

Kununurra White Water Park – Functional Brief

Version 2.0

7 September 2017

Doolooloorng Park

‘Doolooloorng’ in the Miriwoong language means ‘running water’



Lake Argyle Spillway, spilling in 2008

Doolooloorng ('running water') Park – Quick Fact Sheet

What: A world-class White Water Facility for Tourism, Social and Economic benefit.

Attracting over 25000+ visitors annually and creating 25 full-time jobs, the White Water Park will change the Kimberley Tourism landscape, adding over \$6.6M annually to the local economy.

Where: Kununurra - "An outstanding opportunity to maximise the East Kimberley's greatest asset – a highly reliable and abundant flow of fresh water."



The lack of reliable natural water flows means 90% of white water venues are now fed by circulating pumped water. Kununurra is in a unique position to use our flowing water and avoid the \$3M pump capital costs and the over \$1.7M annual pump running costs.



Why: "It brings together all the unique elements of the Kimberley to create a world class tourist attraction."

"An opportunity for Northern Australia to maximise the value of our water infrastructure for Tourism."

There is overwhelming demand in the Kimberley for:

- Improved water based outdoor and recreational opportunities,
- 'Controlled risk-taking opportunities' for our youth,
- Better utilisation our water assets, and
- Increased economic prosperity from Tourism.

Who: The Park will be operationally self sustaining, by a commercial operator.

How: "The Park would result in no net reduction in flows from Lake Kununurra to the Lower Ord River." The project requires only 20% of the daily Kununurra Diversion Dam flow to be diverted through the White Water Park which is returned to the Lower Ord River.

When: The steps forward:

- Consultation with Stakeholders,
- Establish Memorandums of Understandings with the major Stakeholders, and
- Attract an investor who will proceed with the construction and operation of the Kununurra White Water Park.



Contents

1. Social and Economic Impact	6
1.1 Major Tourist Attraction	6
1.2 Controlled Risk, Adventure and Challenge	6
1.3 Economic Impact.....	7
2. Executive Summary.....	8
2.1 Project Objective.....	8
2.2 Site Information	8
2.3 Comparative Facilities	8
2.4 Project Costs & Revenues	9
2.5 Recommendations and Next Steps.....	9
3. Project Requirements & Selected Site	10
3.1 Overview	10
3.2 Location, Water and Site Requirements	11
3.3 Kununurra	12
3.4 White Water Park Site.....	12
3.5 Water	12
3.6 Land.....	14
3.7 Land Tenure	15
3.8 Water Delivery Infrastructure	15
3.9 Course Infrastructure	17
The Course:	17
Warm up/cool down areas:	17
Sport and activity operating systems:.....	17
Course Landscaping:	17
Optional infrastructure:	17
3.10 Support Infrastructure	18
Transport watercraft and paddlers:.....	18
Change rooms:	18
Storage:	18
Administration office and park entrance:.....	18
Equipment shop:	18
Secure perimeter fencing (people and wildlife):	19
Car Park:	19
Power:	19
Potable Water:	19

Sport and activity operating systems:.....	19
Café:	20
3.11 Alternative Ord River Sites.....	20
4. Preliminary Economic Analysis	22
4.1 Capital Cost	22
4.2 Operations	22
Patrons	22
Operational Times.....	22
4.3 Employment.....	23
4.4 Revenues.....	23
4.5 Operation Costs	24
4.6 Facility Profitability	25
4.7 Assumptions / Validity Checks	25
5. Recommendations – Next Steps	26
Appendices.....	27
A. Functional Brief Genesis & Author.....	27
B. Disclaimer.....	29
C. Acknowledgements.....	30
D. Comparative Facilities.....	31
D.1 Vector Wero White Water Park, Auckland, New Zealand.....	31
D.2 Cardiff International White Water Park, Wales.....	32
D.3 Rio de Janeiro Olympic White Water Stadium, Brazil	33
D.4 Lee Valley White Water Centre, England	33
D.5 Shunyi Olympic Park, Beijing, China	34
D.6 Penrith White Water Stadium, Sydney, Australia	35
E. Background Information	37
E.1 White Water Park Users.....	37
E.2 White Water.....	38
F. Preliminary Risk Analysis.....	39
F.1 Ability to attract private sector investment –	39
F.2 Seasonal Closure due to Wet Season inundation –	39
F.3 Facility not attracting enough users –	39
F.4 Facility incurring operational losses –	40
F.5 Approval for the water infrastructure –	40
F.6 Securing land tenure –	40
F.7 Latent ground conditions –	40

F.8 Community acceptance –.....	40
F.9 Water quality –.....	40
F.10 Unwanted wildlife entering the Park -	41
G. Capital Cost Estimates.....	42
H. Operations Costs, Revenues and Visitation Estimates	44
I. Economic Impact Estimates	48

1. Social and Economic Impact

1.1 Major Tourist Attraction

The Kununurra White Water Park represents an outstanding opportunity to maximise a natural asset: flowing water - without altering its quality, quantity or jeopardizing any other industries.

“This project brings together all the unique elements of the Kimberley with incredible natural assets utilizing the regions comparative advantage to create a world class adventure hub.”

This project will be a major tourist attraction for Western Australia and the Kimberley, facilitating over 25000 users per year.

It is estimated that the Park will attract 2400 visitors per year specifically to use the facility, ensure another 5400 visitors stay an extra night and a further 10800 visitors will stay an extra ½ day in the East Kimberley.

1.2 Controlled Risk, Adventure and Challenge

The Park will bring physical adventure and challenge to school children, youth at risk, tourists, families, recreational users, corporates and athletes. Urbanisation and reliance on technology for entertainment means our generations are less connected to outdoor adventure and conquering personal challenges.

“Challenging and exciting facilities allow those not engaged in community to get engaged and focus on achievement.”

Teaching water safety and confidence, the Park will address the rising drowning rates in Australia and the high drowning rates amongst indigenous Australians.

The Park will provide Kimberley youth an opportunity for taking risk in a controlled environment.

“We need more interactive learning experiences to inspire and teach our children.”

Youth seek out risk: a consequence of human evolution. If ‘controlled risk taking activities’ are available, then uncontrolled risk taking behaviour, such as drugs and alcohol use decreases, as reported by *Sigfusdottir et al.*, ‘*Substance use prevention for adolescents: the Icelandic Model*’. This study also found that controlled risk taking and participation in sport were found to be highly protective factors against substance abuse.

Other countries are adopting the Icelandic model with positive results “*In Bucharest, the rate of teen suicides is dropping alongside use of drink and drugs*”.

“Kimberley Youth are in need of Adventure and Controlled Risk Opportunities”

1.3 Economic Impact

The construction phase will see an investment of over \$10.36M in the capital works, estimated to generate the equivalent of 20 full-time jobs.

When operational, the Park will directly employ over 25 local full-time staff. This means the Park will be amongst the biggest employers in Kununurra. In addition to the impact of local employment, local spend by the Park operators and the additional tourism spend by International, Interstate and Intrastate visitors is estimated to be over \$6.6M per year.

“When completed, the Park will contribute an additional \$6.6M to the local economy each year”.



Lake Argyle Spillway, spilling in 2008

“This project will harness the real social and economic benefits of our water and of our existing water infrastructure”.

2. Executive Summary

2.1 Project Objective

To create a world class White Water Park for tourism, sport and recreation in Kununurra. To utilise Kununurra's greatest asset - a highly reliable, year round and abundant flow of fresh water down the Ord River.

The White Water Park would be a major attraction for international and national tourism. The Park would cater for a range of recreational, competition and training activities. It would accommodate international level training and competition for slalom canoe, slalom kayaking, freestyle kayaking, surfing and rafting.

