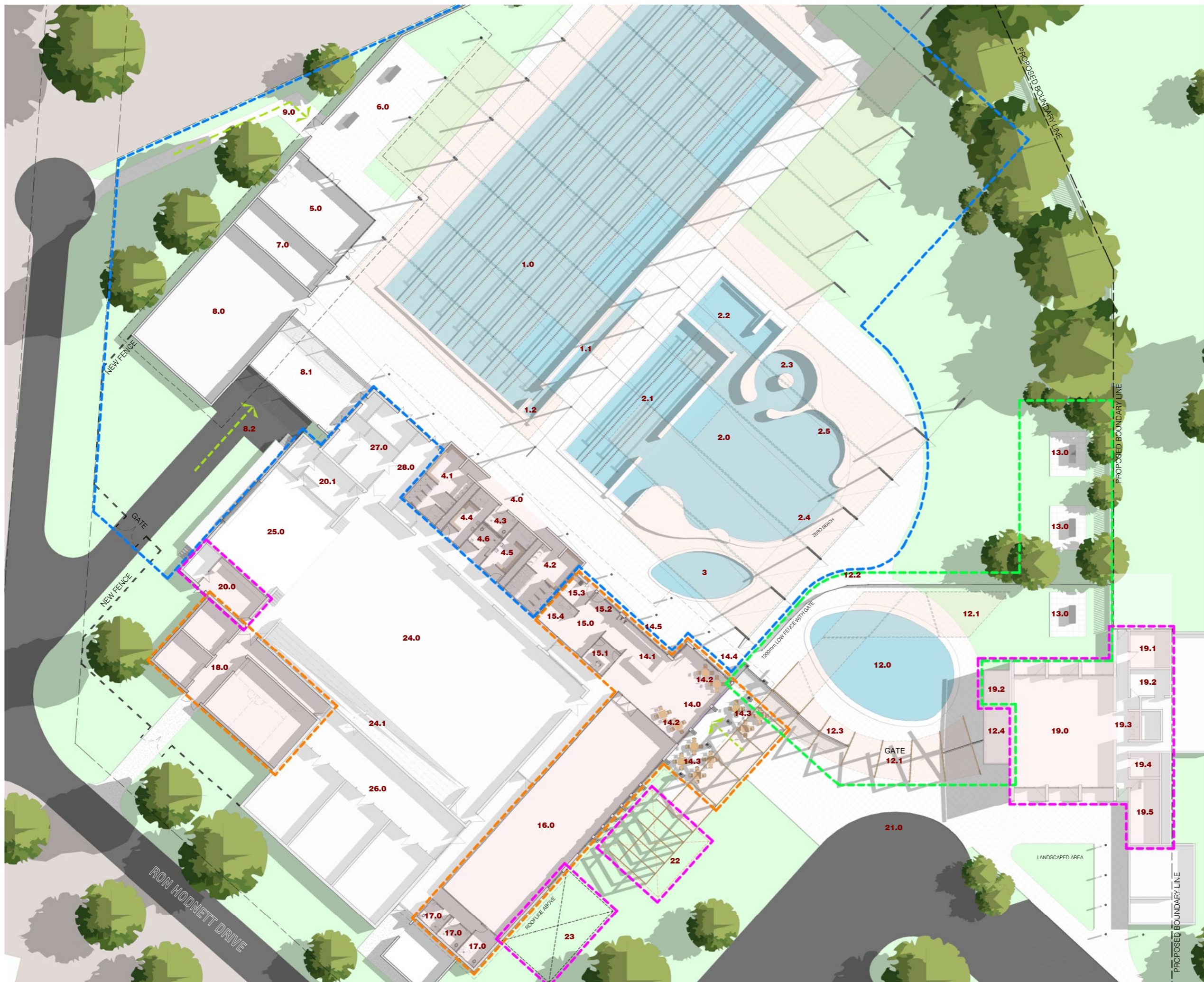
- 19** NEW COMMUNITY HALL
Re-configure existing council administration area into a multi-purpose community hall with male, female, universal access toilets and tea prep facilities.
- 20** EMERGENCY EVACUATION CENTRE KITCHEN
Re-configure one of the underutilized off-stage change facilities into a commercial kitchen facility suitable for an emergency evacuation centre. Update and convert the second off-stage change room into a unisex change facility.
- 21** FULLY SHADED PLAYGROUND
- 22** GYMNASIUM EXTENSION
Additional 70m2 of gymnasium floor space.
- 23** NEW STREET SIGNAGE AND ENTRY PAVING
Create a street presents with way finding signage and Entry Path.

