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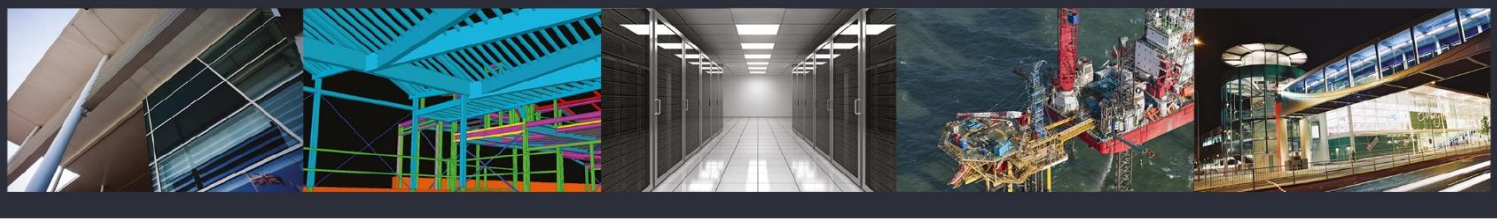

Boherboy SHD

Statement of Compliance With DMURS

January 2022

Prepared for:

Kelland Homes Ltd.

Durkan Group

STRUCTURAL • CIVIL • DUE DILIGENCE • ENGINEERING MASTERPLANNING
FLOOD MANAGEMENT • INFRASTRUCTURE DESIGN
PRE-DEVELOPMENT ENGINEERING • BIM • TRANSPORTATION

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1 INTRODUCTION

1.1 Background

This Statement of Compliance with DMURS has been prepared by Pinnacle Consulting Engineers in support of a Strategy Housing Development application to An Bord Pleanála for a residential development located off Boherboy Road, Co. Dublin.

Kelland Homes Ltd and Durkan Estates Ireland Ltd are applying to An Bord Pleanála for permission for a strategic housing development at a site at Boherboy, Saggart, County Dublin. To the immediate north of the site is the Carrigmore residential estate, to the west are agricultural lands and a single dwelling, to the east is the Corbally residential estate while to the south is the Boherboy Road. The proposed application represents the development of the entire Boherboy Neighbourhood as identified in the Fortunestown Local Area Plan (2012).

The development will consist of 655 no. dwellings, comprised of 257 no. 2, 3 & 4 bed, 2 & 3 storey detached, semi-detached & terraced houses, 152 no. 1, 2 & 3 bed duplex units in 17 no. 2-3, 3-4 & 4 storey blocks, and 246 no. 1, 2 & 3 bed apartments in 9 no. buildings ranging in height from 2, 2-5, 4-5 & 5 storeys, and a 2-storey crèche (693m²).

Access to the development will by via one no. vehicular access point from the Boherboy Road, along with proposed upgrade works to Boherboy Road to include the provision of a roadside footpath along the front of the site at the Boherboy Road, continuing eastwards to the junction with the N81 Blessington Road (for an overall distance of c.370m). The proposed development also provides for pedestrian and cyclist connectivity to the adjoining Carrigmore Park to the north-east, and vehicular, pedestrian and cyclist connections to adjoining developments at Corbally Heath to the east and Carrigmore Green to the north.

The proposed development provides for (i) all associated site development works above and below ground, including surface water attenuation & an underground foul sewerage pumping station at the northern end of the site, (ii) public open spaces, including alongside the Corbally Stream, which will accommodate the provision of pedestrian / cyclist links to Carrigmore Park to the north-east, (iii) hard and soft landscaping and boundary treatments, (iv) undercroft, basement & surface car parking (914 no. spaces including EV parking), (v) bicycle parking (797 no. bicycle parking spaces), (vi) bin storage, (vii) public lighting, and (viii) 5 no. ESB sub-stations, all on an overall application site area of 18.3ha. In accordance with the Fortunestown Local Area Plan (2012) an area of approx. 1.42ha within the site is reserved as a future school site.

The site has an area of 18.26Ha.