The facility would create a minimum of 25 full time jobs. Construction is estimated to cost \$10.36M. When completed, park operations will add \$6.6M per annum to the local economy. The Park would be operationally self-sustaining, operated commercially by a private operator.

This project represents an outstanding opportunity to maximise our greatest natural asset, water, without altering its quality, quantity or jeopardizing any other industries. This project brings together all the unique elements of the Kimberley with incredible natural assets utilizing the regions comparative advantage to create a world class adventure facility.

This project performs exceptionally in 'public interest tests'. There is overwhelming demand for:

- Improved water based outdoor and recreational opportunities,
- Controlled risk-taking opportunities for our youth,
- Better utilisation our water assets, and
- Increased economic prosperity from Tourism.

2.2 Site Information

The proposed site is an area of land west of the Kununurra Diversion Dam, above the area known as "Lions Park".

The site is in close proximity to a highly reliable flow of fresh water, with a flow of 60-80m³/sec. flowing over the Kununurra Diversion Dam (14m³/sec. is required to be diverted through the White Water Park).

The footprint for the White Water Park will be approximately 4 ha and has direct access to the Victoria Highway, via an existing Visitor Information Bay. The site has ready access to power lines.

The area has a natural slope for the course to run down. A 5.5m drop is required for the main section of the white water course channel. There is an average 12m differential between the level of Lake Kununurra and the level of the lower Ord River.

The primary element of the White Water Park will be a concrete channel with moveable obstacles, with Grade 2 to Grade 4 rapids.

2.3 Comparative Facilities

A desktop review was completed on similar successful facilities around the world.

The findings and recommendations contained in this report are a result of reviewing the White Water facilities detailed in the Appendices. Facilities reviewed include: purpose build facilities in Auckland-NZ and Cardiff-Wales, and post-Olympic Games use of facilities in Brazil, England, Beijing and Australia.

2.4 Project Costs & Revenues

The capital cost estimate for initial construction of the Kununurra White Water Park is \$9.79 M.

The main capital cost components are:

- Course: \$4.352 M
- Water Delivery Infrastructure: \$1.800 M
- Site Works: \$ 1.745 M
- Support Infrastructure: \$1.120 M

Revenues will be generated from the following users:

- Dedicated tourism – national and international tourists attracted to visit Kununurra due to the availability of a White Water facility.
- Visitors – national and international visitors already visiting the East Kimberley who seek an adventure tourism experience.
- Local enthusiasts – attracted to white water sports due to the proximity of the facility.
- Athletes – national and international individuals and teams looking to train on a world class, year-round, facility in a warm climate.
- School and youth groups, including ‘at risk youth’
- Leadership and team building exercise groups.
- Swift water rescue training teams.
- Venue Hire by private and corporate users, including competition use.

Preliminary economic analysis of operational costs and revenues indicates the Kununurra White Water Park would operate profitably, with an operating margin of over \$1M per annum.

2.5 Recommendations and Next Steps

- That this Draft Functional Brief be widely disseminated to all stakeholders, including relevant state government agencies, to initiate thorough consultation. Disseminated by 1st June 2017.
- Feedback and input from the consultation will be incorporated into the final version of the Functional Brief. Final version addressing stakeholder concerns completed by 1st December 2017.
- That Memorandums of Understandings are established with the major stakeholders involved in support of this project, ideally by 1st December 2017.
- Promote and seek investors at the 2017 Kimberley Economic Forum held on the 21st to 23rd September 2017 in Kununurra.

The primary aim of this Brief is to attract an investor (private or public/private partnership) who will proceed with the construction and operation of the Kununurra White Water Park.

3. Project Requirements & Selected Site

3.1 Overview

The requirements for a world class White Water Park include:

- Concrete channel with moveable obstacle system
 - Warm up/cool down area at the beginning and end of the course
 - Minimum course length of 250m, 300m being the most common
 - Grade 2 (beginners) and Grade 3/4 white water
 - Slalom gates
- Water delivery pipes and variable gate valves, capable of delivering 14 m³/sec.
- Capacity to transport watercraft and paddlers from the end to start of the course.
- Change rooms, toilets and showers.
- Boat and equipment storage.
- Park entrance, shop and administration office.
- Secure perimeter fencing (people and wildlife).

Most modern White Water Parks are constructed courses fed by circulating pumped water. The Kununurra facility will use the existing water flow down the Ord River. Therefore, the key capital elements not required for the Kununurra White Water Park are the Pumps, Pump House and associated electricity infrastructure required in most other White Water facilities. This removes significant capital (over \$3M capital costs) and removes operational costs (over \$1.7M/year, power and pump maintenance) compared with other white water parks.



Vector Wero White Water Park, Auckland

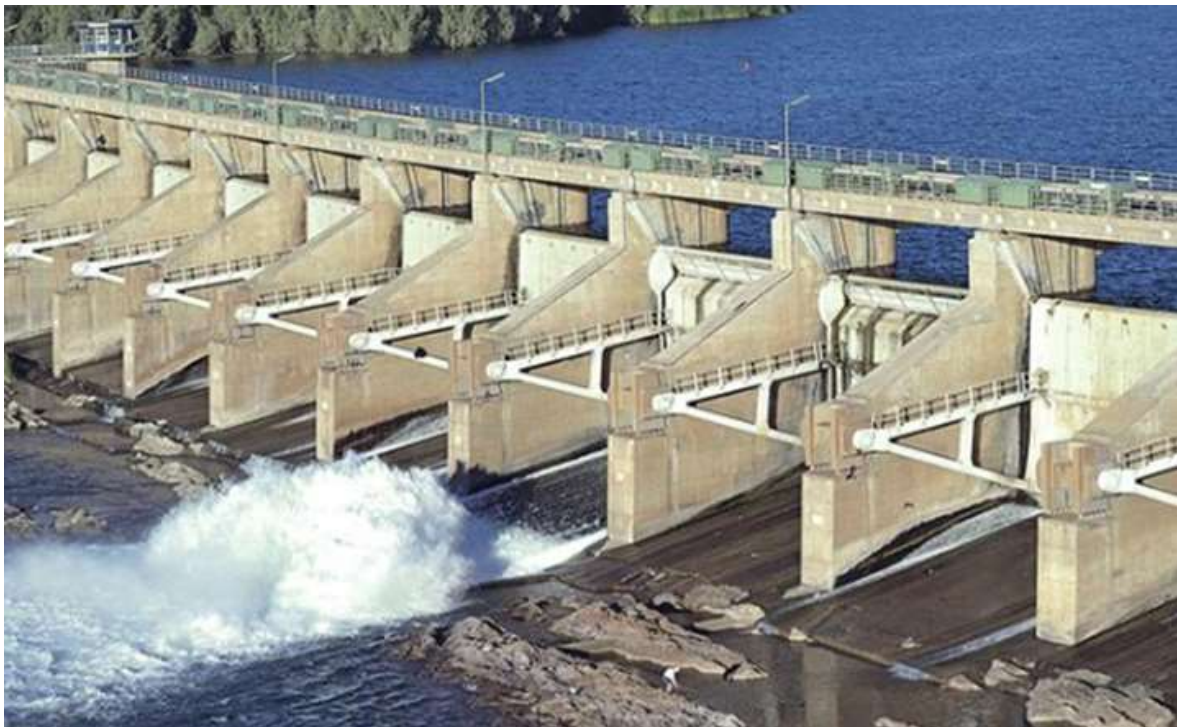
“Key capital elements not required for the Kununurra White Water Park are the pumps, pump house and associated electricity infrastructure”.

3.2 Location, Water and Site Requirements

Ideal location requirements for a (pump-free) White Water Facility include:

- Reliable supply of flowing water ($14 \text{ m}^3/\text{sec.}$).
- Ideally have a climate conducive to water sports, year-round.
- A location with tourism infrastructure, looking to further develop their tourism industry (especially attractive to 'Active Adventurers').

