



CONSULTING ENGINEERS (PTY) LTD

DG Corner

No.9 Hibiscus Street - Lynnwood Ridge

P.O Box 76294 - Lynnwood Ridge - 0040

Tel: (012) 369 6720 - Fax: (012) 348 9978

CIVIL ENGINEERING SERVICES BASELINE REPORT FOR THE DEVELOPMENT OF THE VAN DER HOFF SHOPPING MALL, (PTN 36 & 216 ZANDFONTEIN 317-JR.)

DG ref: 012b/745

LOCATION:

The proposed shopping mall is located in Pretoria West, which serve under the City of Tshwane Municipality. See below the locality map.



1. ROADS

1.1 Existing roads

The nearest road, constructed to the local authority (Gautrans) standards is Van Der Hoff road, situated on the Northern boundary of the development.

1.2 Proposed new infrastructure

We propose that the property obtain access from Van Der Hoff Road on the Northern boundary of the property. The proposed new access road towards the development with the relevant road upgrades will be determined by Gautrans based on the traffic impact study conducted by an appointed traffic engineer. The necessary approvals to construct the proposed access will have to be granted by the applicable authorities.

2. STORMWATER DRAINAGE – Status and technical requirements

2.1 Existing storm water reticulation

An earth shaped stormwater channel current runs thru the property entering the South Western corner of the property and exit close to the North Eastern corner, discharging into the road reserve. The natural slope of the remainder of the proposed development drains towards the North Eastern corner. The closest Tshwane council stormwater infrastructure is a low point concrete outlet structure, connected to a 1050dia pipe located in the City of Tshwane road reserve between Van Der Hoff Road & Malie Street on the North Eastern corner of development. No flood lines are situated adjacent any boundary of the proposed township.

2.2 Proposed new infra-structure

Major Storm water System

The major storm flow will surface flow via the new internal parking area towards the North Eastern boundary of the site, where it will overflow to the lower laying area.

Minor Storm water System

A new proposed internal stormwater piped system will be designed and constructed for the 5 year flood. The internal system will connect to a newly constructed City of Tshwane stormwater pipe within the road reserve, which will convey the stormwater up to the existing 1050dia council stormwater main, situated on the North Eastern corner of the development.

The existing earth shaped stormwater channel will have to be re-routed in a controlled manner along the Western boundary line to discharge into Gautrans road reserve.

The material, construction and testing of the storm water drainage system will comply with the SABS 1200 specifications.

The stormwater discharge will depend on the approval of all applicable authorities.

3. SEWAGE RETICULATION

3.1 Existing sewer reticulation

Existing 225dia sewer main is located along the Northern boundary line of the development. The pipe is located outside the road reserve, inside the building line & protected by a servitude in favor of the City of Tshwane.

3.2 Proposed new infrastructure

New 160dia Upvc pipes will be installed on the perimeter of the building to drain towards the existing 225dia council main along the Northern boundary. The proposed new 160dia erf connection will connect to an existing sewer manhole which is located in the lowest North Eastern corner. Council confirmed that the existing network do have sufficient capacity to accommodate the proposed development. Further upgrades will have to be confirmed by City of Tshwane Municipality.

3.3 Materials and construction

The proposed materials, construction and testing of the sewage reticulation Complies with the SABS 1200 specification.

Sewer pipes and fittings are uPVC Maincore class 400.

Manholes are 1 050 mm internal diameter, precast concrete manholes, constructed of dolomite aggregate (SABS 1294), with step irons (BS 1247). Type 2A (SABS 558) manhole covers will be used for carriageways and Type 4 (SABS 558) for servitudes.

3.4 Indicative sewage flow calculations

Flow calculations.

$$\begin{aligned}\text{Sewer outflow} &= \text{Total area } 10\,000\text{m}^2 @ 0.6\text{kl}/100\text{m}^2/\text{day} = 60\text{kl}/\text{day} \\ &= 60\,000/24 \times 3600 \\ &= 0.69\text{l}/\text{s}\end{aligned}$$

3.5 Construction cost for sewer.

3.5.1 Estimated construction cost:

Break into existing council sewer manhole and provide property with a new 160dia Upvc sewer erf connection - R14 000.00 (Excl Vat)

4. PROVISION OF WATER

4.1 Existing water reticulation

City of Tshwane municipality indicated a 400dia & 700dia bulk water line which run within the Van Der Hoff road reserve along the Northern boundary line. These pipes are bulk supply mains and do not serve as networks distribution mains. The closest reticulation network line, is a 76dia Asbestos line installed parallel to the bulk mains up to the North Eastern corner of the property, connecting to a ring main network in Theo Slabbert Street which are approximately 700m towards the Eastern side of the proposed new development. Council confirmed that this pipe will not have sufficient capacity to accommodate the fire requirements for the development.

4.2 Proposed new infrastructure

Council suggest to upgrade the 76dia AC council main to a new 160dia Upvc Class 12 pipe, towards the existing 76dia water ring main network in Theo Slabbert Avenue which will have sufficient capacity to accommodate development. The approximate distance towards the connection is measured as 700m. Further upgrades will have to be confirmed by City of Tshwane Municipality.

4.3 Materials and construction

It is proposed that the materials, construction and testing of the water reticulation comply with the SABS 1200 series of specifications.

The more important materials may be summarized as follows:

- Pipe - uPVC class 12
- Bends - uPVC class 12
- Fitting: - uPVC class 12
- Valves - Class 16 gate valve SABS 664, non-rising spindle, anti-Clockwise closing, flanged

4.4 Water demand calculations

Flow calculations (Existing retail phase)

$$\begin{aligned}\text{Water demand} &= \text{Total area } 10\,000\text{m}^2 @ 0.4\text{kl}/100\text{m}^2/\text{day} = 40\text{kl}/\text{day} \\ &= 40\,000/24 \times 3600 \\ &= 0.46\text{l}/\text{s}\end{aligned}$$

4.5 Construction for water.

4.5.1 Estimated construction cost:

Installation of new 160dia Upvc CL12 water main
– 700m @ R390/m = R273 000.00 (Excl Vat)