The site is located approximately c. 13.7 Km southwest of Dublin City Centre and is bounded to the north by Carrigmore Estate; Corbally Estate to the east; agricultural land to the west and Boherboy Road to the south.

The site is currently a greenfield site.

The site location is shown in Figure 1.

In order to complete this report, Pinnacle Consulting Engineering has made reference to the following documents:

- The Design Manual for Urban Roads & Streets (2019)

Figure 1 Site Location (Source: GeoHive)

1.2 Development

It is proposed to develop a residential development consisting of 628 residential units with associated car park and servicing arrangements on lands of Boherboy Road, Co. Dublin.

Refer to Pinnacle drawing P170804-P100 for a general arrangement drawing for the proposed development.

Refer to the Architect's and Landscape Architect's drawings for details on the road hierarchy.

2 ROAD HIERARCHY

2.1 Introduction

A hierarchy of roads have been provided as:

1) Link Streets,
2) Side Streets &
3) Homezones.

The aim is to provide self-regulating streets offering low speed route choices within a high-quality residential environment. While there is a hierarchy of road types, all roads through this residential development are provided as slow-moving traffic roads.

All internal estate roads have been designed with short straight elements, gentle horizontal curves from junction to junction, varying road widths (6.0m, 5.5m, 5.0m & 4.8m), smooth & gentle vertical alignments and numerous interconnections, route options & looped sections keeping speeds low to create a pleasant living environment.

Fast moving traffic is discouraged by the horizontal alignment arrangement. Speed limits of 30km/hr maximum is proposed. Home-zones such as those proposed for “local access only” and short cul de sacs shown below will have lesser speed limits applied, i.e., 10-20km/hr.