To cater for international competition Canoe and Kayaking, flow rates of up to $14 \text{ m}^3/\text{sec.}$ are required. Flow rates for recreation, tourism and training could be less than $10.5 \text{ m}^3/\text{sec.}$, depending on the course design and the Grade white water desired.



Kununurra Diversion Dam – 'dry season'

The site needs:

- To have access to water.
- To be clearable of existing vegetation.
- To have an adequate gradient from top to bottom, as the course needs a drop of 5.5m over a 300m course length.
- To have road access.
- Have access to power (for the amenities, office, shop and storage).

There is flexibility in the site area and shape, as the amenities and course can be designed to fit a wide range of available spaces (for reference, the Penrith facility located in Sydney has a 6ha footprint).

Ideally the White Water Park would also be close to a large body of flat water to allow close proximity to flat water racing and recreation of kayaks and canoes.

3.3 Kununurra

Kununurra is the tourism centre of the East Kimberley. The town is serviced by the East Kimberley Regional Airport. Domestic passenger flights arrive from Perth, Darwin and Broome. Direct flights from Melbourne are expected to commence in 2018.

Virtually all tourists circumnavigating Australia by vehicle must come through Kununurra. The Kununurra Visitor Information Centre alone services over 87 000 visitors per annum and Australia's North West receives over 1.8M visitors per year {*Tourism WA Overnight Visitor Fact Sheet, 2015*}.

Tourism is a major economic driver for Kununurra and growth in this sector is welcomed. The Shire of Wyndham East Kimberley Tourism Plan (November 2013) seeks to “increase water based activity” and “extend the Tourism Season”. This project strongly meets the Plan's objectives and its goal of providing “a business opportunity that supports tourism growth”.

3.4 White Water Park Site

The site selected is an area of land to the west of the Kununurra Diversion Dam, above the area known as “Lions Park”.



This site has the added advantage of being very close to a flat water body (Lake Kununurra) that allows for flat water kayak activities and is in very reasonable proximity to the town of Kununurra and all the associated facilities, accommodation and transport infrastructure.

3.5 Water

Average Ord River flow rates are provided below for comparison:

- Kununurra Diversion Dam ('Dry Season') 60 to 80 m³/sec.

- Ord Hydro 55 to 75 m³/sec.
- M1 offtake during irrigation periods: 13 to 18 m³/sec

Diversion of approximately 20% of the Kununurra Diversion Dam flow through the White Water Park would deliver the required 14 m³/sec. The flow diverted through the White Water Park would be returned to the Lower Ord River (approximately 500m downstream of the dam wall).



To assist with understanding the size of our existing water infrastructure – Lake Argyle and Lake Kununurra pictured, with Sydney Harbour superimposed at the identical scale

“The White Water Park would result in no reduction in flows from Lake Kununurra to the Lower Ord River.”

The White Water Park would simply divert 20% of the Kununurra Diversion Dam flow and return it to the lower Ord. The Park would greatly add value to the utility of the existing dam infrastructure without impacting on existing flows.

Water use, storage and flow regimes are governed under the Rights in Water and Irrigation Act 1914, via the Ord Allocation Plan 2015. All requirements of this legislation and allocation plan will be met. An agreement with Water Corporation will need to be reached for the diversion of water.

An environmental impact study will be undertaken prior to development to determine if this proposal presents any environmental challenges and a management plan will be developed to mitigate any issues. There will be no degradation of the quality of water returned to the downstream environment. A monitoring program will be established to demonstrate highest standards in environmental management.

3.6 Land

The Kununurra Diversion Dam has an average height differential of 12m, a world class White Water Facility requires a 5.5m height drop from start to finish. So the selected site will be able to accommodate this gradient requirement.



Photo looking up-slope from the Lions Park Boat Ramp toward the Victoria Highway

Kununurra experiences warm to hot day time temperature year round (average maximum 35.1°C) and experiences an average of 228 sunny days per year. Lake Kununurra water temperatures average 25°C – the climate and water temperature is extremely attractive to water users.

3.7 Land Tenure

The selected site is currently covered by a number of different land tenures:

- Water Reserve, with a Management Order to the Water Corporation (closest to the lower Ord River),
- Unallocated Crown Land, and
- Road Reserve with a Management Order to Main Roads (adjacent to the Victoria Highway).



The area of Unallocated Crown Land presents an opportunity to partner with the Traditional Owners. The Miriwung Gajerrong (MG) is the appropriate Native Title Group for this area.

There are two options under the West Australian Land Administration Act to deal with Native Title on the area of Unallocated Crown Land. The preferred option is to negotiate an Indigenous Land Use Agreement with MG. MG is considered a significant stakeholder in this project and an opportunity exists to work with the MG people and develop an Indigenous Land Use agreement beneficial to the Project and MG.

Permission to proceed with the Project will be required by Water Corporation and Main Roads to utilise any land within their respective Reserves.

3.8 Water Delivery Infrastructure

A primary piece of infrastructure required is the water delivery infrastructure. It is likely, the delivery infrastructure will be a combination of open channel and pipes (under the Victoria Highway). The purpose of the delivery infrastructure is to feed water from Lake Kununurra to the top of the White Water Park.

The delivery infrastructure would run west from Lake Kununurra, clear of the Dam Wall (including the Dam Wall Abutments) to fully maintain the integrity of the Dam. The water would then run north under Victoria Highway.



Draft Schematic of Water Delivery Infrastructure

The infrastructure needs to deliver a maximum of 14 m³/sec. to the top of the Park. A controllable gate structure at the end of the channel will be capable of delivering variable flow rates (depending on park activities and desired white water Grades) and capable of being turned off. Water flow will be stopped and secured outside of park operation hours.

The initial calculations for delivery pipe diameters is approximately 4 x 1.8m diameter pipes.

An operational timetable and communication process will be need to be developed with Water Corporation to maintain desired flows down the lower Ord River, depending on Park use. Similar communications systems already exist between Ord Irrigation and Water Corporation and Pacific Hydro and Water Corporation to manage flow rates. This will take into consideration requirements for all environmental flow regimes currently required under the Ord Allocation Plan.



Photos of the existing M1 structure (inlet and outlet) capable of delivering over 18m³/sec.

At the end of the White Water Park an outlet will be required to return the water flow to the lower Ord River. The outlet from the finish pool will be designed so the water is exiting at low velocity (wide outlet) and will need a protective security structure for patrons and wildlife proof grill.

3.9 Course Infrastructure

The Course:

- Minimum course length of 300m,
- Grade 2 and Grade 3/4 white water,
- Concrete floor and sides,
- Attachments for bolt in obstacles,
- Bolt in obstacles.



Vector Wero White Water Park under construction

Warm up/cool down areas:

- Top Pool:
 - Concrete Pool,
 - Launching Steps,
 - Water Inlet.
- Finish Pool:
 - Concrete floor,
 - Exit ramp,
 - Beaching floor,
 - Water outlet.

Sport and activity operating systems:

- Poles for stringing wires,
- Supporting wires,
- Slalom gate poles,
- Gate numbers,
- Start gate,
- Finish gate.

Course Landscaping:

- Spectator paths & viewing areas,
- Vehicle pathway from finish to start,
- Grass/rock landscaping,
- Sun shade.

Optional infrastructure:

The inclusion of a standing wave for surfing activities would provide additional revenue, if space was available on the site.



Vector Wero White Water Park under construction

3.10 Support Infrastructure

Transport watercraft and paddlers:

White Water Parks fed by circulating pumped water are usually U-Shaped and use a conveyer belt from the end to start of the course to transport watercraft and paddlers. Where a linear or alternate shape course is designed, the use of electric vehicles (i.e. Golf Carts) with a towable watercraft racks is recommended as a cost effective solution for this task. A dedicated sealed path from the end to start of the course is required.

