c. Alternative technologies

Opportunities for alternative technologies are limited with respect to water supply. However emphasis will be placed on demand management within the development and there is a desire to leverage on BMS (Building Management Systems) to track and manage water demand more efficiently.

7.2.7 Irrigation

Although high quality landscaping will be a feature throughout the development it is the intention that the landscaping palette comprise as far as possible of indigenous and other water wise species.

An estimated water demand for the establishment period of the proposed landscaping has been determined. As the plants establish over a few seasons the demand will likely reduce by up to 50%. The projected annual water demand for this scenario is 80,025 m^2 for the establishment year. This equates to an average application rate of 2.36 mm/m^2 which translates to a daily consumption of 220 m^2/day.

The probable sources of water for irrigation could include a blend of:

- boreholes;
- supply from treated effluent lines (blended with other sources to mitigate against leachate); and
- water from dewatering and other subsurface water control operations.

Treatment will most likely be required for some for the above source depending on the water quality.

7.2.8 Water for Construction

Given the total bulk of the development is 150,000 m^2, it is a reasonable (albeit conservative) estimate that a total of 471,000 m^2 of water will be used to construct the building components of the project over its entire construction period.

It is expected that civil engineering construction will account for an equivalent 140,000 m^2 during the construction period and hence requiring 1 m^3/m^2 water per constructed area. Considering both civil construction and building construction a total of 611,000 m^3 of water could be used over the entire construction period

7.3 Sewage

7.3.1 Existing Bulk Infrastructure

The proposed development falls within the Athlone Waste Water Treatment Works (WWTW) catchment area and within a sub catchment that drains to the Raapenberg Pump Station, which in turn pumps the sewage to the Athlone WWTW.

The River Club is currently serviced by a 225 mm dia. pipe located in Observatory Road. This pipe also services the SAAO and Valkenberg Hospital complex. In addition, a large diameter bulk sewer main – ranging in size from 900 mm to 1050 mm dia. – runs to the west of the River Club site. This main eventually discharges into the Raapenburg Pump Station.

Given the additional flows that are expected it is anticipated that the 225mm dia. main will not have sufficient spare capacity to serve the development and it is likely that a more direct connection to the bulk main is required. It is also reported by the CoCT that the Raapenburg Pump Station experiences challenges during peak times and is at capacity during these times. (refer to 7.3.2 below).

7.3.2 Proposed Bulk Infrastructure

No bulk collection, pumping or conveyance infrastructure upgrades are required to service the River Club development. In terms of wastewater treatment, the CoCT is currently installing a 3rd diversion main from the Athlone WWTW to the Cape Flats WWTW so that flows during peak times can be diverted to Cape Flats WWTW, thus creating additional capacity.

7.3.3 Proposed Link Infrastructure

It is unlikely that the exiting sewer pipe that services the River Club will be sufficient for the increased flows, and it will therefore be necessary to implement sufficient link infrastructure.

The link infrastructure will consist of:

- Two pump stations (PS 1 located in Precinct 1 and P2 located in Precinct 2). These pump stations will be located within the respective "super-basements"[20].
- PS2 is a satellite pump station i.e. it pumps sewage to PS1 from where it is pumped towards the municipal discharge point in Station Road. A bypass arrangement is provided at PS1 so that P2 can still pump sewage towards the municipal discharge point if PS1 is experiencing technical difficulties.
- Two HDPE sewage rising mains of approximately 160 mm dia. will be installed within the "super-basement"[21] of PS 1.
- The infrastructure that will be required outside of the development boundary entails a section of 160 mm dia. HDPE rising main crossing Liesbeek Parkway and discharging into a break pressure manhole. From the break pressure man hole the sewage will gravitate in 200 mm dia. uPVC of approximately 40 m until it discharges into an existing 900 mm dia. sewer main. The Liesbeeck Parkway crossing will most likely be installed using directional drilling to avoid disruption to road users.

7.3.4 Proposed Internal Infrastructure

Preliminary estimates indicate that a network ranging in size from 160mm to 250mm dia. pipelines would be sufficient to service the development. However, this can only be confirmed upon detailed

[20] Refer to footnote 4 on pg. 17.

[21] *Ibid.*

sewer modelling. The network will be designed to maintain the minimum velocities (in addition to other requirements as prescribed by the CoCT).

7.3.5 Demand

The sewage unit flows are based on a percentage of the water demand and are indicated in **Table 10**.

Table 10: Sewage flows unit demands

Land Use	Water Demand		Sewer Yield	Sewer Flows	
	Unit	Rate		Unit	Rate
Retail	l/m²/day	4	95%	l/m²/day	3.8
Residential	l/unit/day	600	90%	l/unit/day	540
Office	l/m²/day	4	95%	l/m²/day	3.8
Hotel	l/m²/day	4	95%	l/m²/day	3.8
Place of Instruction	l/pupil/day	20	95%	l/pupil/day	19
Ancillary	l/m²/day	4	95%	l/m²/day	3.8

The ADWF (Average Dry Weather Flow) for the development is estimated at 866 kl/day which equates to an instantaneous flow of 10.02 l/s. The PDWF (Peak Dry Weather Flow) is estimated at 35.37 l/s and when considering an infiltration rate of 15% the PWWF (Peak Wet Weather Flow) is estimated at 40.68 l/s. The findings are summarized in **Table 11** overleaf.

Table 11: Sewage demand

Description	Unit	Amount
Average Dry Weather Flow (ADWF)	kl/day	866
Instantaneous Flow	l/s	10.02
Peak Dry Weather Flow (PDWF)	l/s	35.37
Infiltration @ 15%	l/s	5.31
Peak Wet Weather Flow (PWWF)	l/s	40.68

7.4 Electricity Supply

7.4.1 Existing Infrastructure

The incoming Bulk MV Supply source is currently unknown.

7.4.2 Demand

The maximum demand for the site has been preliminarily calculated at 10-MVA. This maximum demand has been calculated based on best-practice minimum energy consumptive systems incorporating the following engineering solutions:

- LED lighting technology to be adopted throughout the development;
- time-of-use and occupancy sensors to be included in designs to manage lighting and air-conditioning systems;
- air-conditioning systems to comprise latest inverter-based variable load capacity technology ensuring energy efficient load management;
- centralized air-conditioning services to be provided where possible with heat-exchanger systems to provide hot-water for local usage (minimizing the need for electrical heating); and
- site energy management systems can be implemented ensuring load-demand management.

7.4.3 Required New Infrastructure

A 10-MVA Mains Supply is recommended for the site. This supply will be required to be provisioned as per the following phases:

- Precinct-1 1st Phase 6.0-MVA
- Precinct-2 2nd Phase 4.0-MVA

It is expected that the City of Cape Town (Electricity Department) will provide an 11-kV Bulk Mains Supply to the site. A standard 630-Amp MV Switchpanel will be well suited to this application (having a capacity of ±12.5-MVA). This will require a City of Cape Town MV Switchroom to be constructed, preferably in the Precinct-1 "basement"[22] parking areas.

7.4.4 Incorporation of Solar Power

It is estimated that ± 2.0-MW of solar power can be supplied to the site at peak-demand (assuming 330-Watt Solar Panels, angled at 15° to the horizontal and fitted over ≤ 60% of the available roof space in rows of four-panels per access-aisle).

The solar panels will be series connected to 33-kW and 100-kW invertor sources, which will feed power to the LV side of individual building Main Distribution Panels. The Main LV Switch and the incoming Supply-Authority / Solar-Sources will be monitored and managed by Dual-Source Smart Meters, such that the electricity billing can be appropriately metered.

7.4.5 Capacity

The CoCT's Electricity Department has confirmed that there is sufficient capacity to supply the demand for the proposed development (refer to **Annexure S**).

[22] Refer to footnote 4 on pg. 17.

7.5 Stormwater Management

7.5.1 Overview

The City of Cape Town's *Management of Urban Stormwater Impacts Policy* (2009) sets the requirement to attenuate the stormwater runoff and to improve the stormwater quality from developed sites, as per best management practices.

It is expected that a detailed Stormwater Management Plan will become a condition of granting development rights, and that at this stage of the process a conceptual plan is sufficient to demonstrate the intent of the proponent to accommodate and comply with the policy.

7.5.2 Existing Infrastructure

The existing stormwater infrastructure for the River Club consists of a limited network of catchpits and pipes which drain directly into the Liesbeeck Channel and Old Liesbeeck River. Further drainage provision is through a combination of overland flow into the above-mentioned water courses and filtration. There are no visible or known connections to the municipal stormwater network.

Various large diameter municipal stormwater outfalls which drain parts of Observatory discharge into the 'old' Liesbeeck River channel.

7.5.2 Conceptual Stormwater Management Plan

a. Objectives

The objectives of the Conceptual Stormwater Management Plan are to:

- Identify measures to comply with the Council's Management of Urban Stormwater Impacts Policy (C58/05/09);
- Propose methods (structural controls) for removing, reducing, or retarding runoff flows, and preventing targeted stormwater runoff constituents, pollutants and contaminants from reaching receiving waters; and
- Propose operation and maintenance procedures.

b. Stormwater concept

It is proposed to utilise a system of vegetated swales on the western perimeter of the site underlain by a formalised piped drainage network. This will ensure that all stormwater runoff will be treated by the swales prior to entry into the river. The preliminary stormwater attenuation and drainage concept layout is illustrated in **Annexure Q**.

c. Stormwater attenuation

No specific measures will be implemented in order to reduce runoff volumes and flow rates. However, the vegetated swales will slow the stormwater flow velocities, lengthening the

catchment response time and decreasing peak flows for the lower order storm events. They will also increase the total storage capacity of the stormwater system. This will provide storage in addition to the piped network.

d. Stormwater quality

The vegetated swales will reduce waterborne pollutant concentration through sedimentation and plant uptake of nutrients. Infiltration of stormwater into the soil underlying the swales will also lead to a reduction in pollutants reaching the downstream waterways.

e. Impact on flood lines

The CoCT's latest flood line studies indicate that flood lines currently impact on the site. The 1:100 year RI and 1:20 year RI storm events have particular relevance in terms of development set-backs. Applying the City of Cape Town's *Management of Urban Stormwater Impacts Policy* (2009) to this development, no buildings are to be constructed within the 1:20 year flood zone. Buildings are permitted in the 1:100 year flood zone; however the finished floor levels must be above the 1:100 year flood level.

f. Flood risk mitigation

All finished floor levels of structures at the River Club will be constructed above the 1:100 year flood level. Site egress during high order flood events will be via the proposed bridge across the M5 (Berkley Road) on the eastern portion of the site. Egress via the Liesbeek Parkway intersection is not possible as the level of the culvert crossing the Liesbeek River is at the 1:20 year flood level.

g. Calculation of stormwater runoff

Based on the rainfall data provided in **Table 12** overleaf, the various design storms (South Africa, 24h SCS Type 1) will be created and simulated[23]. The storm distributions are shown in **Figure 44** overleaf.

[23] Rainfall data extracted from the SRK / Smithers Rainfall Database are used to create these storm events.

Table 12: 24hr rainfall (Source: SRK/Smithers Database, 2011)

Recurrence Interval	24hr Rainfall Depths
0.5yr	32.3
1yr	43.9
2yr	53.1
5yr	71.2
10yr	84.5
20yr	98.4
50yr	117.9
100yr	133.8
200yr	150.9

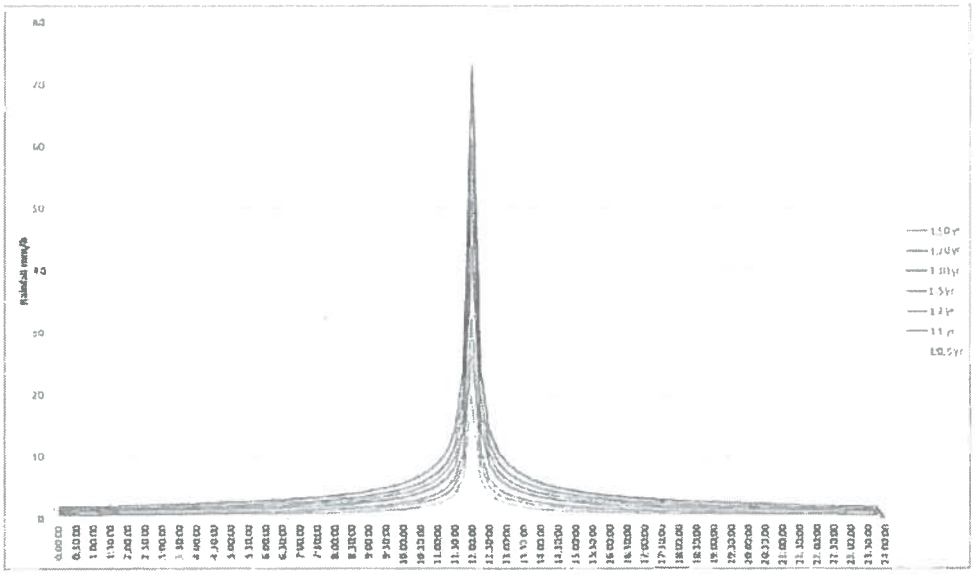


Figure 44: 24hr SCS type 1 storm distribution (Source: Aurecon)

h. Proposed stormwater infrastructure

A system of vegetated swales underlain by a formalised piped drainage network will convey stormwater from within the precinct to the various detention ponds.

Bioretention swales provide both stormwater treatment and conveyance functions, combining a bioretention system installed in the base of a swale that is designed to convey stormwater. The swale component provides pre-treatment of stormwater to remove coarse to medium sediments while the bioretention system removes finer particulates and associated contaminants.

Bioretention swales provide flow retardation for frequent storm events and are particularly efficient at removing nutrients. The bioretention swale treatment process operates by filtering stormwater runoff through surface vegetation associated with the swale and then percolating the runoff through a prescribed filter media, forming the bioretention component which provides treatment through fine filtration, extended detention treatment and some biological uptake. A typical cross section of a swale is shown in **Figure 45** overleaf.

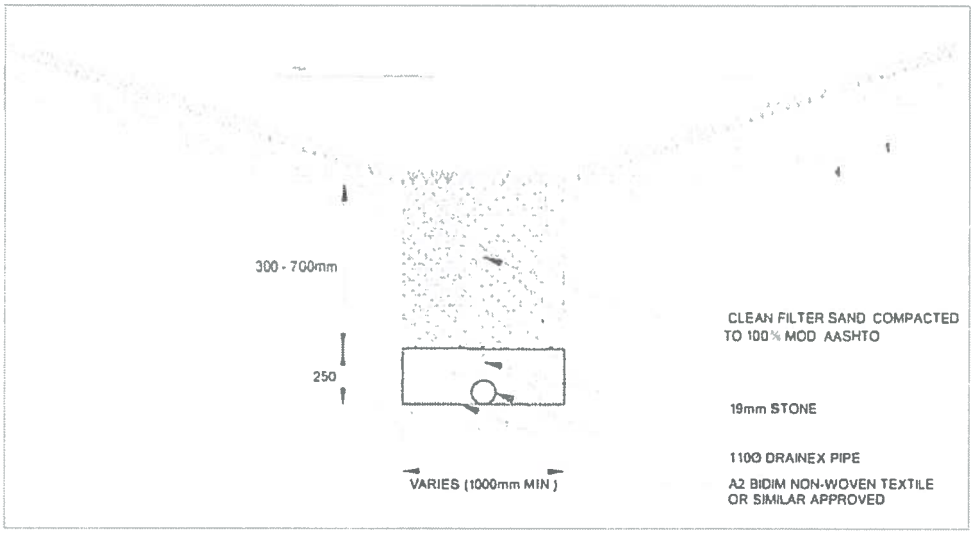


Figure 45: Swale – typical cross section (Source: Aurecon)

Bioretention swales also act to disconnect impervious areas from downstream waterways and provide protection to natural receiving waterways from frequent storm events by reducing flow velocities compared to piped systems. The bioretention component is provided as a continuous "trench" along the full length of a swale.

It is important to ensure that velocities in the bioretention swale from both minor (2-10 year RI) and major (50-100 year RI) runoff events are kept sufficiently low (preferably below 0.5 m/s and not more than 2.0 m/s for major flood) to avoid scouring. This will be achieved by ensuring the slope and hydraulic roughness of the overlying swale reduce flow velocities by creating shallow temporary ponding (i.e. extended detention) over the surface of the bioretention filter media via the use of a check dams (only where required).

i. Operation and maintenance

Operation and maintenance procedures will be produced by Aurecon as part of the closeout procedures for the project. The maintenance agreement will require the developer to periodically clean the structures, monitor the vegetation and sediment accumulation and provide occasional watering to preserve the vegetation during the dry season. The developer or Property Owners' Association (POA), as applicable, will be tasked with implementing the most suitable of these activities for the specific site conditions, or as required during the lifecycle of the swales.

j. Sustainable urban drainage

A sustainable urban drainage system (SUDS) is designed to reduce the potential impact of new and existing developments with respect to surface water drainage discharges.

SUDS use the following techniques:

- source control
- increasing permeable surfaces such as permeable paving
- storm water detention
- storm water infiltration
- evapo-transpiration (e.g. from a green roof)

Some interventions that are being considered for implementation at the River Club include:

- Protecting and enhancing the Liesbeeck Canal through rehabilitation of the bank on the River Club side;
- Protecting and improving the water quality of water draining from the proposed development through the use of bio swales;
- Attempting to restore the urban water balance by maximising the reuse of stormwater, recycled water and grey water;
- Integrating stormwater treatment into the landscape so that it offers multiple beneficial uses such as water quality treatment, wildlife habitat for the Western Leopard Toad, recreation and public open space;
- Marginally reducing peak flows and runoff simultaneously providing for infiltration and groundwater recharge; and
- Integrating water into the landscape to enhance urban design as well as social, visual, cultural and ecological values.

8. TRANSPORT IMPACT ASSESSMENT

8.1 Overview

A Draft Transport Impact Assessment (TIA) was undertaken by Aurecon in order to assess the predicted traffic generated by the development against the current capacities of the surrounding road network, determine the most suitable vehicular access point to the site and determine any possible road and intersection improvements required as a result of the development induced traffic. The analysis performed in the Draft TIA included primary data collection in the form of traffic counts and site visits and physical observations. The Draft TIA is attached to this report as **Annexure T**.

The impact of the traffic to be generated by the proposed development was assessed by examining the performance of critical intersections and links in the vicinity of the site, using computerised capacity analysis techniques. In doing so, five traffic scenarios were selected for analysis purposes, *viz.*:

- Base year (2017) land use development with present transport network;
- Base year (2017) land use development with the completion of Berkley Road;
- Base year (2017) land use with Precinct 1 River Club development with partial and full completion of Berkley Road;
- Base year (2017) land use with full River Club developmentwith partial and full completion of Berkley Road; and
- Future 2032 modified "pragmatic densification" land use scenario (TRUP) with full River Club development (including completion of Berkley Road and upgrade of Liesbeek Parkway).