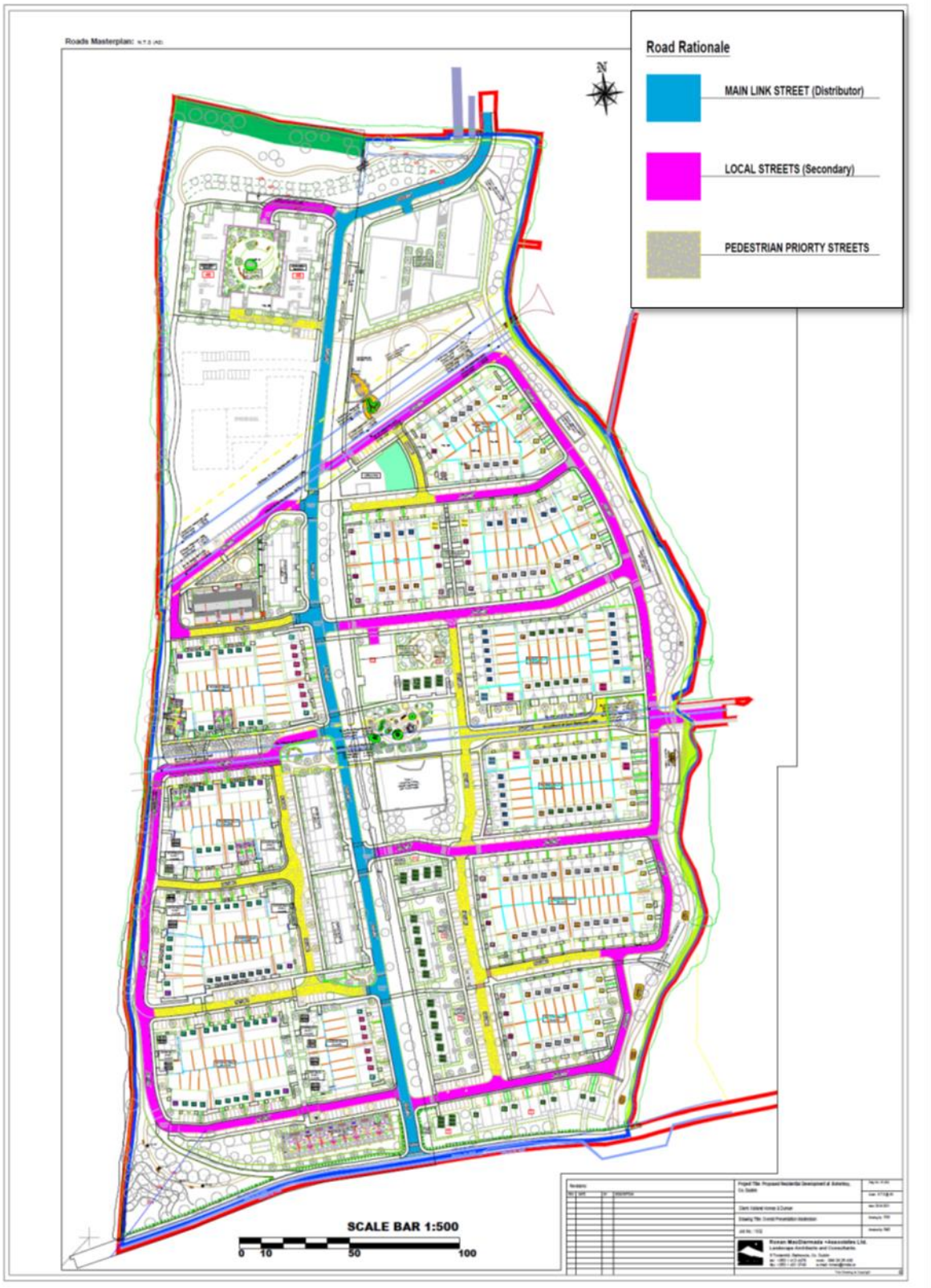

Figure 2 Road Hierarchy (Source: RMDA)

Road Hierarchy:

The numerous T-Junctions will assist in frequently stopping the flow of traffic when travelling through the development, which will create quiet side streets used for access by locals only. Home-zones promote shared surface uses and are primarily proposed where there is no possibility of “through vehicular traffic”.

Within the subject site, place-enhancement and movement management are influenced by introducing measures to reduce driver speeds such as:

a) roads with close proximity to buildings.

b) tighter corner radii provided where appropriate.

c) shared surfacing in home-zones.

d) reduced visibility splays.

e) on street parking where appropriate.

f) horizontal deflections; and

g) pedestrian activity with numerous interlinking footpaths and crossing points.

All roads are provided with adjacent footpaths allowing pedestrian interconnectivity throughout this development and connection with local estates estate, the adjacent zoned lands and further connection with the wider network of paths.

The kerb corner radii have been designed through computer programme “swept path” analysis considering traffic safety and practical turning arcs while also considering the guidelines set out within the Design Manual for Urban Roads & Streets.

Large vehicles such as waste collection trucks and furniture lorries are allowed for in the design, their frequency of passage is considered most infrequent in comparison to passenger cars. Therefore, the swept paths for these larger vehicles have been analysed to ensure circulation is achievable without overdesigning the kerb radii. Overdesign would result in the negative effect of encouraging car drivers to travel at higher than desired speeds thus defeating the purpose of applying other DMURS standards.

In general, the kerb radii dimensions are between 3m to 6m. There are locations where kerb radii dimensions are larger for road safety considerations. Typically, the radii to the primary roads are larger than those set out for secondary access roads. Horizontal alignment can have large radii to facilitate the placing of adjacent dwellings however junctions set out on these alignments will incorporate small radius bends.

In addition to kerb radii considerations and as the road network throughout the development consists of many interlinked looped routes, the road hierarchy has been considered with appropriately located STOP sign positions. With the numerous stoppage locations, traffic speeds are reduced overall to an acceptable level for driver, pedestrian and cyclist safety.

With reference to carparking, the proposed development incorporates:

a) Own door carparking within the curtilage of the private dwelling plots.

b) Off street parking for visitors.

c) Carparking adjacent to the link street; and

d) Carparking within the homezones which harmonize with the domestic environment that they exist within.