Change rooms:

- Men, women, unisex change rooms (change benches),
- Shower areas (4 shower heads per room),
- Toilets (4 seated toilets men, 4 space urinal men, 6 seated toilets women),
- 2 handwashing stations per room.

Storage:

- Watercraft storage racks/cages,
- Covered hanging storage for life jackets,
- Covered hanging storage for helmets,
- Paddle storage.

Administration office and park entrance:

- Payment point,
- Entry gate,
- Staff tea room (temporary facility initially),
- Staff office (temporary facility initially).

Equipment shop:

Temporary building utilised initially, attached to watercraft and equipment store.

- Pay station,
- Display racks,
- Floor space.

Secure perimeter fencing (people and wildlife):

- Security fence



Car Park:

- Gravel surface car park,
- A ring road with provision for buses and boat unloading areas near the Park entrance.

Power:

The Packsaddle power lines and Wyndham feeder lines currently run to the site. A suitable transformer will be required to access power from the appropriate line.

Potable Water:

A potable water storage and water treatment system will be required to supply drinking water. However, this would be quite a minimal volume.

Sport and activity operating systems:

Additional infrastructure may include (at later stages depending on use):

- Timing systems,
- Spectator seating and viewing,
- Medal presentation area (including flag poles),
- Judge's booths,
- Public announcement system,

- Media room.

Café:

Suggest using a mobile café at initial construction, with space retained for a permanent café in future. Initially leasing out the mobile café site is recommended.

3.11 Alternative Ord River Sites

Alternative Ord River sites were considered during the initial concept development:

- Spill Way: a course in the Spill Way Creek would be subject to uncontrolled flows during periods of high levels in Lake Argyle. There is a high potential for course damage and extended periods where the course would be unusable due to high flows. The natural spillway course also presents uncontrolled hazards, so safety aspects would be difficult to control.



Lake Argyle Spillway, 20m below the Spillway Bridge, 2008

- Spill Way Off-Take: A course feed by a Spill Way Creek offtake would require flows of at least 14 m³/sec down the Spill Way. This site is much further from Kununurra and no existing sites along the Spill Way had the required drop of 5.5m over 300m.

- Upper Ord River: There is a section of the upper Ord River with rapids less than Class 1 (beginner). However, these are in sections of the river with no road access and no capacity to generate Grade 2 and Grade 3 rapids on these sections, as the required drop does not exist.



Upper Ord River, Ord River Dragon Boat Marathon, 2016

4. Preliminary Economic Analysis

The sole purpose of this Preliminary Economic Analysis is to provide an early indication if operating a White Water Park in Kununurra is commercially viable.

The estimated operational costs, visitor numbers and revenues used indicate viable ongoing operation of the Park.

- Estimated Operation Costs: \$2.7M/year,
- Estimated Operation Revenues \$3.7M/year.
- Estimated Profitability \$1.017M/year

4.1 Capital Cost

Initial Capital Cost is estimated to be \$10.36 M

Capital costs includes the course infrastructure required for the park to operate. Rather than build permanent support infrastructure in the first instance, temporary buildings will be utilised for staff, administration and the shop, to reduce the initial spend. A mobile café will also be utilised initially, with a site reserved for future permanent café development in the future.

The key capital elements are:

- Course: \$4.352 M
- Pipeline: \$1.800 M
- Site Works: \$ 1.745 M
- Support Infrastructure: \$1.120 M

Details of the cost estimates are provided in the Appendices.

4.2 Operations

Patrons

There is a wide range of patrons who will utilise the White Water Park:

- Dedicated tourism – national and international tourists attracted to visit Kununurra due to the availability of a White Water facility.
- Visitors – local, national and international visitors already visiting the East Kimberley who seek an adventure tourism experience.
- Local enthusiasts – attracted to white water sports due to the proximity of the facility.
- Athletes – national and international individuals and teams looking to train on a world class facility in a warm climate.
- School and youth groups, including ‘at risk youth’.
- Leadership and team building groups.
- Swift water rescue teams.

Operational Times

As this facility does not require pumps to operate and environmental flows are required continually to the lower Ord River, there is great flexibility in operating hours.

Seasonal closures could be expected in occasional years with extremely high rainfall 'Wet Seasons', when the lower Ord River and Dunham Rivers 'back-up' against the Diversion Dam. This may temporarily inundate the lower sections of the site from time to time. Closures due to inundation would be expected to occur in the months of February and March, corresponding with Kununurra's tourist 'low season'.

For reference, the Penrith White Water Park operates seven days a week and only closes Christmas Day, Boxing Day, New Year Day and Good Friday.

4.3 Employment

The staff roles to operate the White Water Park includes:

- Reception – point of entry (1 on duty all opening times),
- Lifeguards (2 on duty all opening times),
- Shop – Hire and Sales staff (minimum 2 all opening times),
- White Water instructors and guides (1-12 depending on demand)
- Facility Manager (1)
- Marketing & Communications Officer (1)
- Facility Maintenance Officer (1)
- Cafe operators (2+)

To operate an average of 8 hours per day, seven days per week, 12 months of the year it is anticipated to require a minimum of 25 full-time staff.

Staff salary and employment costs are estimated to be \$2.16M/year



4.4 Revenues

The primary revenue will be from user fees and gear hire. A schedule of user fees incorporating the following use categories have been estimated and used in the Appendices:

- Individual users
 - Single trip guided rafting experience,

- Kayak/Canoe guided course use,
- Non-guided and non-instructed use by certified users (hourly/daily/monthly/yearly passes),
- Certification instruction courses.
- Group users (tour groups, corporate groups, private groups)
 - Single trip guided rafting experience,
 - Kayak/Canoe guided course use,
 - Non-guided and non-instructed use by certified users,
 - Certification instruction courses
- Venue Hire for corporates and group bookings
- Emergency Services Training (swift water rescue)
- Venue Hire for Competition Use
- Spectator entry fees for competition/specific events

For comparison, Penrith White Water Park fees (at April 2017), include:

- \$94 for a guided raft experience (90 minutes)
- \$88/hr kayak instruction (individual user)
- \$38/day play, \$193/week, \$385/month (competent paddlers)
- Equipment Hire:
 - Paddle \$11/day
 - Vest \$11/day
 - Helmet \$5.50/day
 - Kayak: \$25/90 min., \$35/3hrs., \$50/day

4.5 Operation Costs

The lack of water pumping equipment at the Kununurra facility will significantly reduce operating costs. The Penrith White Water Park requires 5 x 300kW (1500kW total pump capacity) to operate. At current Western Australian power prices (\$0.275549/kWh) these pumps would cost \$413 per hour (approximately \$4130 per day, \$1.5M per year) to operate. In addition to the pump maintenance and electricity supply infrastructure maintenance costs.

“Penrith requires 1500 kW in pumps to operate, a total of over
\$1.5M in power per year – that Kununurra will not require”

The primary operational costs at the Kununurra facility will be:

- Staff,
- Equipment,
- Facility and site maintenance,
- Marketing and
- Insurance.

Details of the Operation Costs Estimates are provided in the Appendices.

4.6 Facility Profitability

The estimated operation costs and revenues are provided in Appendices. Visitor numbers used are also provided in this Appendices.

The facility is estimated to operate at a positive operational margin of \$1.017M/year.

4.7 Assumptions / Validity Checks

Profitability: Penrith

- Penrith operates profitably, but it is calculated to have a \$1.7M/year power and pumps costs, that Kununurra will not.
- Penrith is a 2 hour drive from the Sydney CBD and attracts 500,000 visitors per year. Kununurra is a remote location and Park visitation estimates used are for 25100 visits per year.
- Penrith visitor numbers are impacted negatively by cold weather periods. Kununurra's will be similarly negatively impacted by a decline in visitor numbers over the 'Wet Season'.