8.2 Site Access / Egress

Proposed access / egress positions to the site are illustrated in **Figure 46** overleaf.

Primary access / egress to the development will occur at two positions:

a. Along Berkley Road extension, approximately halfway between the M5 and the intersection with Malta Road / Liesbeek Parkway. The spacing between the M5 and future Malta Road / Liesbeek Parkway / Berkley Road extension intersection will be approximately 365m, which is very close to the preferred spacing of 375m for a Class 3 road, and is therefore deemed acceptable.

b. Along Liesbeek Parkway opposite Link Road. The spacing between the Station Road / Observatory Road intersection and the Malta Road / Berkley Road extension intersection is slightly short of the preferred spacing of 375m (± 350 m). However, the intersection is already signalized and is considered an ideal access / egress position for the new development.

Secondary access / egress (left-in left-out) will be provided at two positions approximately 90m from the main access off Berkley Road extension. These accesses will give direct access to Precinct 2 and alleviate congestion at the main intersection along Berkley Road.

The existing access to the River Club is not considered viable as it will provide access to the proposed SKA development and is not owned by the River Club. However the existing access right of way that the River Club enjoys across this site will be retained.

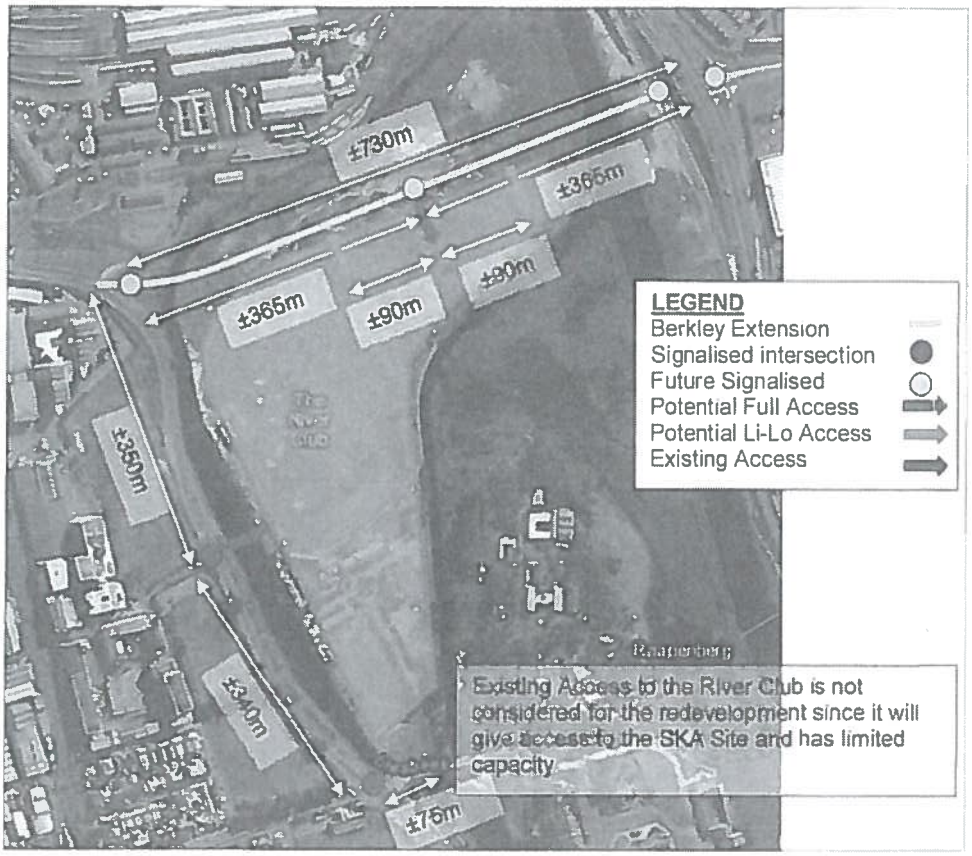


Figure 46: Proposed access / egress (Source: Aurecon)

8.3 Analysis of Development Traffic

8.3.1 Scope of Traffic Modelling

This traffic model study involved an EMME/4 transport modelling analysis of the road system in the area of the River Club development to:

- predict background traffic behaviour with changes to the road network; and
- predict traffic conditions with other proposed developments such as the TRUP initiative and the City's future 2032 "pragmatic densification" land use scenario.

The following was included as part of this study:

- calibrated transport model estimates for the 2017 base year;
- public and private transport estimates for a future 2032 land use scenario which includes trips generated across the metropolitan area;
- the analysis of alternative network scenarios with, and without, other road improvements in the vicinity of the proposed project;
- the incorporation and assessment of future public transport proposals for the area; and
- graphic outputs of modelling results, including peak hour traffic, peak period traffic and volume / capacity ratios and public transport passenger estimates.

8.3.2 Land Use Scenarios Modelled

The following 4 land use scenarios were modelled as part of the Draft TIA:

a. 2017 base year (without the proposed development). This has mainly been used to calibrate and validate the model outputs in terms of present traffic and passenger counts, and to provide a general assessment of the network performance. This scenario was also used to test the impact of completing the Berkley Road connection with present traffic demand.

b. 2017 base year with Precinct 1 of the proposed development. This was to establish a minimum level of infrastructure requirement and to assess if incremental infrastructure development is feasible.

c. 2017 base year with both phases of the proposed development. Other future long-term developments were excluded in order to determine the total infrastructure needs of Precincts 1 & 2 combined.

d. 2032 future "pragmatic densification" land use scenario with the proposed development. This scenario allows for a comprehensive assessment of the River Club development in conjunction with other land use developments in the sub-region.

8.3.2 Trip Generation

Trip generation rates were obtained from the *South African Committee of Transport Officials (COTO) Trip Data Manual, TMH 17, Volume 1 (2013)*.

The area for each land use proposed was used to calculate the trip generation for each specific land use for the AM and PM peak hours as shown in the tables. Trip reduction rates were applied for "mixed-use" development, as allowed for and described in the TMH 17.

The development is planned in two phases and the implementation of these are expected to occur within the next 5-10 years. It is estimated that the development could generate the following approximate peak hour trips:

Precinct 1

AM peak hour total trips: 645 Trips (382 In / 263 Out)
PM peak Hour total trips: 1 673 Trips (916 In / 757 Out)

Precinct 2

AM peak hour total trips: 1 551 Trips (1 182 In / 370 Out)
PM peak Hour total trips: 987 Trips (347 In / 640 Out)

Total (Precinct 1 & Precinct 2)

AM peak hour total trips: 2 197 Trips (1 563 In / 633 Out)
PM peak Hour total trips: 2 660 Trips (1 263 In / 1 397 Out)

8.3.3 Trip Distribution

The proposed traffic distribution for the full future road network is shown in **Figure 47**.

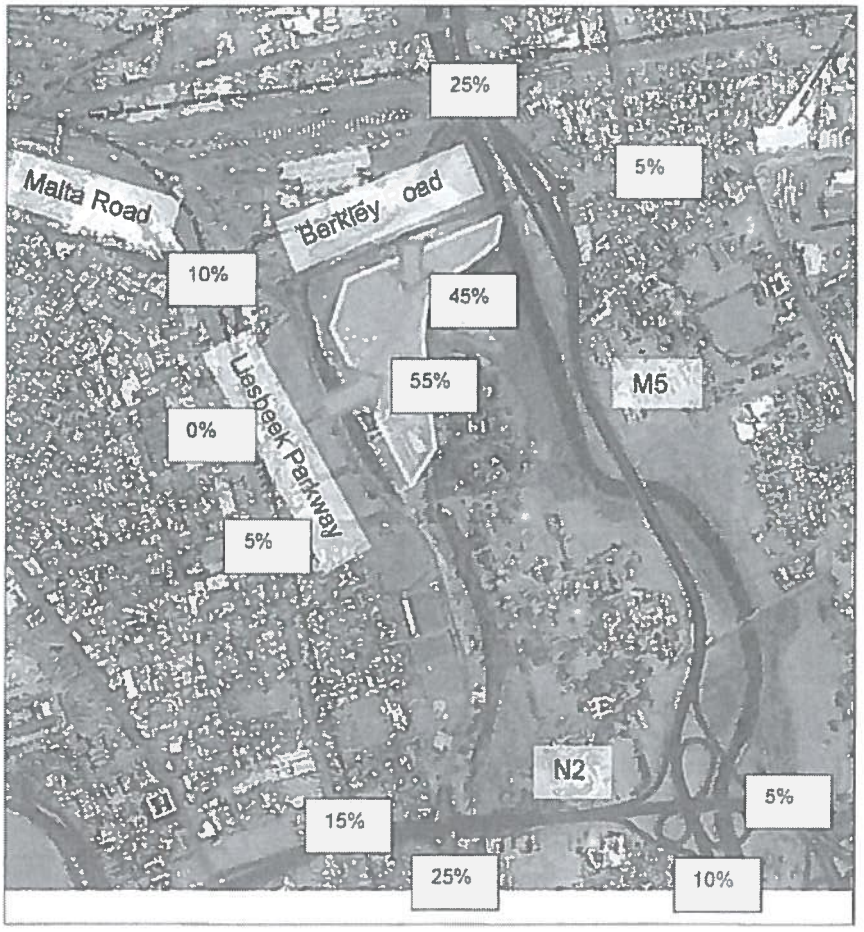


Figure 47: Trip distribution, full road network (Source: Aurecon)

It is evident that:

- 55% of vehicles entering the site will do so off Liesbeek Parkway, with 45% entering via Berkley Road extension.

- Distribution from the site will likely occur as follows:
  - 25% will use M5 northbound;
  - 25% will use Liesbeek Road southbound;
  - 15% will use N2 westbound (via Liesbeek Parkway);
  - 10% will use Lisebeek Road / Malta Road westbound towards the CBD;
  - 10% will use M5 southbound;
  - 5% will use N2 southbound;
  - 5% will use Berkley Road eastbound; and
  - 5% will use Station Road westbound towards Main Road.

8.3.4 Future Network Scenario Modelling

The impact of the development traffic on the road network was evaluated for the following scenarios:

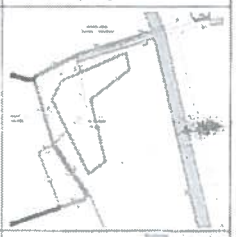
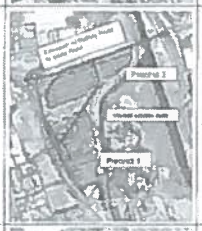
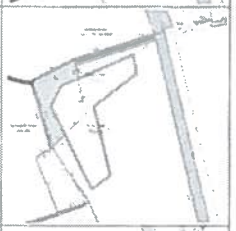
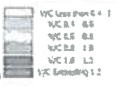
- Precinct 1 traffic with Berkley Road extended fully to Malta Road (2017 traffic);
- Precinct 1 and 2 traffic with Berkley Road extended fully to Malta Road (2017 traffic); and
- Precinct 1 and 2 traffic with expected TRUP traffic with Berkley Road extended fully to Malta Road (2032 traffic).

Table 13 overleaf provides a summary of the modelling results.

It can be concluded that:

- The network is able to carry the proposed development, including the "Pragmatic Densification" scenario, provided certain upgrades are implemented; and
- There is not a significant difference between the various scenarios. The 2032 traffic sceanario is similar to the 2017 traffic scenario due to the increase in the use of public transport.

Table 13: Traffic scenarios on fully extended network (Source: Aurecon)

Scenario Description	Scenario Illustration	PH Traffic	Peak Period	Vehicle / Capacity
Precinct 1 traffic with Berkley Road extended fully to Malta Road (2017 traffic)				
Precinct 1 and 2 traffic with Berkley Road extended fully to Melte Road (2017 traffic)				
Precinct 1 and 2 traffic with expected TRUP traffic with Berkley Road extended fully to Malta Road (2032 traffic)				
Key				

8.4 Road Upgrades

8.4.2 Precinct 1

Roads

The following road improvements are required for the development of Precinct 1 (and Precinct 2):

- Liesbeek Parkway should be dualled between Station Road and Link Road;
- The partial completion of Berkley Road extension as a 2-lane road;
- A 2-lane link road through the development (with appropriate widening at intersections); and
- Required other internal roads.

Intersections

a. Station Road / Liesbeek Parkway intersection

Upgrades include:

- Signal optimization

b. Link Road / Liesbeek Parkway intersection

Upgrades include:

- Northern leg
  - additional though lane on approach and turning lane; and
  - extension of the merging lane on departure.

- Eastern leg
  - new approach into development with two lanes in and out and slip lane to the south.

- Southern leg
  - additional turning lane on approach; and
  - additional through lane and merging lane on departure.

(refer to **Figure 48** overleaf)

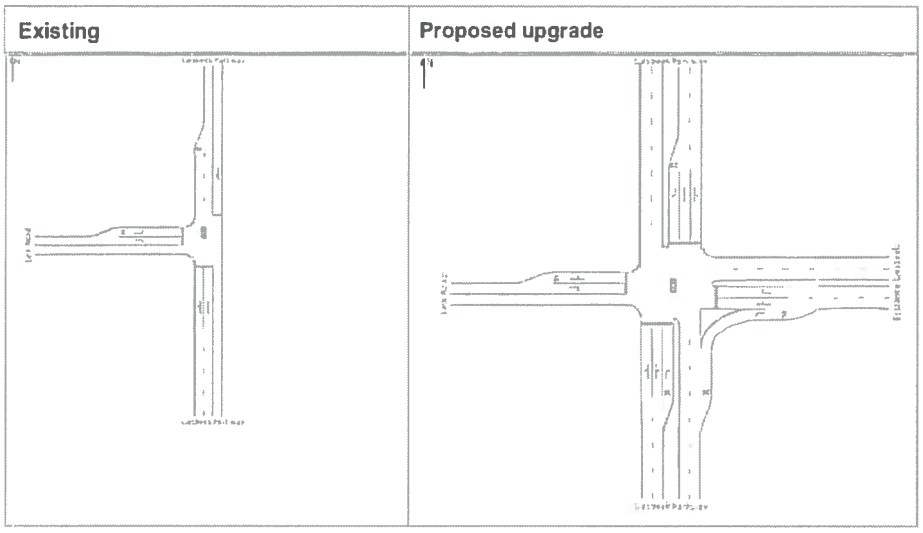


Figure 48: Conceptual upgrade of Link Road / Liesbeek Parkway intersection (Source: Aurecon)

c. New access off Berkley Road extension

Upgrades include:

- Temporary intersection from the development into the west-bound lane of the Berkley Road extension:
  - 2 lane intersection approaching from Berkley Road; and
  - full approach from within development site.

(refer to **Figure 49** overleaf, portion highlighted in green required for Precinct 1)

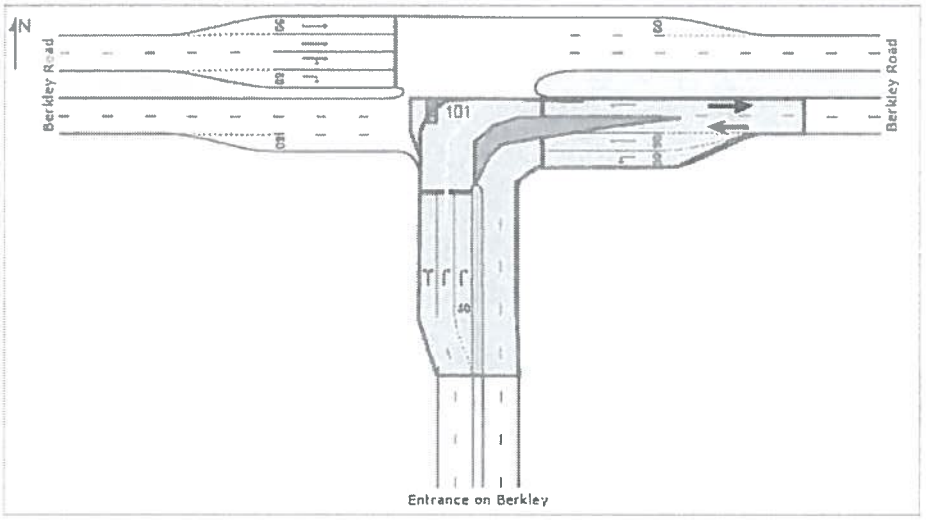


Figure 49 Temporary intersection from the development into the west-bound lane of the Berkley Road extension (Source: Aurecon)

d. M5 / Berkley Road intersection

Upgrade full intersection to a single point interchange as indicated in **Figure 50** below.

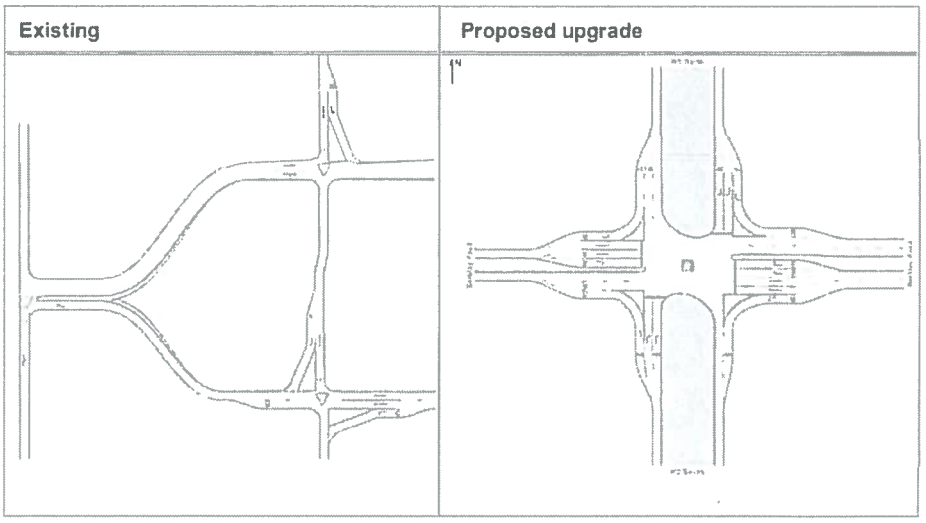


Figure 50: Conceptual upgrade of M5 / Berkley Road intersection to a single point interchange (Source: Aurecon)

8.4.3 Precinct 2

Roads

The west bound carriageway of Berkley Road extension should be extended to the western left-in left-out intersection.

Intersections

a. Berkley Road extension

The following is required:

- Two new left-in left-out intersections.