REFURBISHED AREAS

EXISTING POOL STRUCTURES

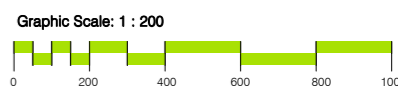
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LEGEND

- stage 1 - Aquatic Facilities**
- 1.0 8 LANE 50M POOL
- 1.1 DDA Compliant Ramp
- 1.2 Entry Stairs
- 2.0 PROGRAMME AND LEISURE POOL
- 2.1 WALK LANES
- 2.2 LEARN TO SWIM
- 2.3 TURBO CHANNEL
- 2.4 ZERO BEACH ENTRY
- 2.5 RELAXATION GROTTO
- 3.0 TOTS POOL
- 4.0 RENOVATED CHANGE ROOM AND TOILET AREA
- 4.1 AQUATIC MALE CHANGE
- 4.2 AQUATIC FEMALE CHANGE
- 4.3 AQUATIC FAMILY / UNIVERSAL ACCESS CHANGE
- 4.4 DRY SPORTS FEMALE CHANGE
- 4.5 DRY SPORTS MALE CHANGE
- 4.6 DRY SPORTS FAMILY / UNIVERSAL ACCESS
- 5.0 MULTI-PURPOSE ROOM
 - Club Room
 - Training Room
 - Function Room
 - Meeting Room
- 6.0 COVERED OUTDOOR BBQ KITCHEN AREA
- 7.0 POOL STORE
- 8.0 POOL PLANT ROOM
- 8.1 OUTDOOR SERVICE COURTYARD
- 8.2 BACK OF HOUSE SERVICE ENTRY
- 9.0 SCHOOL ENTRY
- stage 2 - Zero depth water 'SplashPad'**
- 12.0 ZERO DEPTH WATER 'SPASHPAD'
- 12.1 SHADE SAILS
- 12.2 1.2M CONTROL FENCE TO AQUATIC CENTRE
- 12.3 2.1M HIGH FENCE WITH SLIDING GATE
- 12.4 PLANT ROOM BUILDING
- 13.0 BBQ HUTS
- 21.0 MODIFICATION TO EXISTING CAR PARK AT FRONT ENTRY
- stage 3 - Sport Centre Facilities**
- 14.0 ENTRY FOYER
- 14.1 RECEPTION / KIOSK SERVERY
- 14.2 INDOOR LOUNGE
- 14.3 OUTDOOR LOUNGE
- 14.4 AQUATIC LOUNGE
- 14.5 AQUATIC SERVERY
- 15.0 ADMINISTRATION
- 15.1 MANAGERS OFFICE
- 15.2 LIFEGUARD STATION
- 15.3 FIRST AID
- 15.4 STAFF BREAKOUT/MEETING ROOM
- 16.0 GYMNASIUM
- 17.0 FAMILY / UNIVERSAL ACCESS CHANGE
- 18.0 CONSOLIDATED USER GROUP STORAGE
- stage 4 - Additional Facilities**
- 19.0 NEW COMMUNITY HALL
- 19.1 MALE TOILET
- 19.2 STORE
- 19.3 TEA PREP
- 19.4 UNIVERSAL ACCESS TOILET
- 19.5 FEMALE TOILET
- 20.0 EMERGENCY EVACUATION CENTRE KITCHEN
- 20.1 UNISEX OFF-STAGE CHANGE ROOM
- 22.0 FULLY SHADED PLAYGROUND
- 23.0 GYMNASIUM EXTENSION
- Existing Facilities**
- 24.0 EXISTING SPORTS COURT
- 24.1 EXISTING SPECTATOR SEATING
- 25.0 EXISTING STAGE
- 26.0 EXISTING SQUASH COURTS
- 27.0 EXISTING PLANT ROOMS
- 28.0 EXISTING STORAGE AREA





Architecture / Master Planning / Interiors / Digital Fabrication / Master planning / Visualisation

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