The above in compliance with DMURS guidelines whereby Link Streets are provided with on-street parking spaces located in a series of bays that are parallel to the vehicular carriageway. Otherwise, within the low-speed access roads, perpendicular spaces are provided.

Road surface finishes will be standard tarmacadam with home zone areas being finished in coloured tarmacadam as per Architect's design proposals. We have avoided permeable paving to the areas that are envisaged to be taken in charge by the local authority as such paving is not acceptable for taking in charge. Also, Irish Water do not accept their drainage network located below permeable paving hence the use of conventional tarmacadam. Permeable paving surfacing is however proposed for the carparking bays within the private front gardens and homezones carparking areas.

3 DESIGN PRINCIPLES

3.1 Design Principle 1

To support the creation of integrated street networks which promote higher levels of permeability and legibility for all users, and in particular more sustainable forms of transport

The site is located within zoned 'Residential' lands in the Boherboy LAP.

The proposal is for sustainable residential development with linkage to the adjacent urban areas and transport hubs to the north, south and east of the site. The residential use and associated open space provided will complement the current residential developments surrounding the site including mature estates to the north and east of the site.

The layout for the proposed housing scheme has been carefully developed to provide smaller residential clusters which centre on well landscaped public open spaces located throughout the development. There is pedestrian linkage to the open spaces, and we have provided permeability through these spaces. The finishes around the dominant public spaces are based on providing pedestrian home zone surfaces which provides priority to pedestrians.

The proposed road layout provides for both road, cyclist and pedestrian connectivity with the proposed layout creating a clear system of roads and pavements which are easy to navigate for both drivers and pedestrians. The design of the road and pavement alignment has been carefully designed to introduce curvature into the horizontal alignment which acts as a traffic calming measure throughout the scheme. We have avoided long straight sections of roadway.

Access to and from the site is through a new DMURs compliant access junction located off the Boherboy Road. The design of these junction has been selected to ensure sight visibility both from the junction and for forward visibility from other road users on the Boherboy Road. Additional access will be provided into the Corbally and Carrickmore estates.

There are presently no footpaths along Boherboy Road. Associated public lighting and drainage is also proposed.

There are other alternative pedestrian routes available to provide good pedestrian linkage to the N82 via Corbally estate to the west and Citywest Road to the north via Carrickmore.

3.2 Design Principle 2

The promotion of multifunctional streets that balance the needs of all users within a self-regulating environment.

The roads alignment design throughout the proposed development consists of short, curved stretches of roadway in order to slow traffic down. These features create a passive method for controlling the speed of the vehicular movements throughout the development.

The development has been designed to include car parking for both the apartment development, crèche and housing units.

The apartment car parking comprises mostly on-street parking.

However, parking for homeowners in the development shall be predominantly within their front of house areas within their site boundary with some on-street parking. This has been specifically designed to align with homeowners' preference to have their private vehicles positioned within the limitations of the individual site ownership and to avoid a feeling of over dominance associated with having the majority of parking located on-street.

3.3 Design Principle 3

The quality of the street is measured by the quality of the pedestrian environment.

Raised tables located along the road alignment have been incorporated throughout the proposed development at specific locations to promote lower speed limits along the long sections of roadway which is sloped to act as passive speed control measures.

These raised tables also act as providing pedestrian crossing point's at-grade. These raised crossings shall provide the pedestrian with a sense of priority over vehicular movements at these interfaces. While footways adjacent to the roads have been provided through the development, a further independent network of footways is included through the open spaces away from vehicular routes.

The following geometric designs have been incorporated into the development:

- Pedestrian footpaths located alongside the road carriageways are a minimum 2.0m wide. The footpaths that extend through the open spaces are also 2.0m wide.
- The radii have been kept to a minimum in accordance with the guidance in DMURS (2013). The road entrance radii are range from 6.0m at the main entrance to the development and 4.5m on the internal junctions. Road widths within the development are as follows:
    - Link Streets is to be 6.0m wide
    - Side Streets are to be 5.5m wide
    - Homezones are to be 4.8m wide with a 1.2m footpath delineated with a 25mm bull nose kerb

The internal layout of the proposed development incorporates a number of designed features such as varying surface materials and colours which will establish a sense of place while increasing the overall safety of providing a shared surfacing for all road users. The inclusion of a shared paved vehicular and paved areas and an abundance of planting/vegetation will also encourage lower vehicle speeds throughout the development and give the pedestrian a sense of priority.