8.4.4 Future Network

Roads

The following road improvements are required in the long term (implementation by others):

- Dualling of Liesbeek Parkway between the N2 and Station Road;
- Dualling of Liesbeek Parkway between Link Road and Malta Road, which can only be implemented on completion of the Malta / Liesbeek / Berkley Road intersection; and
- The full extension of Berkley Road requires a 4-lane road.

Intersections

a. N2 / Liesbeek Parkway intersection

Upgrades include:

- Western leg
  - add right turning lane on approach; and
  - add merging lane on departure.
- Northern leg
  - additional though lane on approach.
- Eastern leg
  - add merging lane on departure.
- Southern leg
  - additional right turning lane on approach; and
  - additional through lane on departure.

(refer to **Figure 51** overleaf)

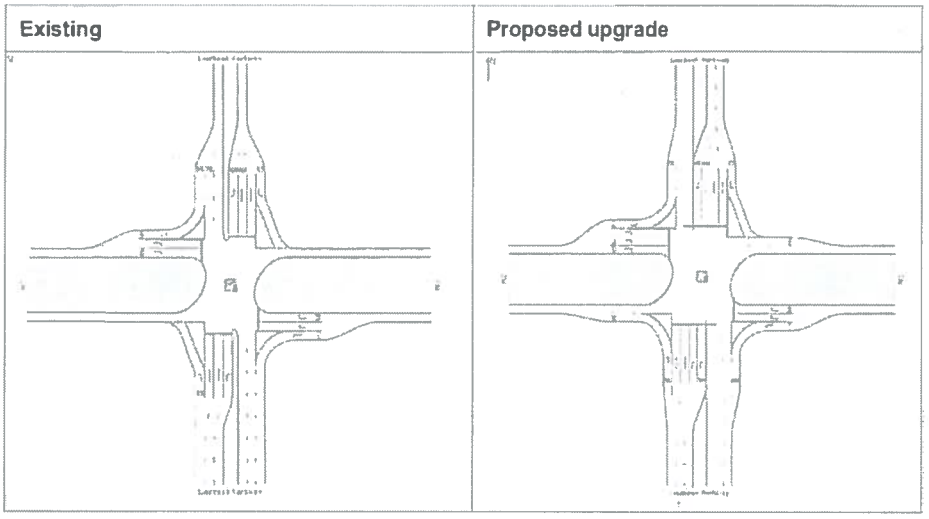


Figure 51: Conceptual upgrade of N2 / Liesbeek Parkway intersection (Source: Aurecon)

b. Malta Road / Liesbeek Parkway / Berkley Road extension intersection

Upgrades include the construction of a new signalised intersection with:

- Western leg
  - full new approach and departure
- Northern leg
  - new access for PRASA land
- Eastern leg
  - full new approach and departure
- Southern leg
  - full new approach and departure
  -

(refer to **Figure 52** overleaf)

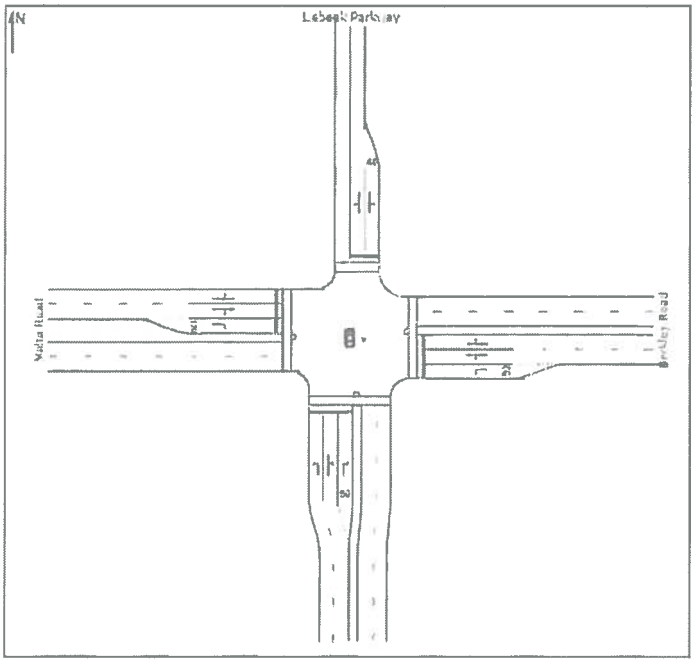


Figure 52: Conceptual design of new signalised intersection at Malta Road / Liesbeek Parkway / Berkley Road extension intersection (Source: Aurecon)

c. M5 / Berkley Road intersection

Upgrades include:

- Northern leg
  - additional right turn lane on approach
- Western leg
  - additional merging lane on departure

(refer to **Figure 53** overleaf)

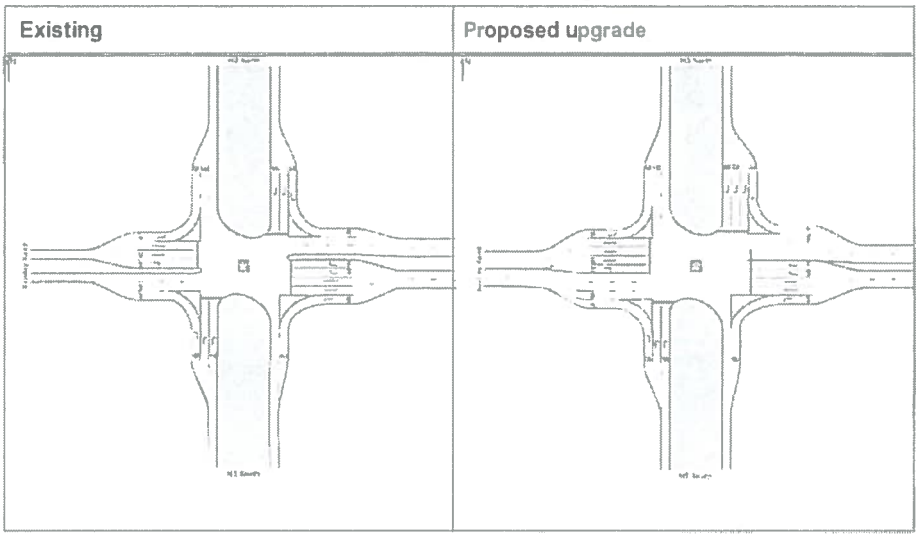


Figure 53: Conceptual upgrade of M5 / Berkley Road intersection (Source: Aurecon)

8.5 Construction Traffic

8.5.1 Precinct 1

The construction impact on traffic is as follows:

- The construction materials will initially be transported via Liesbeek Parkway in the absence of the proposed bridge crossing of the Black River. This will lead to increased traffic on Liesbeek Parkway, but if the contractor is restricted to do hauling outside peak hours the impact will be significantly reduced.

- The upgrading of the M5 / Berkley Road intersection will have a significant impact on traffic on Berkley Road East, but with appropriate traffic accommodation stages it could be mitigated.

- The upgrading of the Liesbeek Parkway / Link Road access intersection will have significant impact on the Liesbeek Parkway traffic. However, the fact that the intersection will have 4-lanes (2 lanes per direction) at the intersection implies that by properly planned traffic accommodation stages, the impact could be mitigated.

- For the construction of Precinct 1 the material could be transported on the Berkley Road extension, which will not be open to public traffic until completion of certain portions of Precinct 1.

8.5.2 Precinct 2

The construction impact of the implementation of Precinct 2 will be significant lower and limited to access control to the link road between the M5 and Liesbeek Parkway.

8.6 Public Transport and Non-Motorised Transport

8.6.1 Public Transport

Public transport services are available within the surrounding area of the proposed development. However, it is important that public transport for the proposed development is enhanced by extending existing services or provision of new services. Importantly, a high quality Non-Motorised Transport network leading to the public transport facilities from the River Club should be provided.

It is the intention that current public transport services, albeit low volume services or low frequencies, be supplemented with higher capacity vehicles at peak times where this should be justified. Further, the public transport system should be adaptable over time relating to the specific needs or passenger requirements as concluded in the TRUP initiatives.

Existing public transport facilities

The River Club site is served by various modes of public transport, viz:

a. Metrorail Services

The Metrorail train services have traditionally been the most popular mode of public transport in Cape Town, however the numbers have declined in recent months due to operational issues at Metrorail. The Observatory train station is located approximately 600m from the Link Road / Liesbeek Parkway access to the development. Other train stations in relatively close proximity include Koeberg (approximately 650m from the Berkley Road extension (east) access to the development) and Salt River (approximately 750m from the Berkley Road extension (west) access to the development).

b. Golden Arrow Bus Services

Golden Arrow Bus Services (GABS) have an existing route along Liesbeek Parkway (from the south towards Malta Road in the north with only one stop location noted in Liesbeek Parkway northbound). Station Road is also a GABS route. However, according to the TDAs Transportation Reporting System (data year 2016) there are currently no GABS bus stops along Liesbeek Parkway.

c. MyCiTi Bus

There are currently no MyCiTi routes serving the immediate environment or within the walkable catchment area. The closest MyCiTi route to the development is Feeder Route 102, with the closest bus stop along this route located in Spencer Road (near the Salt River Rail station), which is not within acceptable walking distance from the development (it is more than 1km from both the access locations for Precincts 1 and 2 on Liesbeek Parkway and the future Berkley Road extension, respectively). As part of Phase 1 of the MyCiTi system, Feeder Route 102 serves Salt River Station and the associated residential areas and the Cape Town CBD.

d. Minibus-taxis

Minibus taxi routes exist in Liesbeek Parkway on the section south of the development and also into Station Road, Main Road (south to north) and Voortrekker Road (east-west route).

Proposed public transport facilities

a. Precinct 1

It is expected that Precinct 1 will generate a certain amount of public transport users with up to 39% of the mode share during the later stages. To accommodate this demand, the following options are proposed for consideration:

- A potential taxi route from the east (Maitland Station) into Berkley Road, through the development and connecting with Liesbeek Parkway, Station Road, Observatory Station and Main Road.
- The existing GABS route for use in Liesbeek Parkway (to/from Malta Road) and Station Road.
- A potential MyCiTi feeder route extension (Route 102) from Salt River Station (Spencer Road) into Malta Road, Liesbeek Parkway, Station Road, Observatory Station and linking with Main Road (future D12 Trunk route) where demand justifies this. This was discussed with CoCT TDA and should be investigated further when required.

b. Precinct 2

To accommodate the possible future demand that the Precinct 2 development may have (additional demand of Precinct 2 but inclusive of Precinct 1), the following long-term planning proposals should be considered:

- a possible MyCiTi future feeder route along Berkley Road extension pending future planning outcomes;
- a MyCiTi trunk route T04 from the north may be altered and then be linked to serve Maitland Station (where other services connect to serve the development);
- a potential MyCiTi feeder route extension (Route 102) from Salt River Station (Spencer Road) into Malta Road, Liesbeek Parkway, Station Road, Observatory Station and linking with Main Road (future D12 Trunk route) where demand justifies;
- a potential taxi route from the east (Maitland Station) into Berkley Road that will not go through the development, but rather connect with Malta Road, Liesbeek Parkway, Station Road, Observatory Station and Main Road; and
- the existing GABS route for use in Liesbeek Parkway (to/from Malta Road) and Station Road.

Existing and proposed Public Transport routes are illustrated in **Figure 54** overleaf.

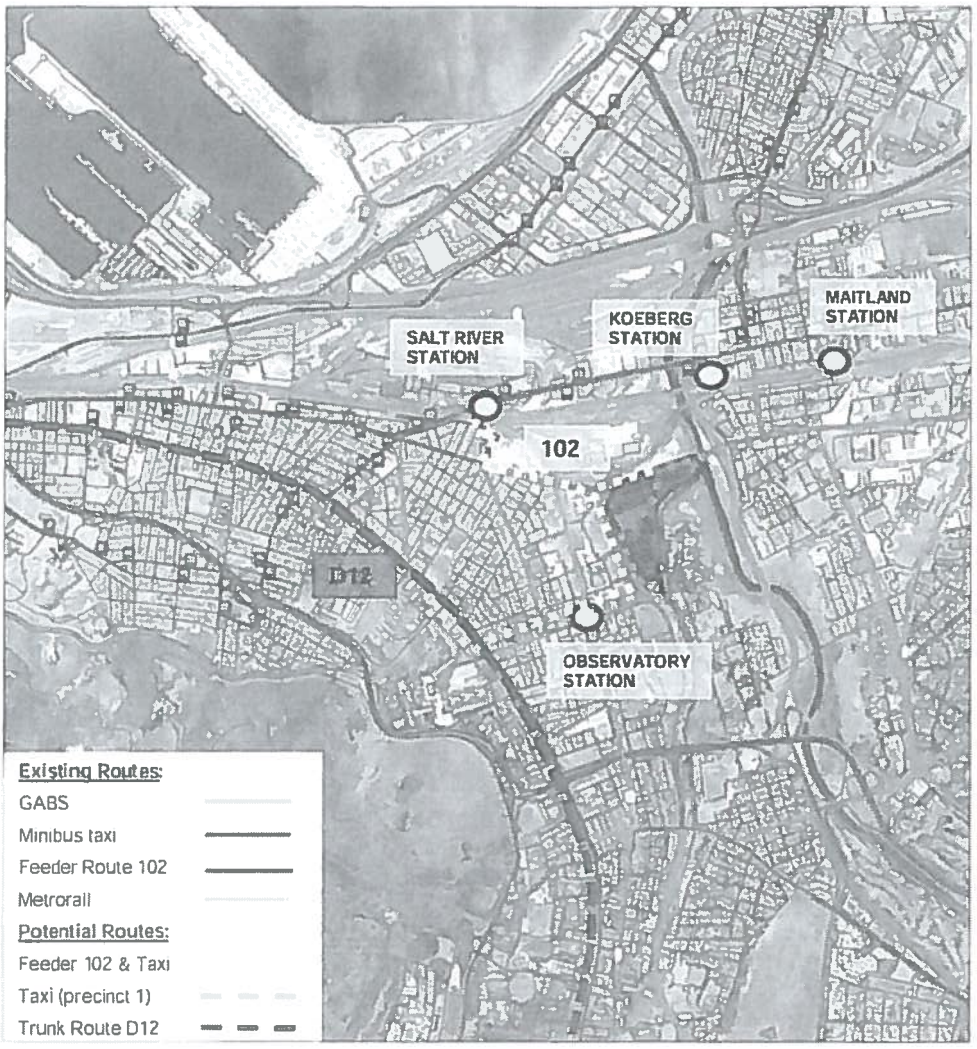


Figure 54: Existing and proposed Public Transport routes (Source Aurecon)

8.6.2 Non-Motorised Transport

NMT will play a big role in the daily activities of the future residents and activities in this area. New NMT facilities and infrastructure will be required as a result of the increased number of pedestrians (walking and public transport) and cyclists that are expected at the development. All new sidewalks should ideally be a minimum of 2.0m wide and any proposed pedestrian facilities should be Universally Accessible (UA) when implemented with adequate lighting for night conditions.

It is recommended that NMT routes (i.e. sidewalks and cycle paths) are provided along the full extent of Berkley Road and the proposed realignment of Liesbeek Parkway with adequate UA

compliant crossing facilities at the proposed signalised intersections and the proposed new accesses.

NMT facilities within the development for walking and cycling should also be accommodated for along the street network. Bicycle facilities such as cycle routes and locking facilities are important to encourage cycling and to make it more attractive and to establish a cycling culture. Wayfinding signs are also very important to provide information / guide NMT users and should be placed at strategic areas internally within the development and externally within the public domain where NMT infrastructure is proposed.

8.7 Parking

The River Club development is located within the 'standard area' within the City of Cape Town in terms of offstreet parking requirements.

The minimum off-street parking requirements per relevant land-use type within this area of Cape Town is illustrated in **Table 14** overleaf. By using the minimum parking ratios for the 'standard area' (as per Table 13), the minimum number of parking bays required is 3 221 for Precinct 1 and 2 628 for Precinct 2, totalling 5 849 parking bays.

Table 15 overleaf provides a summary of the preliminary parking bays to be provided at the River Club. The parking that is proposed for Precinct 1 totals 1 829 bays, which is 1 392 bays less than the minimum requirement as per the CoCT standards. The parking proposed for Precinct 2 totals to 2 972 bays, which is overprovided by 344 bays. The full development therefore provides a total of 4 801 parking bays, which is 1 048 bays less than the minimum required in terms of the CoCT standards.

The River Club development will be the first "new" development within the TRUP area, high levels of parking supply are still expected. Notwithstanding, serious consideration has been given to mitigate the high parking supply by applying the parking strategy as per the TRUP strategy[24] (where possible).

Mechanisms such as Travel Demand Measures (TDM) strategies are required and is proposed for higher ratios than the targets set in the TRUP initiatives. Strategies include enhancement of public transport and various modes thereof, cycling and walking. This is to minimise the reliance on private cars and monitor usage, and then excess supply could either be converted to other uses or made available to occupants of other sites (i.e. shared parking).

[24] The TRUP strategy is to minimise total parking supply, to develop shared parking, and to configure some parking for future conversion to other uses.

Table 14: Minimum off-street parking requirements as per CoCT standards (Source: Aurecon)

Precinct	Land Use	GLA (m²)	Standard Area Ratio	Minimum Parking Bays Required
Precinct 1	Conferencing	1 020 (400 seats)	6 bays / 10 seats	240
	Hotel	6 970	0.75 bays / bedroom + 20	140
	Retail	13 345	6 / 100 m²	801
	Restaurant	7 820	2 / 25 m²	626
	Offices	12 835	4 / 100 m²	513
	Gym	3 485	10 / 100 m²	349
	Ancillary	1 785	n/a	0
	Pavilion	850	5 / 100 m²	43
	Residential	7 140	2 / unit	510
	Total	**55 250**		**3 221**
Precinct 2	Office	37 825	4 / 100 m²	1 513
	Residential	19 975	2 / unit	800
	Place of instruction	8 500	1 / classroom	60
	Retail	4 250	6 / 100 m²	255
	Ancillary	1 700	n/a	0
	Total	**72 250**		**2 628**
Minimum Parking Bays Required for Precinct 1 & Precinct 2				**5 849**

Table 15: Preliminary parking bays to be provided at the River Club (Source: Aurecon)

Level	Precinct 1 Parking Bays	Precinct 2 Parking Bays
Level P1	210	1 372
Level P2	210	0
Level P2-"basement"[25]	0	1 540
Level P3-"basement"[26]	1 349	0
Surface	60	60
Total	**1 829**	**2 972**
Combined Total	**4 801**	

8.8 Conclusion and Recommendations

8.8.1 Conclusions

The following conclusions are *inter alia* drawn in the Draft TIA:

[25] Refer to footnote 4 on pg. 17.
[26] *Ibid.*

- Analysis of the existing intersections within the study area reveals acceptable Levels of Service (LOS), however the existing road network is reasonably congested during peak hours (AM peak hour is between 07:45 – 08:45 and the PM peak hour between 16:15 – 17:15).