Revenue: Lee Valley

- Lee Valley Regional Park Authority aims to bring in up to £45,000 (\$74,250) per day from visitors to offset the energy cost of pumping the water. Estimates for Kununurra is to generate a relatively modest \$10,244 per day.

Capital Costs: Penrith

- The Penrith facility is reported to cost \$6M to construct, including a conveyer belt and \$2M in pumps and associated capital. Kununurra is estimated to cost \$9.79M. Kununurra will incur a cost penalty due to its regional location. Kununurra will not need the pump and conveyor belt infrastructure.

Visitor Numbers: Cardiff

- Cardiff attracts 150,000 visitors per year, assumptions for Kununurra are 25100 visitors per year (17% of Cardiff's).

Visitor Numbers: Kununurra

- Australia's North West receives over 1.8M visitors per year *{Tourism WA, Australia's North West Overnight Visitor Fact Sheet, 2015}*.
- The Kununurra Visitor Centre services 87 000 visitors per annum *{pers. com. Kununurra Visitor Centre}*
- The Kununurra Leisure Centre reports 93 380 visits per year (a minimum of 37 712 of these visits were for the pool complex).
- Local operators advise that an estimated 35000 visitors per year take a cruise on Lake Kununurra or Lake Argyle each year (adult cruise costs \$95 to \$185 + per person).
- Estimates for the Kununurra White Water Park is 68.8 visitors per day, 25100 visitors per annum.

5. Recommendations – Next Steps

That this Draft Functional Brief be widely disseminated by 1st June 2017 to all stakeholders, including all relevant government agencies, to initiate thorough consultation and provide feedback.

Stakeholders include, but are not limited to:

- Miriuwung Gajerrong (MG) Traditional Owners
- Water Corporation
- Department of Water
- Shire of Wyndham East Kimberley and the residents of the East Kimberley
- Main Roads WA
- Kununurra Visitor Centre
- East Kimberley Marketing Group
- Department of Lands
- Department of Regional Development
- Department of Parks and Wildlife
- Horizon Power
- Department for Sport and Recreation
- Tourism WA and Australia's North West
- East Kimberley Chamber of Commerce and Industry
- Canoeing Western Australia
- Australian Canoeing Federation
- Kimberley Development Commission
- Australian Sports Commission

Feedback and input from the consultation will be incorporated into the final version of the Functional Brief. Final version addressing stakeholder concerns will be completed by 1st December 2017.

That Memorandums of Understandings are established with the major stakeholders involved in support of this project by 1st December 2017.

Promote and seek investors at the 2017 Kimberley Economic Forum held on the 21st to 23rd September 2017 in Kununurra.

The primary aim of the final version of this Brief is to attract an investor (private or public/private partnership) who will proceed with the construction and operation of the Kununurra White Water Park.

Appendices

A. Functional Brief Genesis & Author

This Functional Brief was initiated by Kimberley Action Sports Incorporated (KASI).

KASI is a not-for-profit Incorporated Association interested in promoting and participating in action sports in the Kimberley. KASI is an affiliated club with Mountain Biking Australia and are responsible for building and maintaining the first official mountain bike trail in the Kimberley (the Rotary Lake Argyle Mountain Bike Trail). KASI has a proven track record in delivery of unique and fully approved high quality adventure infrastructure in the Kimberley region.



Club members have travelled widely in Australia and New Zealand for Mountain Biking, acquiring extensive knowledge of mountain bike trail use and design. The club members have recognised that Australia is relatively rich in sites which meet mountain biking trail requirements. However, Australian sites suitable for white water adventure activities are rare and locations with reliable water flow are exceedingly rare.



Lake Argyle Spillway February 2017, Ben Broady

“Kununurra has an exceedingly rare asset:
A huge volume of reliable flowing fresh water.”

This Brief has been authored by Glenn Taylor. Reviews of initial drafts and content was assisted by club members: Susie Williams, Rebecca Dobbs, Jackie Ellis, Mark Phillips, Peter Cottle, Grant Lodge, Sarah Lodge, Kim Bunny and Nathan Allister.

Glenn is a Sports Event Manager in Kununurra and co-ordinates:

- Lake Argyle Swim, winner of ‘WA sports Event of the Year’
www.lakeargyleswim.com
- Ord River Paddle www.ordriverpaddle.com.au ,
- Kununurra ½ Marathon www.knxrun.com.au ,
- Broome Marathon www.broomemarathon.com.au , and
- Lake Argyle Adventure Race
www.lakeargyleadventurerace.com.au .



Glenn holds a Ba.For.Sc. with Honours, Cert. IV Sport & Recreation, Cert. IV Occupational Health & Safety and extensive Emergency Services Qualifications. Glenn has received the 'Service to Sport' award - East Kimberly and is a 'Small Business Award Winner' -East Kimberley. He is a multiple Ironman and Marathon finisher and a former national elite Triathlon representative. He is a keen Mountain Bike rider and umpires in the East Kimberly AFL.

“You don’t have to cycle 10,000km around Australia in the 2007 drought to recognise the national scarcity of water, or to identify the massive potential Kununurra has with its abundant water resources” – Glenn Taylor

Glenn is passionate about bringing ‘exciting sports events to amazing locations’. Having paddled in Australia and internationally, he recognises the potential of the abundant flowing water in Kununurra for tourism and adventure.



Images from the 2017 Lake Argyle Swim

B. Disclaimer

This Draft Functional Brief has been prepared for the sole purpose of initiating discussion and further investigation into the possibility of a White Water Park in Kununurra. The author expressly disclaims responsibility for any errors, omissions in this report or any errors in the assumptions made in preparing this report.

This document must not be copied or used by any person without the prior written consent of the Author.

C. Acknowledgements

Thanks to the members of Kimberly Actions Sports Incorporated and the members who helped review initial drafts and content of this functional brief. Thanks also to the other individuals, businesses and groups who provided data.



Thanks to the Shire of Wyndham East Kimberley, for providing a Community Quick Grant to 'seed fund' this report.

Thanks to all the other people and organisations who have provided invaluable advice and input into this document.

Sources cited in this document:

- *Tourism WA, Australia's North West Overnight Visitor Fact Sheet, 2014/2015*
- *Sigfusdottir et al., 'Substance use prevention for adolescents: the Icelandic Model'*

D. Comparative Facilities

A lack of reliable natural water flows around the world has led to the development of constructed white water facilities. Natural water flows are particularly unreliable in southern Australia. Many natural white water courses are usable only for a few months each year and drought conditions make these facilities completely unusable.

In Europe and United States there are white water facilities using diverted water from free flowing rivers. Typically, these rivers that have reliable to semi-reliable snow melt feeding them.

White water slalom kayaking and canoeing events have featured in the last seven Olympic Games. Six of these have been held on constructed courses fed by circulating pumped water. The exception was the 1996 Atlanta Olympics (Ocoee White Water Centre) which utilised a highly modified river bed, fed by a controllable dam outflow.

Typical White Water Facilities:

- Use circulating pumped water,
- Are U Shaped courses,
- Have course lengths of 300m,
- Course height drops of 4.7m to 6.4m over their length.

D.1 Vector Wero White Water Park, Auckland, New Zealand

Vector Wero White Water Park is a world class tourism destination. It is New Zealand's only facility to offer an artificial river and water course for recreation, sports, and emergency services training, school programmes and youth development.