Pedestrian crossing points have been located along the entire road alignment throughout the development to allow the pedestrian to be afforded ease of movement through the complex and all desire lines have been carefully designed and incorporated into the scheme. Refer to Pinnacle Engineering Drawing No. P200107-PIN-XX-DR-D-0031 to 0033 -S1-P01 for details of the Internal Road Network.

The main link street through the site has a very strong building edge. The building edge is defined by 3 and 4 storey buildings with a mixture on street and perpendicular car parking. This creates a visual queue for drives by creating a 'canyon effect'. This can calm traffic by increasing drive caution as the 'canyon' effect visually narrows the carriageway and appears to reduce forward visibility.

3.4 Design Principle 4

Greater communication and cooperation between design professionals through the promotion of a plan led, multidisciplinary approach to design.

The design of the proposed housing development for 690 units has been designed using a coordinated design team inclusive approach between architect, engineers, planning consultants and landscape designers taking into account considerations from all discipline specialists.

The design team have progressed through several iterations of the layout in line with comments received from each discipline while also taking into consideration feedback received from both South Dublin County Council and An Bord Pleanála as part of the previous application on this site to arrive at

a solution which meets the guidance outlined in the DMURS. The resulting layout provides a development of high standard which incorporates spatial requirements and takes into account relevant plans and policies.

Therefore, we are satisfied that the now proposed design addresses all issues raised by the various disciplines and following integration of all authorities and design members meets the requirements / guidance of DMURS.

3.5 Design Principle 5

Social Inclusion – The proposed development has been designed to allow permeability, both in terms of future residents and people currently leaving in the Boherboy Area.

As outlined previously, the proposed development has been designed to ensure that future residents have access to local amenities, public transport nodes and highways through appropriately designed road, pedestrian and cycle links.

This permeability also opens up existing estates to greater access to local amenities. For example, the link through to Corbally will allow Corbally resident's easier access to Carrickmore District Park.

Figure 3 External Permeability (Source: P200107-PIN-XX-DR-D-0021)

Refer to Pinnacle Engineering Drawing No. P200107-PIN-XX-DR-D-0021 for further details.

3.6 Design Principle 6

The functionality of cycling

General

The purpose of a cycle trip can generally be broken down into two forms

1. A functional trip where there is a destination i.e., commuter trips, trips to shops etc
2. A pleasure trip, where the journey has no destination

The proposed development will cater for each of these trips as follows:

1. Functional trips will be catered for along the Link Street towards Carrickmore which will provide access to local amenities, areas of employment and access to public transport. Additional permeability will be provided through Corbally and on to the Boherboy Road.
2. A greenway will be provided along the eastern and western boundaries that allows a person to cycle for enjoyment rather than it been functional. The eastern greenway will be provided access long the eastern boundary to the local district park.

Link Street

Section 4.3.5 of DMURS covers cycle facilities. There are 3 levels of provision.

1. On lightly trafficked/low-speed streets, designers are generally directed to create shared Streets where cyclists and motor vehicles share the carriageway
2. On busier/moderate speed streets, designers are generally directed to apply separate cycle lanes
3. On busier streets with HGV movements off street cycle tracks are desirable

The proposed development will have an AADT of c. 3300. The Link Street will be a lightly traffic/low speed street, through the adoption of traffic calming and the application of a 30km/h speed limit, therefore cyclists will share the carriageway with motor vehicles.

Greenway

The eastern/western cycle tracks are defined as amenity cycle tracks that would cater for pleasure trips.

The greenway should be a two-way shared facility, for pedestrians and cyclists, along the respective boundaries. The cross-sectional width is determined on the likely level of usage. The usage will be less than 1500 users per day (assumed). Therefore, the greenway is a low volume facility and segregation between pedestrians and cyclists is not considered necessary.