- The transport modelling results have demonstrated that the present road capacity in the study area is unable to accommodate existing traffic demand. This gives rise to prolonged congestion and ever extending peak periods. Additional or upgraded road infrastructure and improved public transport services in the longer term are therefore required to support further development in the area.

- The analysis of the partial extension of Berkley Road shows that:
  - The proposed link road through the development draws a significant volume of traffic;
  - Precinct 1 and Precinct 2 traffic can be accommodated with certain infrastructure upgrading;
  - The M5 / Berkley Road interchange will have to be upgraded to a single point interchange;
  - Several intersections should be upgraded to achieve acceptable LOS.

- The analysis of the full extension of Berkley Road shows that:
  - Berkley Road draws a significant volume of traffic with a reduction of traffic through the development link road;
  - The Berkley road extension will have to be a 4-lane road if implemented;
  - Precinct 1 and Precinct 2 traffic can be accommodated without further infrastructure upgrading
  - The Malta / Berkley / Liesbeek intersection should preferably be positioned on the western side of the old Liesbeek River (from a traffic operations standpoint);
  - A traffic circle for the Malta / Berkley / Liesbeek intersection does not function at acceptable LOS even with slip lanes whereas a signalised intersection functions well;
  - The M5 / Berkley Road interchange will have to be upgraded to a single point interchange;
  - Several intersections should be upgraded to achieve acceptable LOS.

- Various road and intersection upgrades are required prior to Precinct 1 being developed, *viz.*:
  - Upgrading of Station Road / Liesbeek Parkway intersection;
  - Upgrading of the Link Road / Liesbeek Parkway intersection at the new access;
  - Provision of access on Berkley road extension;
  - Upgrade of the M5 Berkley Road interchange to a single point interchange;
  - Extension of one lane of the future dual carriageway of Berkley Road from the M5 to the development access;
  - Provision of a 2-lane link Road through the development linking Berkley Road partial extension with Liesbeek Parkway; and
  - Internal intersections and turning lanes.

- Road and intersection upgrades required prior to Precinct 2 being developed are.:
  - The construction of the two left-in left-out intersections on Berkley Road west bound carriageway;
  - The (minimum) extension of Berkley Road from the main access to the western left-in left-out intersection.

- The required upgrades by others for improving LOS on road infrastructure include:
  - Upgrading of the N2 / Liesbeek Parkway intersection;
  - Construction of a new intersection for Malta / Berkley / Liesbeek Roads;
  - Upgrade of the main access to the development to a signalised intersection with roadworks only on Berkley Road dualling;
  - Dualling of Liesbeek Parkway between the N2 and Station Road;
  - Dualling of Liesbeek Parkway between Link Road and Malta Road; and
  - Dualling of Berkley Road between the M5 and Malta Road (which includes completion of the first carriageway).

8.8.2 Recommendations

The following recommendations are made in the Draft TIA:

- Both Precinct 1 and Precinct 2 will have an effect on the immediate road network within the vicinity of the site, however both Precincts could be accommodated with the implementation or provision of the recommended infrastructure as proposed.

- It is recommended that Precinct 1 and Precinct 2 is approved from a transport / traffic perspective.

- It is further recommended that other outstanding infrastructure as listed (dualling of Liesbeek Parkway and Berkley Road) be implemented progressively as other developments within the TRUP influence area are initiated.

9. MOTIVATION FOR DEVELOPMENT ON THIS SITE

9.1 Introduction

Spatial planning policy for this area, including the Two Rivers Urban Park Contextual Framework and Phase 1 Environmental Management Plan (2003), has historically identified limited development to occur on the River Club site. There are various reasons for this, but a primary reason is due to the sites positioning in a floodplain. However, following wide-ranging investigations and specialist studies, the River Club project team have ascertained that development on the site is feasible. This section presents motivation why development in the manner proposed should be allowed to occur.

9.2 Strategic Location

The site is located in a strategically important position within Cape Town – it is a highly accessible site located within close proximity to agglomerated places of work such as the CBD and Paarden Eiland, and also has relatively good accessibility to the metropolitan south-east. Moreover, the location of the River Club at the knuckle of the Main Road corridor, the Voortrekker Road corridor and the Klipfontein Road corridor means that it can be a generator of people and economic activty that supports and reinforces these corridors (in particular the Voortrekker Road corridor). **Figure 55** overleaf illustrates location of the River Club site in relation to the aforementioned urban corridors.

According to the Cape Town SDF (2012), urban corridors are *"broad areas of high-intensity urban development focused predominantly on activity / development routes serviced by mass rapid public transport services (i.e. rail or BRT)."* (*"Broad areas"* are commonly in the order of at least one kilometer wide).

The concept of the urban corridor is underpinned by the notion that continuous transport routes and lines of higher accessibility and therefore energy – they channel flows of people and finance, which in turn attracts private sector responses that elicit a variety of markets and more intensive land uses.

Corridors serve to integrate settlements primarily because they encourage more intense development to orient towards the route. Thus, while they are primary movement routes, they also accommodate intensive land uses, activities and public facilities. Further, they allow for stop start movement to occur, which provides people with opportunities to access these intensive land uses, activities and public facilities. In these situations, therefore, mobility and accessibility are combined. The net result is that no activity or facility is entirely dependent on its local community for support, but instead they attract passing traffic as well as people from the areas which surround them. As such, urban corridors are often identified as 'space integrators'.

Figure 55: The River Club site is strategically located at the knuckle of the Main Road corridor, the Voortrekker Road corridor and the Klipfontein Road corridor

One of the key factors influencing the development of urban corridors is the hierarchical pattern of access. At the metropolitan scale, places where urban corridors intersect or connect represent areas of high accessibility and are typically marked by major transport interchanges (e.g.

Mowbray) where people are able to switch modes of transport direction of movement quickly and easily. At the local scale (i.e. within the sphere of the corridor), less significant feeder routes that penetrate the main activity route (e.g. Station Road; Liesbeek Parkway / Malta Road; Cannon Street / Berkley Road) can play a significant role in the development of corridors, as they influence the hierarchy of urban nodes which form along the corridor itself (e.g. Maitland along the Voortrekker Road corridor; Observatory along the Main Road corridor). Not only do these feeder routes influence where the primary generators of people and finance along a corridor begin to assemble, but they also feed off the pedestrian flows generated by the corridor. In many instances, therefore, it makes sense to locate secondary generators of pedestrian movement, such as a catalytic development project such as the River Club, along or in close proximity to these feeder routes in order to reinforce existing major corridors.

There is international evidence that urban corridors can be used to integrate cities, as well as increase urban efficiencies and create meaningful opportunities for people. However, in order to have significant influence they require certain strategic interventions: they rely on sound spatial planning that utilises a series of strategic projects and interventions over a long period of time. Strategic projects or interventions that can be used to reinforce and consolidate an existing corridor include *inter alia*:

- *Land rationalisation projects:* the purpose of land rationalisation is to better utilise undeveloped or currently underutilised land for alternative purposes.

- *Non-motorised transport projects:* a corridor initiative seeks to discourage the use of the private motor vehicle by promoting the use of public transportation and increasing non-motorised transport (NMT). For NMT to be fully encouraged, it is imperative that the quality and scale of the environment associated with the corridor is attractive and pleasant for pedestrians and cyclists.

- *Housing infill projects:* a vital aspect of any corridor initiative is ensuring that residential densities are relatively high. High densities are not only necessary to ensure that businesses, community facilities and public transportation systems have the necessary thresholds of support to ensure their success, but also so that people have easy and convenient access to these services.

- *Quality public spaces:* improving the quality of the public spatial environment associated with corridors is extremely important to increasing investor confidence in relation to the urban corridor. This means making public spaces pleasant places to be in, both from an aesthetic point of view and in terms of comfort and safety.

The River Club is a development that can contribute in all of these respects.

It is evident from the above that corridors have potential to integrate urban environments. Indeed, both the Voortrekker Road corridor and the Klipfontein Road corridor form part of identified "integration zones" in Cape Town. According to the Draft Cape Town MSDF (2017), integration zones *"represent the City's commitment to plan, fund and implement projects and approaches that are best able to transform the spatial structure of the City through effective transport links and spatially defined mobility and activity corridors"*.

The integration zones are premised on:

- opportunities afforded by public transport to restructure urban form along Transit Orineted Development (TOD) principles;
- capacity to link concentrations of economic opportunity and mono-use settlement patterns;
- opportunities to diversify and intensify land uses; and
- infrastructure improvements and related catalytic urban development projects.

Once Berkley Road extension is constructed, the River Club development can become an integrating site, particularly in relation to the Voortrekker Road corridor. Moreover, it can reinforce the corridor with higher densities and supplementary mixed-use development.

Importantly, the River Club site is identified in the Draft Cape Town MSDF (2017) as an "area-based intervention opportunity" in relation to the Voortrekker Road corridor, and TRUP is identified as a "new development opportunity" within the sphere of influence of the MSEIZ and Voortrekker Road corridor (refer to **Figure 9** and **Figure 10**, respectively, in sub-section 3.4 of this report).

9.3 Access to Public Transport

In addition to being well located in relation to development corridors and the Voortrekker Road Integration Zone, the site is also well located in respect to the public transport network.

According to the Draft MSDF 2017, access to public transport and the optimisation of associated locational benefits has become fundamental to the restructuring and spatial transformational agenda in Cape Town. Central to this thinking is the transition to TOD whereby there is a mutually supportive relationship between land use and the public transport network; essentially, TOD functions optimally when land use intensification occurs in close proximity to high-capacity, high-quality public transport. More specifically, the CoCT is encouraging land use intensification to occur within Transit Accessible Precincts (TAPs), which are precincts located within a 500m radius from a higher order public transport station. In the context of the River Club, the development will densify the area, provide housing, employment and public amenities and both Observatory rail station (to the south-west) and Koeberg rail station (to the north-east) fall within a 500m radius of the site. Further, the site is located within 1 km of both the Voortrekker Road corridor and Main Road corridor, both of which carry bus and mini-bus taxi routes (refer to **Figure 56** overleaf).

Benefits of TOD include *inter alia*:

- Decreased motor vehicle dependence and traffic congestion;
- Reduction in local greenhouse gas emissions due to a higher reliance of public transport as opposed to private motor vehicles;
- Enhanced NMT networks and associated streetscaping elements;
- Improved community health as a result of increased NMT activity;
- Increased safety as a result of more 'eyes on the street' at all times of the day;
- Reduced urban sprawl in favour of more compact communities;
- Increase in local businesses and corresponding rise in community employment;
- Increase in public transit passengers benefits the finances of the transit agencies; and

- Reduced costs through use of existing urban infrastructure.

In addition, TOD has the potential to significantly enhance the rail station precincts because an increase in passenger numbers can result in more commercial opportunities within the station precinct, which in turn can lead to rejuvenation of the station precinct. The net result is the improved livability of the community, both for those who already live in the community and those who come to it for the amenities offered by the rejuvenated precinct.

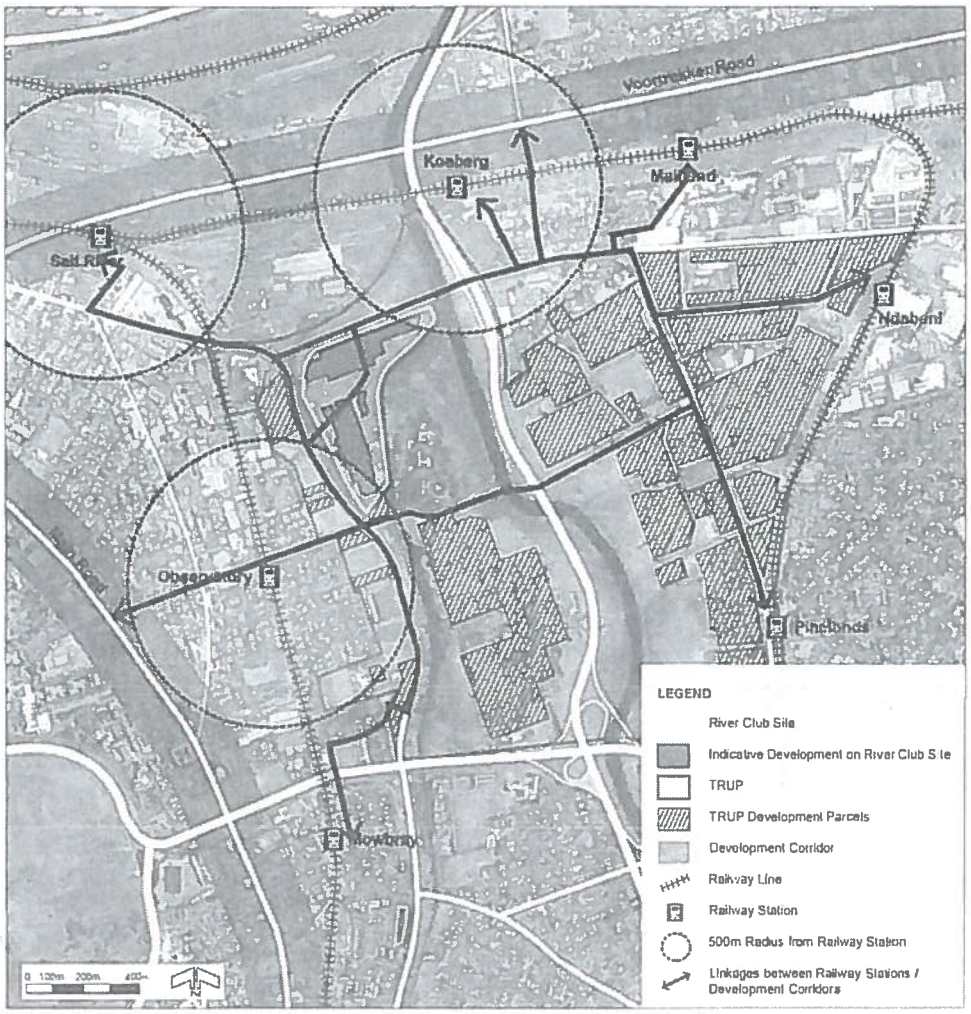


Figure 56: The River Club site is strategically positioned to act as a link between train stations, development corridors and suburbs to the west and east of TRUP

9.4 Opportunity for Ecological Rehabilitation

The proposed development has been subject to a Basic Assessment process in terms of NEMA, which includes *inter alia* detailed studies in respect to flora, fauna and aquatic ecosystems (refer to sub-section 4.2 of this report).

The biodiversity assessment conducted as part of the BAR concludes the following:

"...both terrestrial and natural ecosystems are considered degraded, having suffered a long history of manipulation, including (in the case of aquatic ecosystems) variously, diversion, channelization, fragmentation and canalisation. Terrestrial ecosystems have been assessed by the faunal, avifaunal and botanical specialists as highly altered and affording very low levels of habitat quality. No indigenous flora of any concern was found on the site..."

The degraded nature of much of the River Club site means that its development does present opportunities for rehabilitation / remediation of ecological function.

The development proposal places strong emphasis on the rehabilitation of the currently canalised reaches of the lower Liesbeek River. The planned creation of an unlined vegetated channel that has sufficient space to function as a natural river within a broad connecting riverine corridor, will ensure strong longitudinal and lateral links into natural areas of the site and the adjacent Raapenberg Wetlands.

Against rehabilitation of the canal is also set the infilling and landscaping of the remnant (but historically fragmented and highly altered / diverted) "natural" channel of the Liesbeek River. This loss is considered ecologically acceptable in the context of substantial river rehabilitation, and the proposed development of vegetated swales in landscaped terrestrial areas suitable for colonisation by western leopard toads in their non-breeding season is considered an acceptable use of this space without significant negative biodiversity or other ecological costs.

A key factor in relation to the ecological rehabilitation of the site – and in turn the ecological sustainability of the site in this context – is connectivity across the site, especially from the Raapenberg Wetlands across to the natural channel and (and *vice versa* in an east-west direction across the site). This connectivity is especially important for wetland fauna, in particular Western Leopard Toads.

The local open space system in relation to the proposed development at the River Club is illustrated in **Figure 57** overleaf. Within the context of TRUP, this open space system extends from the River Club, at the most northern point, southwards, where it terminates at the King David Mowbray Golf Course. The open space system includes the Black River and Liesbeek River channels, as well as their associated riverine corridors and Raapenberg Wetlands.

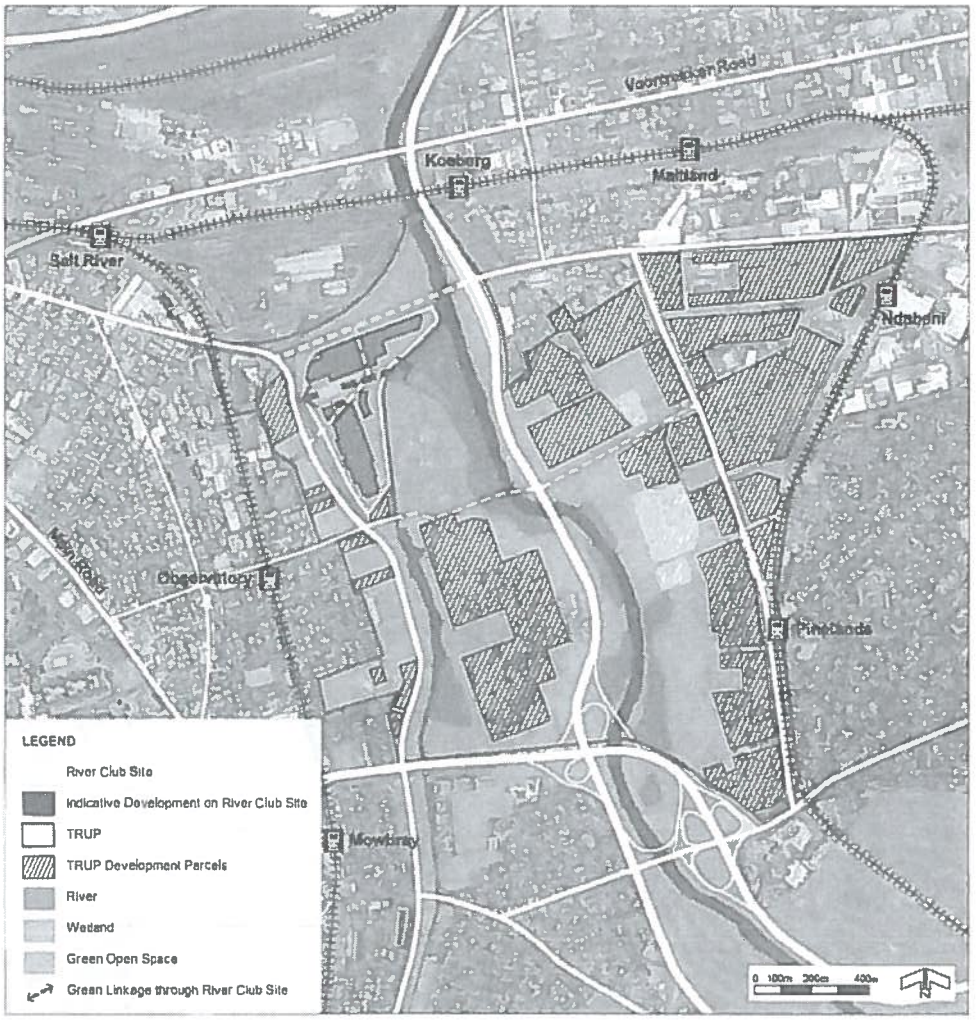


Figure 57: The local open space system in relation to proposed development at the River Club

It is evident from **Figure 57** that, despite proposed development at the River Club, the site will remain connected to the wider open space system. The following factors are particularly pertinent in this regard:

- The proposal is to rehabilitate the canal adjacent to the eastern boundary of the site and implement a riverine buffer of approximately 25 - 40m along its course. This will allow for a visually and ecologically congruent / continuous riverine corridor to be established that will stretch from the lower reaches of the Liesbeek River to the confluence with the Black River adjacent to the River Club site.