Vector Wero White Water Park

The Vector Wero White Water Park facility has two courses operating. An easy course and the more difficult 'River Rush'. 'River Rush' is an adrenaline-pumping Grade 3-4 course. It is 300m long and has the equivalent of an Olympic swimming pool being pumped down it every 95 seconds. There are four 350kW pumps that provide 16.0m³/sec. of water to the long course with 4.0m³/sec. of this capacity dedicated to a 4m waterfall feature.

The second course is a tamer grade 2 course, included to make the park accessible to less experience youth, weekend warriors, corporates and anyone keen to have a crack at rafting, kayaking and even

stand up paddle boarding. The short course uses three 160kW pumps that provide 10.5m³/sec. of water to the starting pond.

Whitewater Parks International (WPI) was the designer. WPI has also worked on Penrith White Water Stadium, Lee Valley White Water Stadium and the Rio Olympic White Water Stadium. At Czech Technical University of Prague, the world's preeminent research facility for water movement, a scale model was built to test and fine-tune the Vector Wero design, ensuring the grade 3/4 river meets international standards.

D.2 Cardiff International White Water Park, Wales

Opened in 2010, the Park attracts 150 000 visitors per year (despite the cold climate of Wales). The facility has been awarded Visit Wales "Best Visitor Experience".

The 250m on demand, white water course pumps up to 16 m³/sec. The flow rate can be changed so that the course can be enjoyed by everyone, from beginners through to experts.



Cardiff International White Water Park

The Park also contains a standing wave machine (the 'Flow Rider'). The standing wave enables people to ride on a shallow stream of water, simulating a mixture of surfing and snowboarding, either using a bodyboard or specially designed surf board. The double lane design allows two people to bodyboard at the same time.

D.3 Rio de Janeiro Olympic White Water Stadium, Brazil

The Deodoro Olympic White water Stadium was constructed to host the canoeing and kayaking slalom events for the 2016 Summer Olympics. The stadium is part of the 'X-Park' sport complex (which includes BMX and Mountain Bike) located in Deodoro, Rio de Janeiro, Brazil.

The venue is managed by the 2016 Rio de Janeiro Olympic Games. The designer was Whitewater Parks International. It uses 7 pumps total, producing: 4 x 4.0 m³/sec. each for competition and 3 x 3.5 m³/sec. each for training.

Opened in 2015, the course length is 250m, is 12-18m wide and drops a total of 4.5m. Flowrates for competition is 12.0 m³/sec. and for training is 10.5 m³/sec.



D.4 Lee Valley White Water Centre, England

Lee Valley White Water Centre is a white water slalom centre that was constructed to host the canoe slalom events of the London 2012 Olympic Games.

The main competition channel is an international and Olympic standard 300 metre course. It and the shorter warm-up course empty into the warm-up and cool-down lake. The white water is created by a system of pumps which lift water into the two start pools. All of the water contained in the system is slightly chlorinated in order to retain water quality. During the Games, temporary seating was installed around the venue for 12,000 spectators.

The 300-metre competition course has a drop of 5.5 metres and a pump-powered streamflow of 13m³/sec. The intermediate/warm-up course is 160 metres long with a drop of 1.6 metres and flow of 10.5 m³/sec.

Lee Valley Regional Park Authority hope to bring in up to £45,000 (\$74,250) per day from visitors to offset the energy cost of pumping the water.

The venue opened to the public after the Games as part of the Olympic Legacy Works. Spectator seating was removed and the venue returned to providing a leisure attraction for canoeing and white-water rafting and a competition venue for elite events, to be managed by Lee Valley Regional Park Authority.



Whitewater Parks International, working with civil and structural engineers Cundall, are the designers of the white-water courses. The detail design of the white-water channel involved the creation of a 1:10 Froude scaled physical model that resulted in numerous changes to the initial white-water channel design.

D.5 Shunyi Olympic Park, Beijing, China

The slalom course is generally considered to be difficult, even by Olympic standards. The water speed is 7.5 m/sec., with a drop of 6.3 meters over the 300-meter course.

Powered by electric pumps, the slalom course is located at the southwest corner of the long rectangular rowing pond, from which it draws its water. Its western loop is the competition course; the eastern loop, with branches, is for training and warmup. Conveyor-belt boat lifts carry paddlers to the start pool.

Construction features which have recently become standard for such courses: vertical side walls (except for strategically placed slanted walls to dampen water oscillations), modular turbulence generators on the channel floor, and clusters of movable plastic bollards attached to the floor as water diverters. There are no concrete boulders in the channel.



Shunyi Olympic Park, Beijing, China

D.6 Penrith White Water Stadium, Sydney, Australia

The Penrith White Water Stadium is an artificial white water sporting facility which hosted the canoe/kayak slalom events at the 2000 Summer Olympics. The facility is part of the Penrith Lakes Scheme, which is converting open-pit sand and gravel mines into lakes for recreation. It is close to Cranebrook and is adjacent to the Sydney International Regatta Centre. These lakes are not filled via the Nepean River, but are filled via rain water and ground water. The operation of the facility aerates the water and improves water quality in the flat water rowing and canoeing course.

The course is in the shape of a massive 'U', 320 metres in length, between 0.8 and 1.2 metres deep and between eight (8) and 12 metres wide. The overall drop from top to bottom is 5.5 metres. During events a conveyor belt is used to take boats, and their occupants, from the finishing pool back to the start.



Penrith White Water Park

As the course has been built in a relatively flat area (flood plain), it has been built up and landscaped to create the sloping course necessary for the required rapids. Five of the six available 300-kilowatt pumps lift the water from the bottom to the start of the course, at the rate of 14 m³/s.

The channel is constructed from concrete with sloping sides. By setting river pebbles into the concrete an effect to make the course look like a natural river has been created. Large immovable rocks shape the course, as well as movable obstacles which may be used for varying the difficulty of the course and for fine-tuning of the rapids.



Penrith White Water Stadium, Sydney

The total cost of construction was \$AU6 million, of which \$1.5 million was paid by Penrith City Council, \$1.5 million by the International Canoe Federation (including \$300,000 by Australian Canoeing) and \$3 million by the Government of New South Wales.

The facility, which includes a cafe, is a popular recreational area, offering large rubber raft rides, as well as individual kayaking/canoeing. It is regularly used for local, national and international canoeing/slalom events. It served as the host venue for the 2005 ICF Canoe Slalom World Championships. It also hosted the 2014 Junior/U-23 ICF Canoe Slalom World Championships.

The venue is operated by a subsidiary of the local government, its operation is profitable. However, income drops dramatically with cool weather.



Penrith White Water Park

E. Background Information

E.1 White Water Park Users

The White Water Park would be a major attraction for international and national tourism. The Park would cater for a range of recreational, competition and training activities. It would accommodate international level training and competition for slalom canoe, slalom kayaking, freestyle kayaking and rafting.

The White Water Park provides opportunities for beginners to experienced users.

Slalom Kayaking & Canoeing: Slalom is a technical competitive form of kayaking/canoeing and the only white water event to appear in the Olympic Games. Racers attempt to make their way from the top to the bottom of a designated section of river as fast as possible, while correctly negotiating gates (a series of double-poles suspended vertically over the river). There are usually 18-25 gates in a race which must be navigated in sequential order. Green gates must be negotiated in a downstream direction, red gates in an upstream direction. The events are typically conducted on Grade/Class II to Grade/Class IV water, but the placement of the gates, and precision necessary to paddle them fast and "clean" (without touching a pole and adding 2 seconds to the total time), makes the moves much harder than the water's difficulty suggests.

Rafting: White water rafting is recreational outdoor activity which use an inflatable raft to navigate a river or other body of water. This is often done on white water or different degrees of rough water, and generally represents a new and challenging environment for participants. Dealing with risk and the need for teamwork is often a part of the experience.