The greenway will not be used by motorised vehicles, apart from maintenance and emergency vehicles.

As the volume is expected to be less than 1,500 users therefore the Greenway would be a low volume facility with 3m wide pavement as recommended by TII Rural Cycleway Design (offline) 2017, Table 4.1.

The proposed Greenway pavement shall be made up of 40mm bituminous surface laid on 150mm of crushed stone sub-base. The sub-base should be laid with a paving machine so as to give a high-quality surface level control which is a requirement for multi-user trails.

Figure 4 Typical Greenway Construction

3.7 Design Principle 7

Vehicle Permeability

Integrated networks do not require the same degree of restrictions to be placed on the movement of vehicles as is applied to more conventional/segregated networks. A network of integrated/self-regulating streets provides the framework for higher levels of accessibility for slow modes (including motor vehicles at slow speed) and strategic continuity for cross-network modes at more moderate speeds (such as public transport) as

- The slower nature of Local streets (i.e., 10-30 km/h) will result in them being less attractive to through traffic. Although trips through Local streets may be more direct (and therefore legible), the traffic-calmed nature of these streets may not necessarily result in significant advantages in overall journey times.

There are a number of advantages to more permeable networks in regard to the management of traffic and vehicle speeds such as:

- Drivers are more likely to maintain lower speeds over shorter distances than over longer ones. As drivers are able to access individual properties more directly from Access/Link streets (where speeds are more moderate) they are more likely to comply with lower speed limits on Local streets.
- Permeable layouts provide more frequent junctions which have a traffic-calming effect as drivers slow and show greater levels of caution.

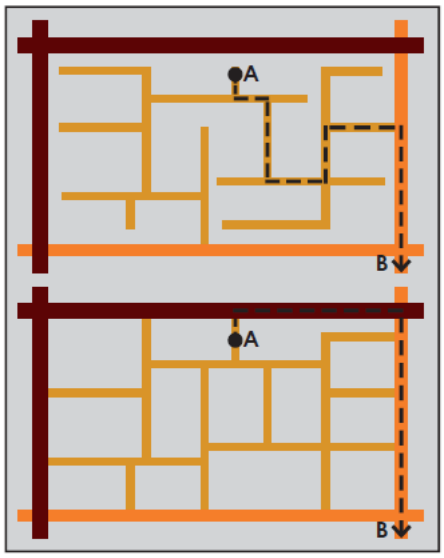

Figure 3.21: Drivers are more likely to comply with posted speed limits where less time is spent on streets with a low design speed (as per the bottom example)

Figure 5 Networks

Increasing access to neighbourhood cells can result in the more equitable distribution of traffic and the impacts of congestion as it is no longer concentrated on a few select junctions or local access streets

The value of place can also be improved as slower moving traffic has less impact on the surrounding environment

Frequent entrances to a neighbourhood cell can reduce the size of individual junctions and streets. This will reduce the potential for severance between communities and increase pedestrian/ cyclist mobility as streets/junctions are more compact and easier to navigate.

Traditionally, Designers may be concerned that more permeable street layouts will result in a higher rate of collisions. However, research has shown that there is no significant difference in the collision risk attributable to more permeable street layouts in urban areas and that more frequent and less busy junctions need not lead to higher numbers of accidents.

The proposed development has taken on these principles to ensure that the development is permeable for all modes of transport including vehicular, pedestrian and cyclist alike.

4 CONCLUSION

4.1 Summary

The Design Manual for Urban Roads and Streets offers a holistic approach to the design of streets within the proposed development.

The design process has been a collaborative and consultative design process involving architects, engineers, and landscape architects. The outcome is a safer environment for pedestrians, cyclists and drivers alike.

Added value and improvements in quality of life will be achieved through implementation of this integrated and progressive approach. It is, therefore, concluded that the proposed development is compliant with the design principles outlined in the Design Manual for Urban Roads and Streets.