- The proposal for the degraded old Liesbeek River channel adjacent to the western boundary of the site is to infill the majority of the existing channel, leaving only a narrow vegetated stormwater swale along its existing course. A buffer area of approximately 10 – 20m between the stormwater swale and development is proposed. This buffer area will serve an ecological (most importantly, serve as a terrestrial refuge for the Western Leopard Toad) and recreational function as landscaped public space, and will also serve as an informal NMT movement corridor.

- An open space corridor is proposed to extend across the site in an east-west direction, connecting the rehabilitated riverine corridor (on the eastern edge of the site) and the stormwater swale (on the western edge). This 'eco corridor' will form a 'green link' between the River Club development and the remaining TRUP open space system, and will allow for faunal movement through the River Club site, particularly that of the Western Leopard Toad. This space will also allow for flood attenuation during periods of high rainfall, as well as perform the function of a landscaped public space.

- Work on the rehabilitated Liesbeek River corridor will include rehabilitation of the interface between the existing canal and the Raapenberg Wetland.

- The SAAO site to the east of the River Club is a campus style development in a parkland setting and retains a function as a green space that can connect into the rehabilitated Liesbeek River corridor and the River Club site beyond.

Given the ecological rehabilitation opportunities that it presents, implementation of the proposed development would, from a biodiversity and general aquatic ecosystems perspective, be a positive impact.

9.5 Opportunity to Rehabilitate the Liesbeek Canal into an Environmental and Heritage Asset

The existing Liesbeek River and its associated ecological corridor is disrupted by a man-made canal, and as a consequence the legibility and functionality of the river is compromised. This has negative implications for environmental sustainability, heritage significance and public amenity.

It is evident from the above – as well as the biodiversity assessment conducted by Dr. Liz Day – that rehabilitating the existing canal and reconfiguring it into a riverine corridor will be positive from an ecological standpoint (in terms of both ecological function and ecological connectivity). It is further argued that this riverine corridor will be positive from heritage and spatial planning standpoints.

The Draft HIA emphasizes the significance of the Liesbeek River corridor and its confluence with the Black River: *"It is a powerful historic symbol and place-mark that refers to early landscape of pre-colonial transhumance use, colonial settlement and agriculture, and contestation… The river itself needs to be respected, enhanced and made accessible."*

Following consultation with the heritage specialists on the project team, Dr. Stephen Townsend and Tim Hart, it was decided that the best way to celebrate the Liesbeek River and to ensure its

long-lasting legacy will be to rehabilitate the Liesbeek Canal into riverine corridor, which will effectively allow for a continuation of the lower Liesbeek River as a visually congruent and publicly accessible riverine corridor, with resulting ecological and social benefits. In the words of the Draft HIA, this rehabilitated riverine corridor will *"create a 'sense of river-ness'"* that has been missing since the Liesbeek River was re-routed *circa.* 1950.

In order to consolidate the "river-ness" of the congruent Liesbeek River as proposed, it is further proposed to reconfigure the old Liesbeek channel as a vegetated stormwater swale / system of detention ponds (i.e. this will be vegetated and will not read as a river in the landscape, thus bringing more focus to the rehabilitated Liesbeek River course).

It is argued that the treatment of the existing water courses as proposed is positive from a spatial planning standpoint, in that the proposals for the existing water courses will have a positive impact on the spatial relationships in the landscape. **Figures 58a** and **58b** below illustrate the effect that the proposals will have on the landscape. **Figure 58a** shows very well how the river is clearly defined all the way from the upper reaches (e.g. Mowbray / Rosebank) into the confluence with the Black River. On the other hand, **Figure 58b** shows how the retention of the status quo (i.e. canal to the east, old channel to the west) has the effect of creating an uncertainty as to what the Liesbeek River actually is.

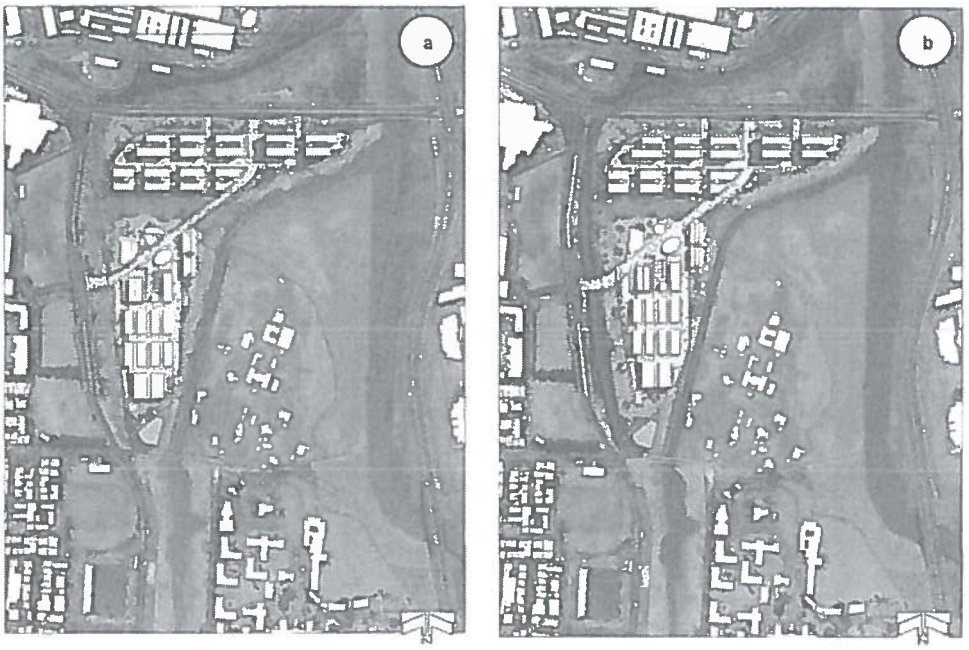


Figure 58a (left) illustrates how the development proposal will have the effect of creating a congruent Liesbeek River riverne corridor in the landscape. **Figure 58b** (right) illustrates how, should the existing water courses be retained, the opportunity for a congruent Liesbeek River riverine corridor will be foregone and the River Club will remain as an island in the landscape

Furthermore, **Figure 58a** shows how the reconfiguration of the old Liesbeek channel into a vegetated stormwater swale / system of detention ponds will have the effect of integrating the site into the urban environment beyond Liesbeek Parkway (i.e. the landscape begins to read as one, and will clearly define the transition between urban space and environmental / heritage space as represented by the Raapenberg Wetland & Bird Sanctuary and the SAAO.

9.6 Potential to Raise the Level of the Ground with Negligible Flooding Impact

There is a common public perception that the River Club site frequently floods and that the development of the site "will" have an impact on the flooding of properties in the surrounding area. While it is correct that the site has flooded relatively frequently (every few years) in recent history, it is important to differentiate flooding as a result of high runoff, and flooding that results due to the capacity of the drainage system being limited due to inadequate maintenance and or structural failure.

A question that will undoubtedly be asked in relation to this development application is: *"Why it is necessary for the River Club to raise itself out of the floodplain, whilst it is not necessary for the surrounding areas to be raised above the floodplain?"* It implicitly suggests that if the River Club's proposed development takes place, this will worsen the flooding affecting properties that have already been developed, and that if the River Club is not developed these properties will not be affected by flooding. It is therefore important to note:

- The reason that there are properties developed on land lower than the existing flood lines is that historically properties were allowed to be developed within the 100-year flood plain. Therefore, properties such as those identified as being below the 100-year flood line would, if developed today, be required to elevate themselves out of the floodplain (as is required for the proposed development on the River Club site).

- The purpose of Surface Water Hydrology report prepared by Aurecon in relation to the River Club development (refer to sub-section 4.1) is to assess the impact that the proposed development will have on surrounding properties, in accordance with the provisions of the *City of Cape Town's 'Floodplain and River Corridor Management Policy*.

In relation to the latter, Aurecon's report concluded *inter alia* the following:

- *"The development of the River Club, along with the TRUP, PRASA and SKA sites is likely to have an impact on flood levels in the order of 0.01m – 0.15m, depending on the storm recurrence interval and location, with the greatest differences expected in the vicinity of the SAAO. The impacts of these changes were deemed to be insignificant."* (emphasis added)

- *"Were the River Club to be developed in isolation (i.e. TRUP, PRASA and SKA were not to be developed), the impacts would be of a similar magnitude for all recurrence intervals, but less by approximately 0.00m – 0.03m, to the scenario where all the proposed development went ahead. Again, this impact was considered to be insignificant."* (emphasis added)

- *"The design of changes to the Liesbeek Canal should aim to maintain the existing hydraulic functioning of the wetland during smaller recurrence interval events. The current proposal would to have little to no effect..."* (emphasis added)

- *"The impact of the proposed development on flood levels and extent are considered to be negligible."* (emphasis added)

- *"The impact of the proposed development along with the proposed Two Rivers Urban Park development on flood levels and extent are considered to be negligible."* (emphasis added)

These conclusions, which were drawn by an experienced team following comprehensive investigations into the surface water hydrology relating to this site, should be enough to allay the public's perceptions with regards to potential future flooding of the surrounding area as a result of the River Club development.

9.7 Berkley Road Extension

Correspondence with road network planning officials from CoCT TDA has revealed that the proposed Berkley Road extension (as per the the CoCT's Public Right of Way – Road Network Plan, refer to sub-section 3.7 and **Figure 12**) is essential to future road network planning in Cape Town. As such, the River Club proponent is prepared to enter into a services level agreement with the CoCT whereby a portion of the development contribution applicable to the River Club development will be offset against the cost of constructing a portion of one carriageway of this road link and to implement the associated bridges / culverts / road construction as part of the agreement.

The implementation of the Berkley Road extension is considered a significant intervention in relation to the proposed development for two reasons. Firstly, the impact of the existing spatial barriers (i.e. the M5 motorway and Black River), which currently restrict movement between the western portion of TRUP (e.g. Salt River, Observatory and Mowbray) and the eastern portion (e.g. Maitland, Ndabeni and Pinelands), will be reduced because movement through these barriers will become significantly easier. This point is illustrated in **Figure 59** overleaf.

Secondly, the Berkley Road extension will greatly enhance access onto the site, thus allowing for a much greater threshold of development to occur than what is currently possible. Enhanced access to the site resulting from the implementation of the Berkley Road extension is therefore a major reason why a significant amount of development is feasible and desirable from an urban planning perspective.

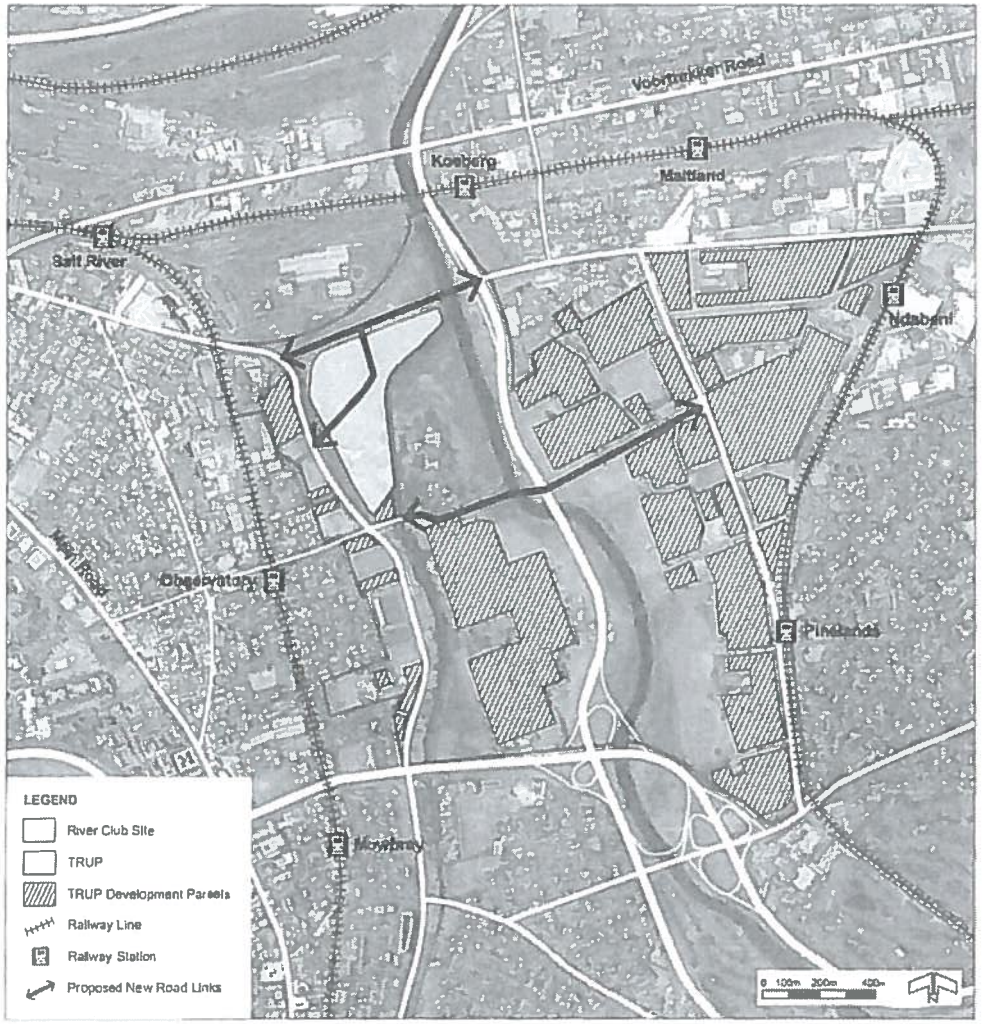


Figure 59: Berkley Road extension will reduce the barrier effect of the Black River and M5 freeway

9.8 Forthcoming SKA Development

The National Research Foundation (NRF), the owner of Remainder Erf 26423 Cape Town (i.e. the property immediately abutting the southern boundary of the River Club), is currently procuring a development tender for a new Square Kilometer Array South Africa (SKA SA)[27] building on this site. According to the tender document, the building will accommodate up to 230 SKA staff members.

[27] SKA SA is a business unit of the NRF and is responsible for the design, construction, operations and maintenance of the MeerKAT radio telescope, a 64-dish array currently being constructed in the Karoo Radio Astronomy Observatory. MeerKAT will be operational during 2017.

The tender document outlines the following vision for the site:

- The SKA building must reflect a global mega-science project which is leading the development of cutting-edge engineering, technology, science and innovation in an effort to realise the MeerKAT and SKA science goals.

- The building must be inspirational to international and local stakeholders, its users and members of the public and be reflective of a project which encompasses many member countries and their collaboration on a project of this scale.

- Building users must feel part of the building with well-planned open spaces for collaboration whilst taking into consideration Green Building principles.

- The building must meet its functional requirements whilst integrating with the emerging landscape in the TRUP. It should be a modern, aesthetically pleasing building which will be representative of the future.

- The building must have a unique identity but compliment both the River Club development and the SAAO.

Further, communication with the SKA SA General Manager of Infrastructure & Site Operations that has revealed the following building parameters:

- Basement parking (i.e. below current NGL);
- 3-4 storeys in height (assumed that floor to ceiling is 4m); and
- 8 000 m² of floor space.

A massing model of the building in relation to the proposed River Club development is illustrated in **Figure 60** overleaf. As highlighted in the Draft HIA, this building (along with the Berkley Road extension) will radically affect the reading and significance of the floodplain, of the surrounds and, in particular the River Club site. It is also clearly apparent that the SKA SA building will be an iconic, gateway building that will strongly compliment the River Club development in its form, and *vice versa*.

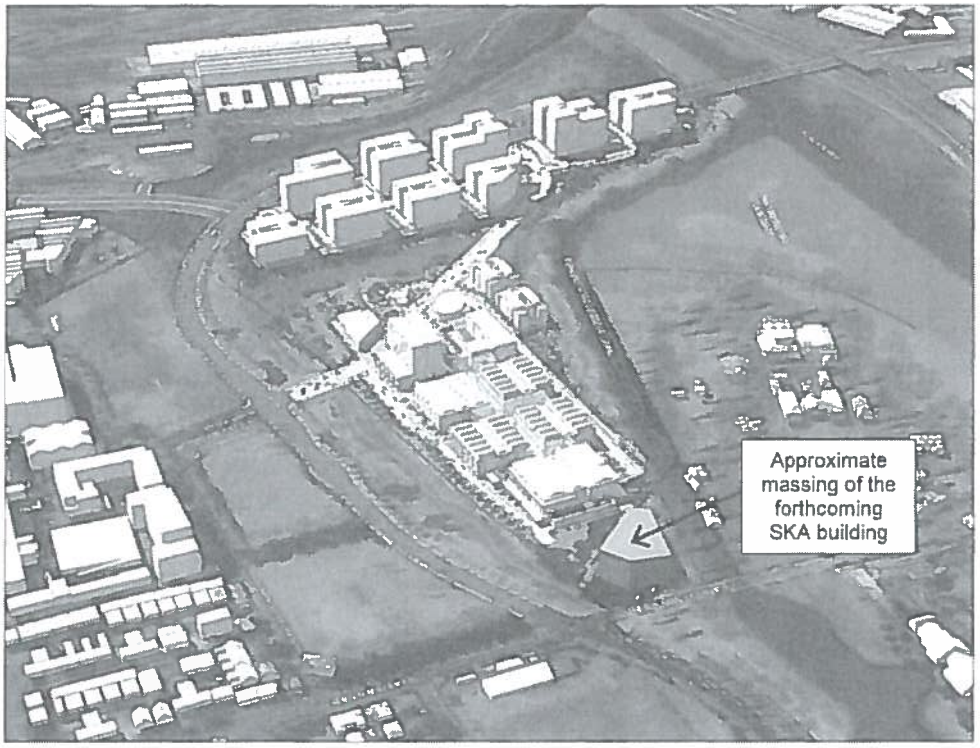


Figure 60: Massing model indicating the prominence of the forthcoming SKA building (Source: Vivid Architects)

9.9 Enhanced Public Access and Amenity

Currently, the River Club is an isolated tranche of land owing to barriers such as the M5 motorway, the Black River, the Liesbeek Canal and inhospitable surrounding land uses (particularly the inwardly orientated institutions of the SAAO and Valkenburg Hospital to the east / south-east, as well as the PRASA railyard to the north). The site is privately owned and commercially operated, which further restricts access to and through the site. Apart from commercial considerations, one of the objectives of the River Club development is to promote public access, break down barriers and integrate the River Club into TRUP and the surrounding communities. It is evident from **Figure 61** overleaf that the development will greatly enhance public access to and through the site.