Rafting Cardiff International White Water Park, Wales

Freestyle Kayaking: Is a more gymnastic and artistic kind of kayaking. While the other varieties of kayaking generally involve going from Point A to Point B, freestylers often stay in one spot in the river where they work with and against the dynamic forces of the river to perform a variety of manoeuvres. These can include surfing, spinning, and various vertical moves, spinning the boat on all possible axes of rotation.

Sledging: Sledging, or Riverboarding, is a board sport in which the participant lies prone on their board with fins on their feet for propulsion and steering. This sport is also known as hydrospeed in Europe.

Standing Wave: Fast flowing water is used to create a standing wave for surfing, body boarding or skim boarding.



Standing Wave in Cardiff

Swift Water Rescue: Swift water rescue, also called "white water rescue", is a subset of technical rescue dealing in white water river conditions. Due to the added pressure of moving water, swift water rescue involves the use of specially trained personnel, ropes and mechanical advantage systems that are often much more robust than those used in standard rope rescue. Currently locally based professional staff travel as far as Albany at the other end of the State to undertake swift-water training.

Tourism, Recreation, Team Building, School Groups: Utilising variable water flow rates, the white water difficulty can be managed to allow for all the above activities for a variety of groups with different levels of experience.

E.2 White Water

White Water Class/Grade is otherwise known as the International Scale of River Difficulty. Below are the six grades of difficulty in white water. They range from simple to very difficult and dangerous.

- Class 1: Very small rough areas, might require slight manoeuvring. Easy and fun. (Skill level: Very basic)
- Class 2: Some rough water, maybe some rocks, might require some manoeuvring. Fun for new users. (Skill level: Basic paddling skill)
- Class 3: Small waves, maybe a small drop, but safe. May require significant manoeuvring. (Skill level: Some experience in rafting)
- Class 4: White water, medium waves, maybe rocks, maybe a considerable drop, sharp manoeuvres may be needed. (Skill level: Experienced rafting skill)
- Class 5: White water, large waves, large volume, possibility of large rocks and hazards, possibility of a large drop, requires precise manoeuvring. (Skill level: Full mastery of rafting)
- Class 6: Class 6 rapids are considered to be so dangerous that they are effectively unnavigable on a reliably safe basis. Rafters can expect to encounter substantial white water, huge waves, huge rocks and hazards, and/or substantial drops that will impart severe impacts beyond the structural capacities and impact ratings of almost all rafting equipment. (Skill level: Full mastery of rafting, and even then it may not be safe)

F. Preliminary Risk Analysis

F.1 Ability to attract private sector investment –

The construction and operation of a Kununurra White Water Park is dependent on attracting a private investor. It is the aim of this Functional Brief to secure wide support for the concept of a Park and secure Memorandums of Understanding with key stakeholders to help reduce this risk.

F.2 Seasonal Closure due to Wet Season inundation –

Seasonal closures are possible in rare years with extremely high rainfall 'Wet Seasons', when the lower Ord River and Dunham Rivers 'back-up' against the Diversion Dam. This may temporarily inundate the lower sections of the site. Closures due to inundation would be expected to occur in the 'low tourist season' months of February and March.

The image below shows the site in April 2017, after above average rainfall 'Wet Season'. Despite the above average rainfall and Lake Argyle flowing 4m over the Spillway, there is very little area of 'Lions Park' inundated. The White Water Park would not be impacted by these Ord River levels.



Lions Park – April 2017

This risk can be significantly reduced by positioning the Park closest to the Victoria Highway (South), at a height just below the Diversion Dam water level.

The park will also cease operations when Lake Kununurra is drained for Dam Maintenance. Again during the 'low tourist season' period.

F.3 Facility not attracting enough users –

The ability to attract users is critical to the ongoing operation of the facility.

Factors that reduce this risk will be:

- Strong rates of International and National tourism to the Kimberley generally,

- Good marketing of both the Kimberley and the White Water Park,
- Continued growth in direct flights to the East Kimberley,
- The excellent climatic and water temperatures for year-round use in Kununurra.

“Kununurra has excellent climatic and water temperatures for year-round use of the Park”

F.4 Facility incurring operational losses –

Operational losses are incurred when the cost of operation exceeds the revenue received. The advantage the Kununurra Park has over comparative facilities world-wide is the removal of water pumping costs. With staff costs then being the biggest operational cost, staff numbers can be managed carefully to control operational costs.

F.5 Approval for the water infrastructure –

Water Corporation’s approval will be needed to proceed with the project. Engaging positively with them and securing a Memorandum of Understanding will be key to managing this risk.

F.6 Securing land tenure –

Negotiating an Indigenous Land Use Agreement with MG is key to managing this risk. Working positively with the MG people to develop an Indigenous Land Use agreement beneficial to their people is critical.

Permission to proceed with the Project will be also be required by Water Corporation and Main Roads.

F.7 Latent ground conditions –

A detailed site assessment is required to address this risk. The proximity to other stable infrastructure (Dam Wall, Victoria Highway, the sealed road to Lions Park) suggest the site is capable of supporting stable infrastructure.

F.8 Community acceptance –

Positively promoting and informing the East Kimberley Community of this project is key to reducing this risk.

F.9 Water quality –

Lake Kununurra has high recreational use, including swimming (Swim Beach), dragon boating, sailing, water skiing, recreational kayaking, canoeing, fishing and boating. High annual flows down the Ord River has meant the main body of the Lake has never been closed due to water quality concerns. (Note: Lily Creek has been closed due to water quality – this is a section of river with little flow, directly adjacent to Kununurra Township).

The main water quality aspect of interest for recreational activities is microbiological parameters. Rowing/Kayaking is classed as “secondary contact”. Given Lake Kununurra has never been closed for “primary contact” (swimming) use, there would be no justification for water treatment at the Park.

F.10 Unwanted wildlife entering the Park -

The lower Ord River is known salt water crocodile habitat. Secure fencing around the entire park and the water outlet is required to ensure no unwanted visitors enter the site. The fence will also provide security from trespassers.

G. Capital Cost Estimates

Draft Capital Cost Estimates - Kununurra White Water Park						
Version 2.0, 7 September 2017						
	Unit	Quantity	Rate	Sub-Total 1	Sub-Total 2	Total
The Course						
<u>Course</u>						
1	Course Design	1	\$ 200,000	\$ 200,000		
2	Course Modelling	1	\$ 300,000	\$ 300,000		
3	Course walls and floor : average 8m wide, 1m deep, \$490,000 in concrete	m	300	\$ 4,000	\$ 1,200,000	
4	Base to bolt in obstacles	m	300		\$ 550,000	
5	Concrete sides	m	600	\$ 600	\$ 360,000	
6	Bolt in obstacles	#	100	\$ 750	\$ 75,000	\$ 2,685,000
<u>Top Pool</u>						
7	Walls and floor	#	1	\$ 600,000		
8	Launching step	#	1	\$ 20,000		
9	Water Inlet	#	1	\$ 30,000		\$ 650,000
<u>Finish Pool</u>						
10	Walls and floor	#	1	\$ 600,000		
11	Exit ramp and beaching floor	#	1	\$ 30,000		
12	Water Outlet, protective mesh	#	1	\$ 50,000		\$ 680,000
<u>Sport & Activity Operating Systems</u>						
13	Poles for strining wires	#	60	\$ 2,000	\$ 120,000	
14	Suporting wires	#	30	\$ 250	\$ 7,500	
15	Slalom gate poles, gate numbers	#	60	\$ 350	\$ 21,000	
16	Start gate	#	1	\$ 5,000	\$ 5,000	
17	Finish gate	#	1	\$ 5,000	\$ 5,000	\$ 158,500
<u>Course Landscaping</u>						
18	Spectator paths and viewing areas	m2	300	\$ 65	\$ 19,500	
19	Vehicle pathway from finish to start	m2	600	\$ 65	\$ 39,000	
20	Grass/rock landscaping	#	1		\$ 60,000	
21	Shade Structures	#	20	\$ 3,000	\$ 60,000	\$ 4,352,000 \$ 178,500
Water Delivery Infrastructure						
22	Inlet (from Lake Kununurra), abutments	#	1	\$ 150,000		
23	Supply Channel (allowed 700m length, move 20,000 cu.m)	#	1	\$ 250,000		
24	Underground Hwy crossing (50m long x 4 pipes, \$389,000 in pipes)	#	1	\$ 1,200,000		
25	Varriable flow gate valve - at end of channel	#	1	\$ 200,000	\$ 1,800,000	\$ 1,800,000