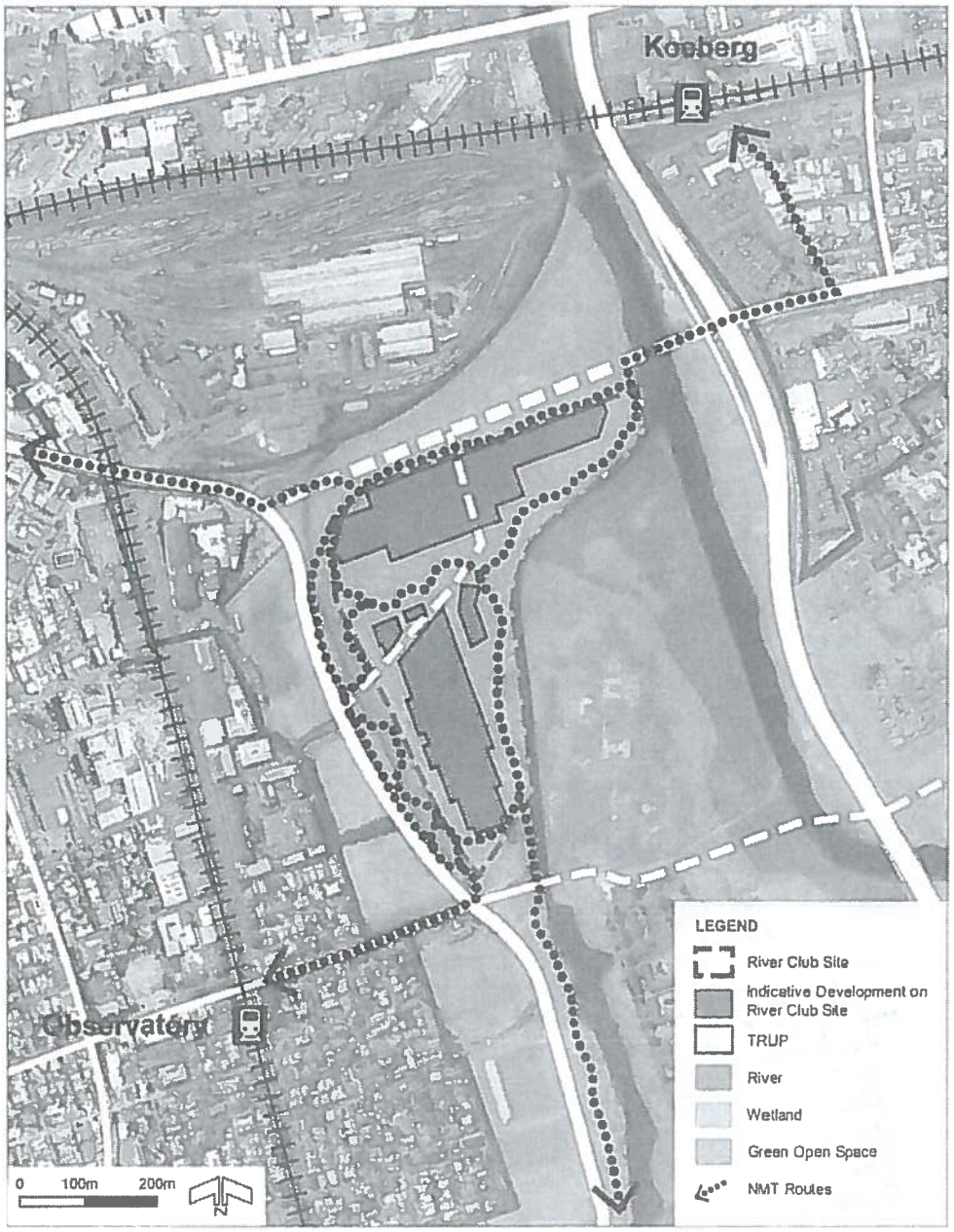


Figure 61: Preliminary NMT routes

Besides enhanced accessibility through the movement system, one of primary ways in which the River Club can become more accessible to the public is through a change in land use (i.e. the character of the development).

While the existing land use at the River Club is open to the public, it remains isolated both in terms of access and land use, and does not generate the number or diversity of people necessary to truly integrate the River Club into the surrounding urban environment. This means that only a limited number of people get to experience the character of the place (the rivers, the landscape, the views toward Devil's Peak etc.). As the western gateway into TRUP, and as a site that falls within the sphere of the Voortrekker Road Integration Zone, the River Club should be attracting people into the area. Moreover, it should have the necessary activities and amenities to make people stay for significant periods of time so as to allow them to draw utility from the landscape and to experience the essence of the place: walk along the river, watch birds in the wetland, look at the views towards Devil's Peak. The current land uses of the site do not facilitate this desired role.

To this end, the River Club is being reimagined as a vibrant, mixed-use precinct that will be a destination place within the city, and will begin to establish the vision of "live, work, play" within TRUP. Further, and by providing public amenities and facilitating public access to and through the site, the River Club will provide people with quality public spaces and the chance to interact with the site in a meaningful way.

Intaka Island at Century City is a contextually appropriate precedent for mixed-use development alongside a wetland / riverine system. Prior to development this was a degraded environment that was inaccessible and inhospitable to the public. It is now a thriving mixed-use precinct that has successfully integrated urban development with an ecologically sustainable environment. Importantly, it has provided people with access to the rehabilitated wetlands / watercourses, which has in turn given people the opportunity to experience the essence of the place and add amenity to the adjacent development. Photographs illustrating the relationship between urban development and the natural environment at Century City are shown in **Plate 1** and **Plate 2** overleaf.

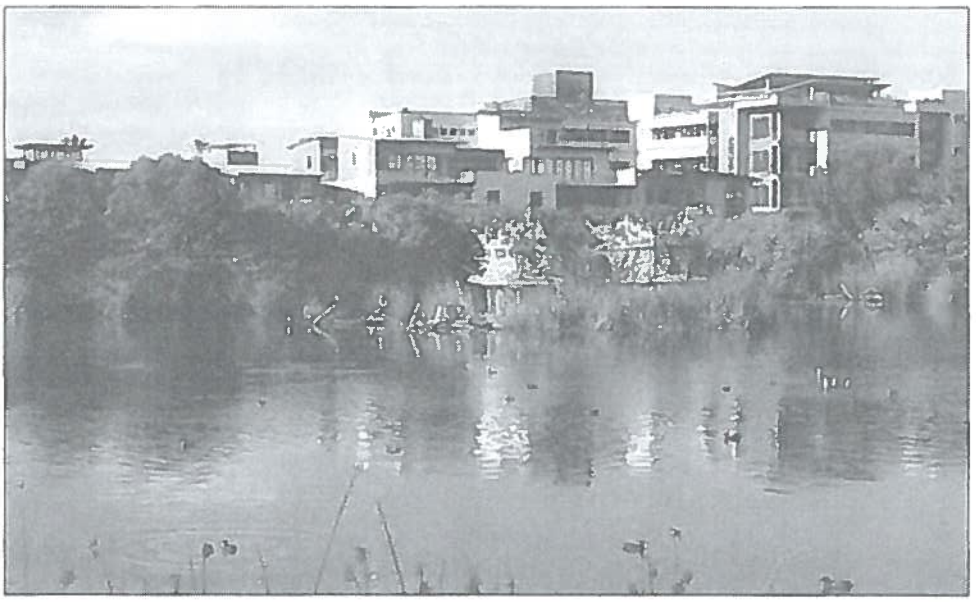


Plate 1: The natural wetlands at Intaka Island Century City have been successfully rehabilitated and integrated with surrounding development

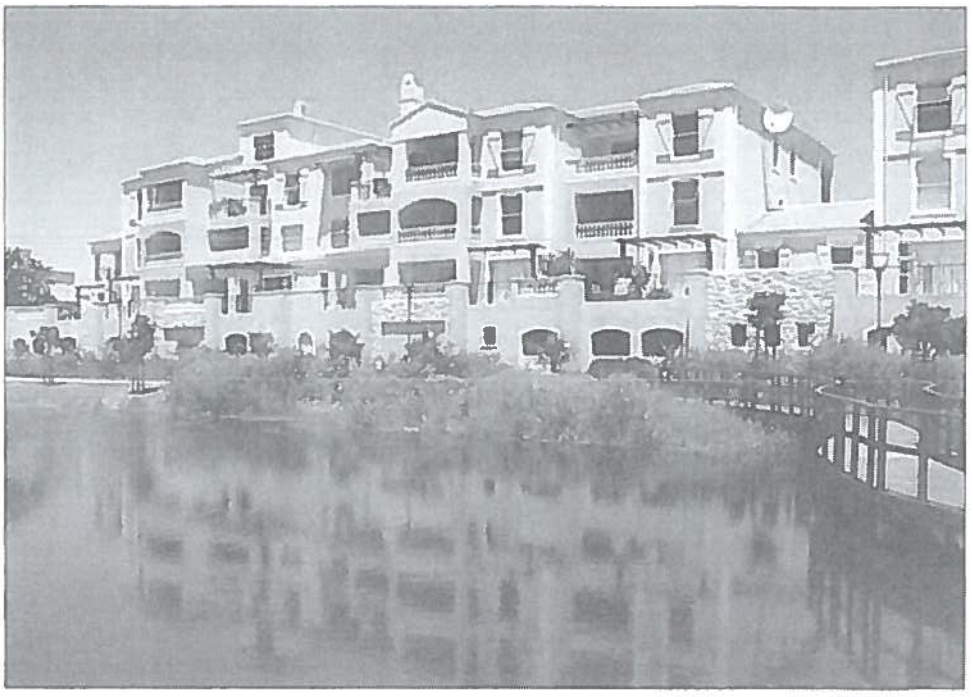


Plate 2: The watercourses at Century City offer place-making elements that provide people with the opportunity to experience the natural environment

9.10 Catalytic Project

The location of the site means that the proposed development can be a catalytic project, not only for TRUP but for Cape Town. The intensive nature of the proposed development means that the River Club has the potential to become a "destination place" within Cape Town. A "destination place" is defined in the MSDF as "*a place that forms a significant landmark or area of attraction and is part of the unique identity of Cape Town*". Indeed, a specific policy in the MSDF is to *"provide efficient access to destination places where potential exists"*.

The site falls on the north-western edge of TRUP, which is currently an unattractive edge that is impermeable to pedestrians, due to the presence of two high security institutions (Valkenberg Hospital and the SAAO), and limited public access to and through the River Club site. This unattractive, impermeable edge is not conducive to the long-term viability of TRUP as a "metropolitan urban park".

It is anticipated that the redeveloped River Club site will become the western gateway[28] into the TRUP, drawing people to and through TRUP. The intention is for this gateway accommodate a medium-high density, mixed-use agglomeration of uses which supports the vision of 'live, work. play' while retaining certain recreational and ecological features. To this end, it is expected that the River Club can act as a catalyst project that can assist with the ongoing implementation of the greater TRUP project.

9.11 Socio-economic Integration

The site is strategically located in relation to, amongst other things, employment opportunities, amenities and social facilities. The proponent acknowledges the socio-economic disparities in Cape Town that remain in place as a result of the legacy of apartheid, and recognizes that there is an opportunity to provide inclusionary housing that will be accessible to those who have previously not had the opportunity to live in close proximity to the CBD and other agglomerated places of work.

The proponent is committed to ensuring that 20% of the total floor space (estimated at approx. 150 000m²) to be built at the River Club will be devoted to residential use. Of the floor space devoted to residential use, 20% will be allocated to inclusionary housing. In terms of this application, approximately 30 000m² of residential GLA is proposed. Therefore 6 000m² will be dedicated to inclusionary housing. With an average unit size of 35m², it is estimated that approximately 140 inclusionary housing units will be available on the rental market (it is important to note that these units will not be available for purchase). The developer is committed to offer these units at below market value rental and they will be integrated, as far as possible, into the same blocks of apartments as the other residential units. In order to achieve this, the proponent is prepared to subsidise the rental in respect of the inclusionary housing units.

[28] A 'gateway' in planning / urban design terms is an important entry point into a place, and they can play a key role in identifying distinct areas (e.g. TRUP). Gateways can significantly contribute to the public realm and create a sense of place. Design mechanisms can be used to accentuate these entry points including *inter alia*: distinct architectural designs (e.g. use of special materials and façade treatments); special landscape treatment (e.g. tree planting, lighting, upgraded sidewalk treatment and special street furniture); landmark plazas and open spaces; and public art.

This proposal reinforces the developer's commitment that the River Club will not become an exclusive enclave. Instead, the River Club will be an inclusive place that will promote socio-economic integration.

10. APPLICATIONS SUBMITTED

10.1 Municipal Planning By-Law

10.1.1 Deviation from the Table Bay District Plan

The Table Bay District Plan categorises the River Club site as a combination of *'open space', 'core 2'* and *'buffer 1'* land. Application is made to deviate from the Table Bay District Plan in order to permit urban development on the site. The deviation is applied for in accordance with section 16 of the MPBL. The following should be noted in relation to the deviation applied for:

- Section 9(5) of the MBPL states: *"If there is a conflict between the municipal spatial development framework and a district spatial development framework...the municipal spatial development framework prevails over other development frameworks to the extent of the conflict"* (emphasis added).

- With reference to the above point, the municipal spatial development framework (i.e. the MSDF) designates the site for "urban development".

- In terms of section 9(1) of the MBPL, when applying for a deviation from the municipal spatial development framework, it is stated that *"...the City may deviate from the provisions of the municipal spatial development framework only if site specific circumstances justify the deviation"* (emphasis added). However, in terms of section 16(2)(b) of the MBPL, when considering a deviation from a district spatial development framework the City *"may deviate from the provisions of an applicable district spatial development framework...only if the circumstances justify the deviation"* (emphasis added).

- There is therefore a clear distinction between applying for a deviation from the municipal spatial development framework and applying for a deviation from a district spatial development framework – the former requires "site specific circumstances" to be considered, whereas the latter requires "circumstances" to be considered when justifying the deviation.

Motivation for the deviation from the Table Bay District Plan is provided in sub-section 12.2.3.

Despite the need to deviate from the Table Bay District Plan at this stage, it should be noted that the MSDF, which will come into effect on 1 July 2018, identifies the land as "urban inner core" and therefore supersedes the Table Bay District Plan according to the "consistency principles and post-2012 amendments" as contained in *Technical Supplement D: Regulatory Requirements and Informants* of the MSDF:

"The MSDF will be implemented in accordance with the consistency principle that applies to the plans and policies of different spheres of government. In terms of the consistency principle, lower-order spatial plans and policies must be consistent with higher-order spatial plans and policies. Should the provisions of spatial plans of a lower order in the hierarchy (including district and local spatial development frameworks and other existing local-scale structure plans) be deemed to be inconsistent with the MSDF, the MSDF will take precedence." (emphasis added)

10.1.2 Rezoning

Application is submitted in terms of section 44(1) of the MPBL to rezone the property from *Open Space 3: Special Open Space (OS3)* to *Subdivisional Area Overlay Zone*.

The reason behind the rezoning to Subdivisional Area is to allow for a degree of flexibility with regard to the future subdivision and deemed zoning(s) on the site. For example, it will allow for different General Business sub-zones to be utilized in different portions of the site, as well as more precise determination of the environmental and open space areas, which zoning will be deemed as Open Space 3.

Preliminary deemed zonings for the site following future subdivision are *General Business (Sub-zones 4 – 7)* and *Open Space Zoning 3*.

10.1.3 Approval to Construct Retaining Structures

In order for habitable space and access roads on the site to be raised above the 1:100 floodline (as per the requirements of the City of Cape Town Floodplain and River Corridor Management Policy), it is necessary to make an application in terms of section 42(i) of the MPBL and item 126 of the DMS.

Item 126 of the DMS stipulates the following:

Without the approval of the City:

(a) no earth bank, retaining structure, column, suspended floor, other device or series of such devices shall be constructed that enables a ground floor of a building to be raised more than 1,5 m above existing ground level, provided that where such raising takes place, the height thereof shall still be measured from existing ground level;

(b) no earth bank or retaining structure used for holding back earth or loose rock, whether associated with a building or not, shall be constructed to a height of more than 2 m above existing ground level; and

(c) no series of earth banks or retaining structures shall be constructed to a cumulative height of more than 2,5 m above existing ground level, unless an approximately level area of at least 2 m wide is incorporated between successive embankments or retaining structures for every 2 m of cumulative height.

At this stage, only item 126(b) is triggered by the proposed development. Retaining structures to be constructed to a height of more than 2 m, which all relate to the outside wall of the "super basements"[29], are analysed in **Annexure U**. The profile drawings indicate that the maximum height of the retaining wall structures are 5.7 m in Precinct 1 and 5.9 m in Precinct 2, respectively.

[29] Refer to footnote 4 on pg. 17.

10.2 Deviations from the City of Cape Town Floodplain and River Corridor Management Policy (2009)

Deviations are required from the following sections of the City's Floodplain and River Corridor Management Policy:

Section 9.2: Flood Management and Public Safety

Permission to develop / obstruct the free flow of water within the 20-year flood line area would need to be granted.

Section 10.5: Table 1: Framework for the assessment of Proposals

The current assessment framework forbids development (including filling) within the 50 year flood plain. It notes: *"In exceptional circumstances minor "smoothing" of the 50 / 100 year flood line may be considered, provided equivalent compensatory stage storage volume is provided within the development precinct"*. As the proposed development falls under the 50-year flood line, a deviation from the policy, allowing the developer to fill (considered development) would need to be granted.