	Site Works						
	<u>Site Clearing</u>						
26	Vegetation removal	ha	5	\$ 5,000	\$ 25,000		
27	Leveling	ha	5	\$ 20,000	\$ 100,000		
28	Site prep	ha	5	\$ 60,000	\$ 300,000		
29	Imported clean fill	m3	2000	\$ 40	\$ 80,000		\$ 505,000
30	<u>Secure Perimeter Fencing</u>	m	1200	\$ 200	\$ 240,000		\$ 240,000
	<u>Car Park</u>						
31	Gravel surface, with ring road	m3	3400	\$ 50	\$ 170,000		
32	Kerbing	m2	300	\$ 65	\$ 19,500		
33	Line marking, bollards	#	1		\$ 5,000		
33a	Intersection Upgrade		1		\$ 100,000		\$ 294,500
	<u>Power</u>						
34	Incoming mains allowance	#	1		\$ 300,000		\$ 300,000
	<u>Potable Water</u>						
35	Bore, Bore pump	#	1		\$ 30,000		
36	Pipes and plumbing	#	1		\$ 40,000		
37	Storage and treatment	#	1		\$ 20,000		\$ 90,000
	<u>Waste System</u>						
38	Septic waste system	#	1		\$ 250,000		
39	Storm water drains	#	1		\$ 40,000		\$ 290,000
40	<u>Signage</u>	#	1		\$ 25,000	\$ 1,744,500	\$ 25,000
	Support Infrastructure						
	<u>Change rooms</u>						
41	Change rooms, mens and womens				\$ 200,000		
42	Shower areas, 4 shower heads per room				\$ 100,000		
43	Toilets, 4 seated and urinal men, 6 seated women				\$ 100,000		
44	Hand washing stations, 2 per room				\$ 10,000		\$ 410,000
	<u>Storage</u>						
45	Boat rack cages				\$ 40,000		
46	Life jackets, helemets				\$ 100,000		
47	Paddle storage				\$ 50,000		\$ 190,000
	<u>Administration office and park enrrance</u>						
48	Payment point				\$ 10,000		
49	Entry gate				\$ 10,000		
50	Office / reception - portable				\$ 180,000		
51	Staff room - portable				\$ 100,000		\$ 300,000
	<u>Equipment Shop</u>						
52	Pay station, display racks, floor space - poratble				\$ 200,000		\$ 200,000
	<u>Café</u>						
53	Stage One - moble Café pad				\$ 20,000	\$ 1,120,000	\$ 20,000
54	<u>Contingency at 15%</u>				\$ 1,352,475	\$ 1,352,475	\$ 1,352,475
					\$ 10,368,975	\$ 10,368,975	\$ 10,368,975

H. Operations Costs, Revenues and Visitation Estimates

Draft Annual Visitor Estimates - Kununurra White Water Park								
Version 1.4, 23 May 2017								
					<u>Average</u>			
Facility Use - Single Users		<u>Visitors</u>	<u>Visit Duration (hr)</u>	<u>Total Visitor Hours</u>	<u>Visitors/day</u>			<u>Capacity Range</u>
301	Single trip guided use - hr (Raft Trip))	16000	1.5	24000	43.8	11.0	Trips/day	1-30 trips/day
302	Guided course use - hr	4500	3	13500	12.3	4.2	Users/hr	1-10 users/hr
303	Non-guided course use - hr	4600	8	36800	12.6	6.3	Users/hr	1-15 users/hr
		25100			68.8			1-200 visitors /day
Facility Use - Venue Hire		<u>Veneu Hire</u>	<u>Visit Duration (hr)</u>	<u>Hire Hours</u>	<u>Hire Days</u>			
304	Venue Hire - days	15	8	120	15			
305	Venue Hire - hr	50	3	150	18.8			
Equipment Hire		<u>Hire Days</u>			<u>Hires/day</u>			
306	Kayak - day	5650			15.5			
307	Paddle - day	5650			15.5			
308	Helmet - day	4500			12.3			
309	Vest - day	4500			12.3			

	Draft Operational Revenues - Kununurra White Water Park					
	Version 1.4, 23 May 2017					
		<u>Unit</u>		<u>Rate</u>	<u>Sub-Total</u>	<u>Total</u>
	Facility Use - Single Users		<u>Visitor Hours</u>			
201	Single trip guided use - hr	Hour	24000	\$ 62.00	\$ 1,488,000	
202	Guided course use - hr	Hour	13500	\$ 88.00	\$ 1,188,000	
203	Non-guided course use - hr	Hour	36800	\$ 10.00	\$ 368,000	\$ 3,044,000
	Facility Use - Venue Hire		<u>Visitor Hours</u>			
204	Venue Hire - hr	Hour	270	\$ 950.00	\$ 256,500	\$ 256,500
	Equipment Hire		<u>Hire Days</u>			
205	Kayak - day	Day	5650	\$ 50.00	\$ 282,500	
206	Paddle - day	Day	5650	\$ 11.00	\$ 62,150	
207	Helmet - day	Day	4500	\$ 5.50	\$ 24,750	
208	Vest - day	Day	4500	\$ 11.00	\$ 49,500	\$ 418,900
	Café Lease					
209	Annual Café Lease					\$ 20,000.00
						\$ 3,739,400
					Revenue/day	\$ 10,244.93
					Revenue/hr	\$ 1,280.62
	Profitability (Annual Revenues - Costs)					\$ 1,017,000

I. Economic Impact Estimates

Draft Annual Economic Impact - Kununurra White Water Park					
Version 1.4, 23 May 2017					
Facility Operations					
401	Facility Profit - retained locally (50% local ownership)				\$ 508,500
402	Annual Local Staff Costs				\$ 2,163,500
403	Maintenance Costs - local spend				\$ 159,500
404	Marketing costs - local spend				\$ 6,000
405	Power & Comms				\$ 14,880
406	Office equipment - local spend				\$ 8,800
Café					
407	Café Staff Costs				\$ 180,000
408	Café - local spend food and beverage				\$ 600,000
Visitors					
			<u># visitors</u>	<u># days - Kimberly</u>	<u>\$/visitor/day</u>
409	Attracted to Kununurra specifically for Park	International	200	23.3	\$ 45 209,700
410		Inter State	600	13.8	\$ 67 \$ 554,760
411		Intra State	1600	7.8	\$ 93 \$ 1,160,640
412	Stay an additional night due to Park	International	600	1.5	\$ 45 \$ 40,500
413		Inter State	1800	1.5	\$ 67 \$ 180,900
414		Intra State	3000	1.5	\$ 93 \$ 418,500
415	Stay an additional 1/2 day due to Park	International	1200	0.5	\$ 45 \$ 27,000
416		Inter State	3600	0.5	\$ 67 \$ 120,600
417		Intra State	6000	0.5	\$ 93 \$ 279,000
	<i>*Source: Tourism WA North West 2014/2015 fact sheet</i>		18600		
Special Events					
418	Special event spending	10 special events per year		\$2000 local spend	\$ 20,000
					\$ 6,652,780