10.3 Deviations from the City of Cape Town Management of Urban Stormwater Impact Policy (2009)

Ssince the site is located within a flood plain and its surrounds are inundated even during low order storm events, such as the 1:2 year storm event, attenuation of stormwater adds no significant value and thus the rate at which runoff is released from the development becomes irrelevant.

Thus, the following deviations from the City of Cape Town Management of Urban Stormwater Impact Policy in terms of attenuation are requested:

i. Annexure table: 24 hour extended detention of the1-year RI, 24h storm event in a greenfield development > 50 000 m²

   Permission to deviate from this requirement.

ii. Annexure table: Up to 10-year RI peak flow reduced to pre-development level in a greenfield development > 50 000 m²

   Permission to deviate from this requirement.

iii. Annexure table: Up to 50-year RI peak flow reduced to existing development levels in a greenfield development > 50 000 m²

   Permission to deviate from this requirement.

11. WAY FORWARD

11.1 Future Applications

This application represents the first in a range of land use planning applications that will be submitted in connection with the River Club site (should approval be forthcoming). Future land use planning applications include *inter alia* the following:

a. Subdivision

Rezoning to Subdivisional Area means that subdivision of the land will need to occur in the future in order to allocate a deemed zoning to the various land units. A preliminary "block" subdivision plan, including an indication of future zonings, is shown in **Figure 62** overleaf. As individual developments occur, further internal subdivisions will take place.

A subdivision plan will be submitted should the application for rezoning to Subdivisional Area be approved.

b. Phasing plan

It is probable that subdivision will be implemented in phases, and therefore the future application for subdivision will likely be accompanied by a phasing plan.

A phasing plan will be submitted should the application for rezoning to Subdivisional Area be approved.

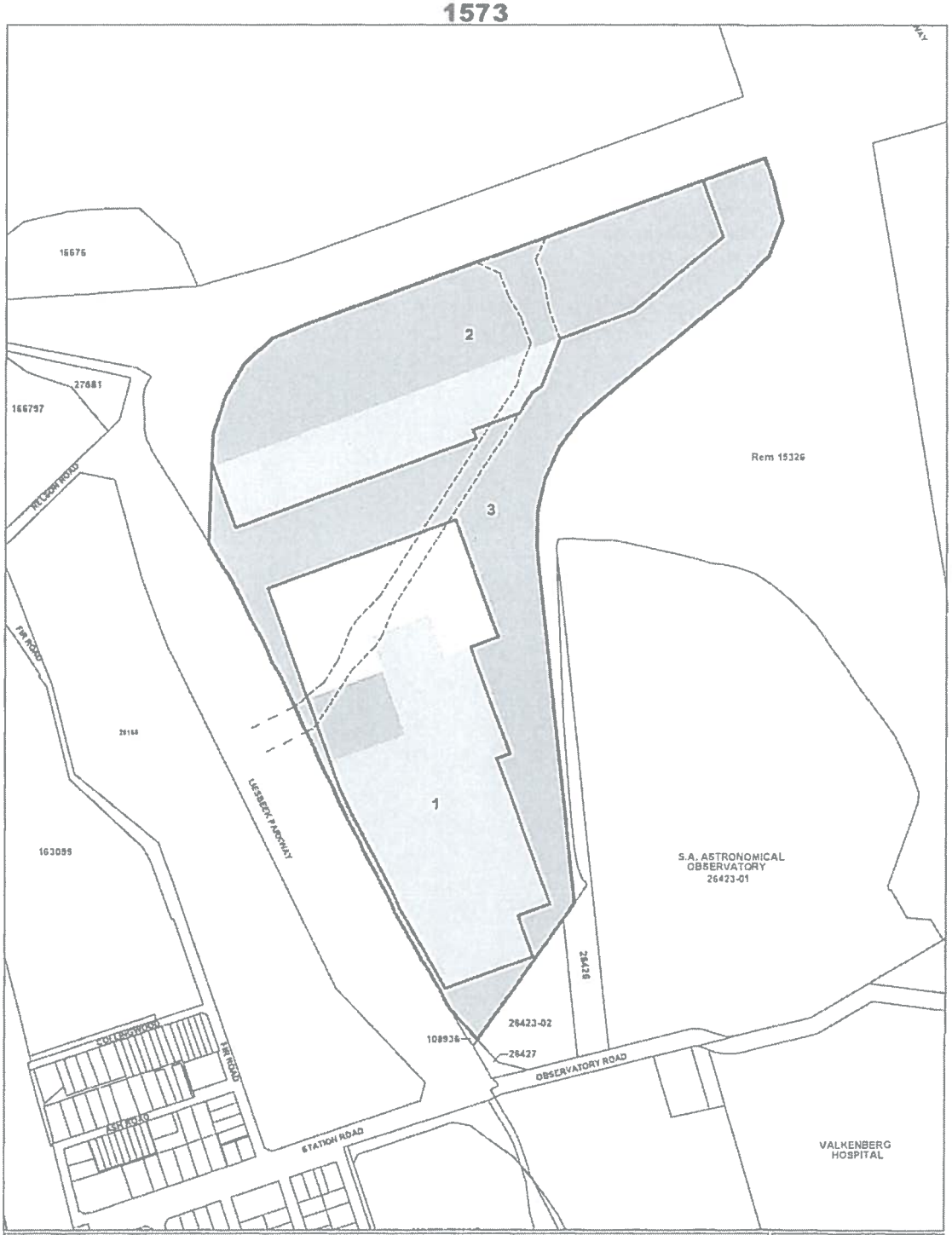
c. Precinct plans

There are two distinct precincts within the proposed development: Precinct 1 in the southern portion of the site and Precinct 2 in the northern portion.

Precinct plans will likely be submitted for each individual precinct and will describe in more detail the development objectives and intentions for the respective precincts, as well as *inter alia* principles for urban form, land use, floor space, pedestrian links and traffic management. This will facilitate more rapid processing of subsequent detailed subdivision applications.

d. Site development plans

Site development plans will likely be prepared for individual land units within the development (either in addition to the precinct plans described above or in lieu of the precinct plans). These site development plans will include details relating to *inter alia* land use, floor space, building lines, height, parking requirements, municipal services and landscaping, as well as details relating to the position and appearance of buildings, open space, pedestrian links and traffic management.



Portion No	Proposed Zoning	Approx Area (±ha)
1	General Business 3 General Business 6 General Business 7	4,75
2	General Business 6 General Business 7	4,81
3	Open Space 3	5,17
	Total	14,73

ERF 151632 CAPE TOWN

PRIVATE ROAD (Servitudes required)

NOTES:

1. AREAS & DIMENSIONS ARE APPROXIMATE

RIVER CLUB OBSERVATORY

INDICATIVE INTERNAL BLOCK SUBDIVISION AND ZONING

SCALE 1 : 6000

PLANNING PARTNERS

JUNE 2019

Figure 62

e. Regulation departures

It is possible that future application(s) for a departure(s) from the zoning scheme regulations will be required in order to alter the development rules relating to the respective land unit(s). Such departures may include coverage, height and floor space. These will be processed in association with detailed architectural designs for specific buildings.

12. MOTIVATION FOR APPROVAL

12.1 Introduction

The assessment of a planning application is guided by the principles and criteria outlined in national, provincial and local planning legislation. This section provides motivation for the approval of the proposed development by demonstrating compliance with the relevant legislation.

12.2 Compliance with the Provisions of the Municipal Planning By-Law

12.2.1 Overview

Section 99 of the MPBL provides guidance about matters which must be considered when an application comes before Council. In terms section 99(1) of the By-Law, if the application fails to comply with the following minimum requirements, it must be refused:

a) the application must comply with the requirements of the By-Law;
b) the proposed land use must comply with or be consistent with the municipal spatial development framework, or if not, a deviation from the municipal development framework must be permissible;
c) the proposed land use must be desirable in terms of section 99(3) of the MPBL; and
d) in the case of an application for a departure to alter the development rules relating to permitted floor space or height, approval of the application would not have the effect of granting the property the development rules of the next subzone within a zone.

If an application is not refused in terms of section 99(1) discussed above, the decision maker must consider section 99(2), which entails considerations including, where relevant, the following:

a) any applicable spatial development framework;
b) relevant criteria contemplated in the development management scheme;
c) any applicable policy approved by the City to guide decision making;
d) the extent of desirability of the proposed land use as contemplated in section 99(3);
e) the impact on existing rights (other than the right to be protected against trade competition);
f) in an application for the consolidation of land unit –
  (i) the scale and design of the development;
  (ii) the impact of the building massing;
  (iii) the impact on surrounding properties; and
g) other considerations prescribed in relevant national or provincial legislation.

Section 99(3) stipulates the following considerations that are relevant to the assessment under section 99(1)(c) of whether, and under section 99(2)(d) of the extent to which, the proposed land use would be desirable, namely:

a) socio-economic impact;
b) compatibility with surrounding uses;
c) impact on the external engineering services;
d) impact on safety, health and wellbeing of the surrounding community;
e) impact on heritage;
f) impact on the biophysical environment;

g) traffic impacts, parking, access and other transport related considerations; and
h) whether the imposition of conditions can mitigate an adverse impact of the proposed land use.

In order to demonstrate the compliance of this application with section 99, the aforementioned criteria are applied to the application.

12.2.2 Minimum Requirements for an Application in Terms of Section 99(1)

(a) Compliance with the Municipal Planning By-Law

The proposal complies with the requirements of the MPBL. Moreover, it is considered to be desirable in terms of section 99(3) of the MPBL, as demonstrated in sub-section 12.2.4 below.

(b) Consistent with the Cape Town Spatial Development Framework

The composite MSDF (i.e. Map 5d of the MSDF) reveals that the land on which the proposal is situated is categorised as "urban inner core". The proposal is therefore aligned with the 'spatial planning category' as designated in the MSDF. Refer to section 3.1 of this report.

(c) Desirability in terms of section 99(3) of the Municipal Planning By-Law

The proposal is considered to be desirable in terms of the desirability criteria specified in section 99(3) of the MPBL, as evaluated in sub-section 12.2.4.

(d) Impact of permanent departure(s) relating to floor space and/or height

In terms of this application, no permanent departures are applied for with regard to floor space or height. This requirement is therefore not applicable in this instance.

12.2.3 Other Relevant Considerations

If an application is not refused in terms of section 99(1) discussed above, the decision maker must consider section 99(2), which entails considerations including, where relevant, the following:

(a) Consistent with the Table Bay District Plan

The Table Bay District Plan designates the land as 'open space' and therefore motivation is provided to deviate from the District Plan in order to allow for urban development:

- The specialist biodiversity assessment found that terrestrial and natural ecosystems associated with the site are degraded, having suffered a long history of manipulation, including (in the case of aquatic ecosystems) variously, diversion, channelization, fragmentation and canalisation. Terrestrial ecosystems have been assessed by the faunal, avifaunal and botanical specialists as highly altered and affording very low levels of habitat quality. In addition, no indigenous flora of any concern was found on the site.

- The 'open space' designation is based on the long-established use of this site as a recreation facility. However, two significant forthcoming interventions in close proximity will fundamentally change the character of the site, *viz.*:

  - Berkely Road extension to the north of the site, which will be a major arterial road connecting the Malta Road-Liesbeek Parkway junction with Berkley Road in Maitland; and
  - the proposed SKA building (± 8 000m² of floor space) to the immediate south of the River Club site.

  These interventions will fundamentally change the nature of the site and present opportunities to integrate the River Club site into the surrounding urban landscape.

- Although the site falls within the floodplain associated with the surrounding watercourses, the specialist stormwater hydrology study concludes that the proposed development would have an insignificant effect on flooding in the vicinity of the existing River Club site. Further, although development on the site would have some limited effect on the flows and water levels in the Liesbeek and Black Rivers, the modelled impacts are insignificant and can be considered negligible.

- The site is strategically located within Cape Town and development of the site will have positive implications with respect to *inter alia*:

  - surrounding urban corridors, in particular Voortrekker Road corridor, which is also part of an Urban Integration Zone;
  - the future implementation of Transit Oriented Development in relation to the surrounding railway stations and future MyCiTi bus routes;
  - the successful implementation of future TRUP development projects; and
  - the provision of inclusionary housing on land well located in relation to the CBD and other employment generators (e.g. Paarden Eiland);
  - the creation of a destination place with urban amenities that will be attractive to, and cater for the needs of, urban residents in the vicinity.

More detailed motivation is provided in section 9.

(b) Criteria contemplated in the Development Management Scheme

The only aspect relating to the DMS contemplated in this application is that relating to item 126 (i.e. raising the level of the ground, use of retaining structures etc.). Retaining structures higher than 2m (which will be used to hold back loose earth, as stated in item 126(b)) are analysed in **Annexure U**. These retaining structures are necessary in order to ensure habitable floor levels of buildings and access roads will be constructed above the 1:100 year flood level, which is a requirement of the City of Cape Town Floodplain and River Corridor Management Policy (2009).

When considering the use of retaining structures higher than 2m to hold back loose earth, it must be remembered that the specialist stormwater hydrology study concludes that the proposed development would have an insignificant effect on flooding in the vicinity of the existing River Club site. Further, although development on the site would have some limited effect on the flows and water levels in the Liesbeek and Black Rivers, the modelled impacts are insignificant and can be

considered negligible. Constructing retaining structures to hold back loose earth will enable the development to take place in a safe and sustainable manner, which in turn will unlock significant benefits from the development in terms of economic activity.

(c) Any applicable policy to guide decision making

In addition to the spatial planning policies, the following plans / policies have relevance to the application:

- Floodplain and River Corridor Management Policy (2009);
- Management of Urban Stormwater Impacts Policy (2009);
- Densification Policy (2012);
- Urban Design Policy (2013);
- Tall Building Policy (2013);
- Transit Oriented Development Strategic Framework (2016); and
- Parking Policy for the City of Cape Town (2014).

The compliance of the proposal with these policies is discussed in more detail in section 3. There is generally good compliance between the development proposal and policies relating to densification, urban design and transit oriented development.

It must be noted, however, that deviations are required from the following policies:

a. City of Cape Town Floodplain and River Corridor Management Policy (2009)

   i. Section 9.2: Flood management and public safety

      Permission to develop / obstruct the free flow of water within the 20-year flood plain.

   ii. Section 10.5: Table 1: Framework for the assessment of proposals

      Permission to infill within the 50-year flood plain.

b. City of Cape Town Management of Urban Stormwater Impacts Policy (2009)

   i. Annexure table: 24 hour extended detention of the1-year RI, 24h storm event in a greenfield development > 50 000 m²

      Permission to deviate from this requirement.

   ii. Annexure table: Up to 10-year RI peak flow reduced to pre-development level in a greenfield development > 50 000 m²

      Permission to deviate from this requirement.

   iii. Annexure table: Up to 50-year RI peak flow reduced to existing development levels in a greenfield development > 50 000 m²

Permission to deviate from this requirement.

(d) Extent of desirability

The proposal is considered to be desirable in terms of the desirability criteria specified in section 99(3) of the MPBL, as evaluated in sub-section 12.2.4 below.

(e) Impact on existing rights

When considering existing rights, three parties need to be considered:

- the public at large or the City as its representative;
- the surrounding landowners; and
- the owner of the land.

The proposed development will have no impact on the rights of the public at large. In fact, the proposed development will be predominantly positive:

- a substantial section of the Berkley Road extension to the north of the site will be implemented, which will not only provide access onto the site, but will also establish a public amenity in terms of the wider transportation network;
- rehabilitation of the Liesbeek Canal into a riverine corridor will occur, which will effectively allow for a continuation of the lower Liesbeek River as a visually congruent and publicly accessible riverine corridor, with resulting ecological and social benefits;
- intense urban development will occur within a 500m radius from higher order public transport stations (i.e. Observatory and Koeberg train stations), in line with the City of Cape Town's Transit Oriented Development Strategy.
- development will yield a substantial income for the Municipality in terms of rates to assist with service delivery in areas of need elsewhere in the city;
- densification and diversification of residential stock will occur in-line with the City of Cape Town's Densification Policy;
- inclusionary housing will be provided, thus satisfying an important social need;
- significant employment opportunities will be created in an area that is relatively easily accessible from the Metro Southeast;
- a catalytic, mixed use development will be implemented at the western gateway into TRUP; and
- a destination place will be established that will attract, and serve the needs of, urban residents.

The proposal will have minor impact on the adjoining owners, most notably the SAAO. The storm water hydrology investigation found that 3 buildings positioned along the bank of the Liesbeek Canal on the SAAO property are susceptible to increased frequency of flood damage post development. However, it is important to recognise that these properties were built within the 1:2 to 1: 5 year flood plain and therefore are prone to flooding in any event.

Finally, the proposed development meets the needs and objectives of the land owner. The Liesbeek Leisure Trust bought the property in 2015 and over the past two years the facility has

been progressively improved, with numerous upgrades of the buildings, parking area and grounds having taken place, while the golf driving range is much improved. Notwithstanding these improvements, the owners of the River Club find that the current use of the property is not financially sustainable and is an underutilization of well-located land within Cape Town. Accordingly, they have undertaken a comprehensive process over the past three years to investigate a feasible development proposal for the site, and it is believed that the proposal presented represents an optimal balance between urban development, environmental sustainability, the preservation / celebration of heritage resources and enhanced socio-economic benefit.

(f) Criteria to be taken cognizance of if consolidation is involved

Not applicable to this application.

(g) Other considerations prescribed in relevant national or provincial legislation

Considerations prescribed in national legislation (i.e. SPLUMA) is evaluated in sub-section 12.3 below, while considerations prescribed in provincial legislation (i.e. LUPA) is evaluated in sub-section 12.4.

12.2.4 Desirability of the Land Use Contemplated

(a) Socio-economic impact

The River Club development will deliver significant socio-economic benefits in the form of investment in the economy, increase in employment, increase in government revenue (i.e. rates and taxes) and the cross-subsidisation of public infrastructure (e.g. Berkley Road extension). In addition, the development will provide access to inclusionary housing, as well as improved accessibility to open spaces and urban facilities that will deliver amenity to the community. Furthermore, the development has the potential to a catalyst project that will encourage the further implementation of projects within TRUP and attract more visitors to TRUP.

(b) Compatibility with surrounding land uses

The River Club will be a mixed-use, medium-to-high density development that will promote the vision of "Live, Work, Play". The development will include retail, commercial, residential and open space land uses.

There are a variety of land uses in the areas surrounding the site with residential, commercial, institutional and industrial activities interspersed with open spaces for passive and recreational activities.

Mixed-use development on this site is considered desirable for the following pertinent reasons:

- economic investment, employment and income generation;
- generation of population thresholds to support public transport and retail uses within TRUP, the nearby Main Road and Voortrekker Road corridors;

- integrate and reinforce the Voortrekker Road and Main Road development corridors and promote economic activities and interaction east and west of the Black River and M5;
- support the efficient functioning and viable provision of public and NMT services (including the proposed TRUP public and NMT corridor to the south of the site on Station Road) by increasing population thresholds and introducing mixed-use development;
- improve pedestrian permeability between the Voortrekker and Main Road corridors;
- attract people to the western edge of the Black River and be a gateway and catalyst to TRUP;
- the creation of a "destination place" within TRUP where the concept of "live, work, play" is encapsulated;
- providing public access to the rehabilitated interfaces with land and freshwater ecosystems;
- improve regional mobility by connecting the Liesbeek Parkway with the M5, and TRUP to the CBD by allowing and promoting public access and thoroughfare to and through the site;
- reduce travel distances and times, as well as the associated costs;
- create attractive and safe urban environments, particularly in river corridors; and
- celebrate the inherent heritage of the site and surrounding areas.

(c) Impact on the external engineering services

All of the utility services required by the project will be installed by the developer. The proposal is situated within an established urban area and will connect into the existing infrastructure network. No adverse impacts on the existing utility network are anticipated.

Future implementation of services, including the phasing thereof, will be subject to an engineering services agreement to be entered into between the developer and CoCT following any land use approvals granted.

(d) Impact on safety, health and wellbeing of the surrounding community

A development such as the one proposed at the River Club will promote 24-hour surveillance and increase "feet-on-the-ground" when compared with the current situation, thereby improving the safety of the area.

There is a perception amongst some of the public that the development of the River Club site will increase flooding in the surrounding area, and in turn compromise the safety of the public. However, after a comprehensive stormwater hydrology assessment it was concluded that the proposed development would have an insignificant effect on flooding in the vicinity of the River Club site.

(e) Impact on heritage

The substantial changes on the site will transform the existing sense of place, and this change will be highly visible to persons familiar with the area. Whether this change is perceived as negative or positive is dependent of the personal aesthetic and values of the observer.

The Draft HIA identifies the Liesbeek River corridor and its confluence with the Black River as the one heritage feature of high significance in this context: *"It is a powerful historic symbol and place-mark that refers to early landscape of pre-colonial transhumance use, colonial settlement and*

agriculture, and contestation. The river itself needs to be respected, enhanced and made accessible."

It is contended in the Draft HIA that the sense of place attributed to this area relies on the Liesbeek River riverine corridor for its significance, and that the Liesbeek River will be significantly enhanced by the restoration of the corridor associated with the canal to match the corridor upstream.

The proposed rehabilitation of the canalised section of the Liesbeek River will create a "sense of river-ness" and engender conditions favourable to creating biodiversity and engendering natural qualities. This action will result in a powerful positive contribution to the overall commemoration of this feature and enhance and celebrate its symbolic significance.

(f) Impact on the biophysical environment

A Basic Assessment has been conducted as part of the NEMA process. A comprehensive assessment of potential biodiversity impacts associated with the proposed development forms part of the Basic Assessment. The biodiversity assessment report, which is attached hereto as **Annexure I**, incorporates the findings of an aquatic ecosystems (i.e. rivers and wetlands) study, a botanical assessment, a faunal study, an avifaunal assessment and a geohydrological study.

The assessment found that terrestrial and natural ecosystems associated with the site are degraded, having suffered a long history of manipulation, including (in the case of aquatic ecosystems) variously, diversion, channelization, fragmentation and canalisation. Terrestrial ecosystems have been assessed by the faunal, avifaunal and botanical specialists as highly altered and affording very low levels of habitat quality. In addition, no indigenous flora of any concern was found on the site.

The assessment concludes that the proposed development is acceptable from an ecological perspective. Importantly, the proposal to rehabilitate the currently canalised reaches of the lower Liesbeek River, and the planned creation of an unlined vegetated channel that has sufficient space to function as a natural river within a broad connecting riverine corridor (and which would significantly improve faunal connectivity and toad migration routes across the site), is supported from a biodiversity and general aquatic ecosystems perspective, and its implementation is recommended by the specialist team.

Further, the infilling and landscaping of the remnant "natural" channel of the Liesbeek River is considered ecologically acceptable by the specialist team, and the proposed development of vegetated swales in landscaped terrestrial areas is considered an acceptable use of this space without significant negative biodiversity or other ecological costs.

(g) Traffic impacts, parking, access and other transport related considerations

The project traffic engineer has produced a comprehensive Draft Traffic Impact Assessment (TIA) regarding the predicted impact of the development in terms of traffic generation and road operations.

The Draft TIA concludes that both Precinct 1 and Precinct 2 of the River Club development will have an effect on the immediate road network within the vicinity of the site. Notwithstanding, both Precincts could be accommodated with the implementation or provision of the recommended infrastructure as proposed in the Draft TIA. The Draft TIA therefore recommends that the River Club development be approved from a transport / traffic perspective.

(h) Whether the imposition of conditions can mitigate an adverse impact of the proposed land use

Council's standard conditions for a development of this type will assist to manage the development process and any potential concerns. These will include requirements relating to *inter alia* future applications and detailed plans regarding engineering services. In addition, it is expected that any NEMA approval will include conditions such as a Construction Environmental Management Plan and an Operational Environmental Management Plan.

12.3 Compliance with SPLUMA Development Principles

12.3.1 Overview

Section 7 of the Spatial Planning and Land Use Management Act [Act 16 of 2013] (SPLUMA) outlines five development principles (and associated sub-principles) which apply to spatial planning, land development and land use management, *viz.*:

- *The principle of spatial justice;*
- *The principle of spatial sustainability;*
- *The principle of efficiency;*
- *The principle of spatial resilience; and*
- *The principle of good administration.*

12.3.2 Compliance

Not all of the principles outlined in SPLUMA are applicable to the proposed development, but there are 7 sub-principles that are particularly pertinent. These are discussed in more detail below and in each instance compliance is demonstrated.

(a) the principle of spatial justice, whereby—

(i) past spatial and other development imbalances must be redressed through improved access to and use of land

The impact that the legacy of apartheid has had on South Africa's cities, particularly its continued effect on access to land and housing by the poor, is acknowledged by the proponent. As such, the proponent is committed allocating approximately 6 000 m² of residential floor space to inclusionary housing. With an average unit size of 35m² (and with an efficiency factor of 80%), it is estimated that approximately 140 inclusionary housing units will be available to the rental market (it is important to note that these units will not be available for purchase).

Considering that this is a private development on privately owned land, the allocation of 20% of the total dwelling units to be offered at the River Club to the inclusionary housing market is regarded as reasonable in upholding this sub-principle.

(b) *the principle of spatial sustainability, whereby spatial planning and land use management systems must—*

(iii) uphold consistency of land use measures in accordance with environmental management instruments

An application for Environmental Authorisation is being made to the Competent Authority, namely DEA&DP, and is required as the proposed development triggers various activities listed in terms of the NEMA EIA Regulations, 2014.

In terms of the NEMA EIA Regulations 2014, a Basic Assessment ("BA") process must be followed in order to apply for Environmental Authorisation, which includes the compilation of a Basic Assessment Report ("BAR"). The BAR, which includes a comprehensive Environmental Management Programme (EMPr), will be submitted to DEA&DP during the second half of 2018.

(iv) promote and stimulate the effective and equitable functioning of land markets

The location and size of the site means that it is highly valuable. The bid rent principle means that once the development is complete the value of the properties / sectional title units at the River Club will soar, with many competing contenders seeking to locate there. Location of the land is further strengthened by the potential for agglomeration with existing business / industries located at inter alia Black River Park, Salt River, Maitland and Ndabeni.

Notwithstanding, two factors should ensure that the urban land market remains equitable: the allocation of 20% of residential units to the inclusionary market; and the fact that the developer will retain ownership of the land (all properties / sectional title units will be leasehold). The latter will ensure that properties / sectional title units are not frequently traded on the market, which will ensure the market value is regulated.

(v) consider all current and future costs to all parties for the provision of infrastructure and social services in land developments

The availability and cost of infrastructure has been taken into consideration. The City of Cape Town has confirmed that there is available capacity for the development and the developer is aware of the necessary Development Contribution costs.

(vi) promote land development in locations that are sustainable and limit urban sprawl

The site falls within the "urban inner core" (as identified in the Cape Town MSDF). Moreover, the proposed density of approximately 40 du/ha is considered in line with the City's densification targets and will further densify this part of the city in a manner that positively reinforce the nearby urban corridors, as well as the surrounding public transport

network. The benefits of densification with regards to sustainability are well documented and do not need to be repeated.

With regards to the long-term sustainability of the site, it is believed that the proposal presented represents an appropriate and sustainable balance between environmental needs, heritage needs and optimal urban development.

(vii) result in communities that are viable

The River Club will be a vibrant, mixed use development on a strategically located piece of land in Cape Town. The project will be a catalyst for the TRUP initiative and will help TRUP establish itself as a destination place in Cape Town. The inclusion of inclusionary housing will assist to make it an integrated development. Further, the project will (ultimately) facilitate the construction of Berkley Road extension, which has long been part of the City of Cape Town's road network plan. This new road will connect the suburbs of Salt River and Maitland, which will serve to integrate a part of Cape Town that has long been fragmented by physical barriers such as the Black River and M5 freeway.

(c) the principle of efficiency, whereby—

(i) land development optimises the use of existing resources and infrastructure

The development will connect into existing services infrastructure and it has been confirmed by the City that there is available capacity within the system.

12.4 Compliance with LUPA Assessment Criteria

12.4.1 Overview

Section 49 of the Western Cape Land Use Planning Act [Act 3 of 2014] (LUPA) provides guidance about matters which must be considered when an application comes before a Municipality and reads as follows:

"When a municipality considers and decides on a land use application, the municipality must have regard to at least—

(a) the applicable spatial development frameworks;
(b) the applicable structure plans;
(c) the principles referred to in Chapter VI;
(d) the desirability of the proposed land use; and
(e) guidelines that may be issued by the Provincial Minister regarding the desirability of proposed land use."

Section 49(c) makes reference to "principles". Indeed, section 59 of LUPA outlines five principles (and associated sub-principles) which apply to land use planning, *viz.*:

(1) Principles of spatial justice;
(2) Principles of spatial sustainability;
(3) Principles of efficiency;

(4) Principles of good administration; and
(5) Principles of spatial resilience.

12.4.2 Compliance

Section 49(a) and 49(b)

Compliance with the assessment criteria 49(a) and 49(b) has already been demonstrated elsewhere in this report.

Section 49(c)

As with the SPLUMA principles, not all of the principles outlined in Chapter VI of LUPA are applicable to the proposed development, but there are 15 sub-principles that are particularly pertinent. These are discussed in more detail below and in each instance compliance is demonstrated.

59(1)(a) past spatial and other development imbalances should be redressed through improved access to, and utilisation of, land

Covered in relation to SPLUMA (refer to sub-section 12.3.2).

59(2)(a) land use planning should—

(iii) uphold consistency of land use measures in accordance with environmental management instruments

Covered in relation to SPLUMA (refer to sub-section 12.3.2).

(iv) promote and stimulate the effective and equitable functioning of land markets

Covered in relation to SPLUMA (refer to sub-section 12.3.2).

(v) consider all current and future costs to all parties for the provision of infrastructure and social services in land developments

Covered in relation to SPLUMA (refer to sub-section 12.3.2).

(vi) promote land development in locations that are sustainable and limit urban sprawl

Covered in relation to SPLUMA (refer to sub-section 12.3.2).

(vii) result in communities that are viable

Covered in relation to SPLUMA (refer to sub-section 12.3.2).

59(2)(b) the sustained protection of the environment should be ensured by having regard to the following:

(i) natural habitat, ecological corridors and areas with high biodiversity importance

The proposed development has been subject to a Basic Assessment process in terms of NEMA, which includes inter alia detailed studies in respect to flora, fauna and aquatic ecosystems (refer to sub-section 4.2 of this report).

The biodiversity assessment conducted as part of the BAR concludes the following:
"...both terrestrial and natural ecosystems are considered degraded, having suffered a long history of manipulation, including (in the case of aquatic ecosystems) variously, diversion, channelization, fragmentation and canalisation. Terrestrial ecosystems have been assessed by the faunal, avifaunal and botanical specialists as highly altered and affording very low levels of habitat quality. No indigenous flora of any concern was found on the site..."

The degraded nature of much of the River Club site means that its development does present opportunities for rehabilitation / remediation of ecological function, which is part of the development proposal.

(ii) the provincial heritage and tourism resources

The HIA states:

"...the pre-colonial river crossing site and the Liesbeek riverine corridor and its sense of place apart, there are no heritage resources on the site that will require intervention. Determining the quality of the site is an urban design issue; and, given that the indicators/criteria-for-decision-making are relatively weak in determining architecture and townscape character, we argue that the role that heritage informants should play in the urban design of the site is relatively limited. The one heritage feature of high significance that has been identified is the Liesbeek River corridor itself and the confluence which is the common feature that runs through the project area and beyond. It is a powerful historic symbol that refers to early landscape of pre-colonial transhumance use, colonial settlement and agriculture, and contestation."

The rehabilitation / restoration of the Liesbeek Canal bounding will create a "sense of river-ness" to the lower reaches of the Liesbeek River. This rehabilitation, in turn, will engender conditions favourable to creating biodiversity and natural qualities. This action will result in a powerful positive contribution to the overall commemoration of this feature and enhance and celebrate its symbolic heritage significance.

(iii) areas unsuitable for development, including flood plains, steep slopes, wetlands and areas with a high water table and landscapes and natural features of cultural significance

Although the River Club site falls within a floodplain, it is proposed to "raise" habitable space and roads above the 1:100 year floodline (in accordance with the provisions of the *City of Cape Town's 'Floodplain and River Corridor Management Policy*).

Aurecon have conducted extensive investigations into surface water hydrology in relation to the site, and what impact the proposed development twill have on flooding in the area (refer to **Annexure H**). The report concluded *inter alia* the following:

- *"The development of the River Club, along with the TRUP, PRASA and SKA sites is likely to have an impact on flood levels in the order of 0.01m – 0.15m, depending on the storm recurrence interval and location, with the greatest differences expected in the vicinity of the SAAO. The impacts of these changes were deemed to be insignificant."* (emphasis added)

- *"Were the River Club to be developed in isolation (i.e. TRUP, PRASA and SKA were not to be developed), the impacts would be of a similar magnitude for all recurrence intervals, but less by approximately 0.00m – 0.03m, to the scenario where all the proposed development went ahead. Again, this impact was considered to be insignificant."* (emphasis added)

- *"The design of changes to the Liesbeek Canal should aim to maintain the existing hydraulic functioning of the wetland during smaller recurrence interval events. The current proposal would to have little to no effect..."* (emphasis added)

- *"The impact of the proposed development on flood levels and extent are considered to be negligible."* (emphasis added)

- *"The impact of the proposed development along with the proposed Two Rivers Urban Park development on flood levels and extent are considered to be negligible."* (emphasis added)

(iv) the economic potential of the relevant area or region

The site is located within the "urban inner core" of Cape Town and in close proximity to both the MSEIZ and VRC. It therefore has high economic potential.

59 (2)(e) the safe utililisation of land should be ensured by takin into consideration factors such as sea-level rise, storm surges, flooding, fire hazards and geological formations

Refer to response to section 59(2)(b)(iii) of LUPA.

59(3)(b) integrated cities and towns should be developed, whereby—

(i) the social, economic, institutional and physical aspects of land development is integrated

The River Club will be a vibrant, mixed-use precinct that will be a destination place within the city, and will begin to establish the vision of "live, work, play" within TRUP. Further, and by providing public amenities and facilitating public access to and through the site, the River Club will provide people with quality public spaces and the chance to interact with the site in a meaningful way.

(iii) the availability of residential and employment opportunities in close proximity to, or integrated with, each other is promoted

Approximately 30 000 m² of residential floor space (approximately 600 dwelling units) and is proposed in combination with 60 000 m² of office floor space and approximately 30 000 m² of commercial / retail floor space. This means that people will have the opportunity to live and work in the same precinct.

(iv) a diverse combination of land uses is promoted

A diverse mix of land uses is proposed (refer to **Table 8** in sub-section 6.2).

(v) the phenomenon of urban sprawl in urban areas is discouraged and the development of more compact towns and cities with denser habitation is promoted

This development promotes higher densities (approx. 40 du/ha) within the "urban inner core".

(vi) historically distorted spatial patterns of settlement are corrected

The impact that the legacy of apartheid has had on South Africa's cities, particularly its continued effect on access to land and housing by the poor, is acknowledged by the proponent. As such, the proponent is committed allocating approximately 6 000 m² of residential floor space to inclusionary housing. With an average unit size of 35m² (and with an efficiency factor of 80%), it is estimated that approximately 140 inclusionary housing units will be available to the rental market (it is important to note that these units will not be available for purchase).

The River Club will be a place that is welcome to all people, irrespective of race, class gender or religion.

(vii) the quality and functionality of the public spatial environment is promoted

Apart from commercial considerations, one of the objectives of the River Club development is to promote public access, break down barriers and integrate the River Club into TRUP and the surrounding communities. To this end, extensive upgrading / rehabilitation of the public spatial environment will occur.

Section 49(d)

Section 49(d) of LUPA is used to assess the desirability of the proposed land use. The following factors point to the proposal being highly desirable:

- increase in population thresholds and mixed-use development, which will support the efficient functioning and viable provision of public transport services;
- reduction in travel distances and times, as well as the associated costs;

- rehabilitation of interfaces with freshwater systems and enhanced public access to these areas;
- enhancement of the heritage value of the Liesbeek River (and its associated confluence with the Black River) by rehabilitating the Lisebeek Canal into a visually congruent and publicly accessible riverine corridor, with resulting ecological and social benefits;
- generation of employment and income;
- enhance access to economic opportunities, public transport and open space amenities;
- diversification and choice of housing types and tenure options;
- generation of sufficient consumers to facilitate the creation of economic opportunities in close proximity to identified urban corridors;
- cost-effective provision and optimal use of services infrastructure (the site is within the urban edge and can link in with existing services infrastructure within and surrounding the site); and
- development of a catalyst project that will enhance the greater TRUP area; and
- the creation of a destination place which the general public can visit and enjoy.

13. CONCLUSION

The development proposal for the River Club has been formulated after input from various specialists, including stormwater hydrology, freshwater ecology, botanical, faunal, heritage, visual, urban design, engineering, traffic, landscape and town planning professionals. The layout represents a balance between the existing urban fabric, proposed future urban interventions, the preservation of existing heritage resources and the need to mitigate the impact on the natural environment.

The proposed development will be an asset to the area and is consistent with the principles of the MPBL for approval of applications. This composite planning application has considerable merit and it is requested that approval is granted.