

**INFRASTRUCTURE SERVICES:
ROADS, TRANSPORT & CIVIL WORKS**

Att: Lee-Ann Primmer

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E-mail: lee-ann@metroprojects.co.za

Date: 2018-03-29

Dear Sir,

RE: LEACHVILLE EXTENSION 2

Attached please find the stormwater management plan for the abovementioned property.

Kind Regards

Willem Geyer Pr. Ing.

Tel: 082 900 900 4

Email: wietsche@jtevolve.com

Please sign below as acceptance of report

Representative:

Sign:

Date:



STORMWATER MANAGEMENT REPORT: Rev.0
LEACHVILLE EXTENSION 2, EKURHULENI

1. Scope:

Jt Evolve Consulting Engineers have been appointed as Consulting Engineers for the stormwater management report for Leachville Extension 2, Ekurhuleni.

2. Site Description

Locality

The Site is located to the east of the R23 Regional Road and is bounded on its western cadastral boundary by the existing Leachville Residential Development. Please see attached locality plan in **Appendix A**.

Land Use

The development currently consists of 223 residential 1 units. It is proposed to rezone the existing residential 1 units to residential 2 thus increasing the density to 40 units/ha to deliver an estimate of +- 810 residential 2 units.

Current Zoning and Units

Site zoning: Res 1

Site Area: 20.38 ha

Number of units: 223

Analysis Zoning and Units

Site zoning: Res 2 @ 40 Units/ha

Site Area: 20.38 ha

Number of units: 810

Topography

The site drains from south-west to north-east towards New Kleinfontein Road. Based on the contours and Ekurhuleni GISS data the site is affected by a 1:100-year flood line due to the height of New Kleinfontein Road. The average slope of the site is 1.39% from the south-west side towards the north-east. The site has light vegetation with built up residential developments bounding the site.

3. Stormwater Management

Guidelines

The following design standards will be applied:

1. Guidelines for the provision of engineering services and amenities in residential township development by the National Housing Board (Blue Book).
2. Guidelines for human settlement planning and design (2000) compiled under patronage of the Department of Housing and published by the CSIR Building and Construction Technology (New Red Book).
3. Design guidelines by Ekurhuleni Metropolitan Municipality to limit flows if possible.
4. Applicable SANS 1200 standards.

Design Principles

Minor System

The internal stormwater network will be designed using a storm with a recurrence interval of 5 years. Stormwater will be managed mainly on the surface.

Major System

The internal roads and paved area will be designed in combination with the minor system to handle a storm with a recurrence interval of 25 years. The 25-year storm will be discharged on the road surface. Larger order storms will be handled as sheet flow over the area and discharged through the road reserve to lower lying areas.

Stormwater Infrastructure

Existing Infrastructure

The whole development drains toward New Kleinfontein Road. Stormwater is conveyed underneath New Kleinfontein Road via 2 x 1050 dia battery culverts. Stormwater is further conveyed towards Apex pan via earthen channels. There is existing stormwater infrastructure to service the existing built up developments.

Please find attached drawing in **Appendix B**

New Stormwater System

Please find pre-and post-development flow calculations in **Appendix C**.

The stormwater runoff from the site can be summarized as follows:

| Storm | Pre-Development Runoff (m³/s) | Post-Development Runoff (m³/s) |
|--------------|---|--|
| 5 year | 1.664 | 3.3 |
| 25 year | 2.70 | 5.35 |

The existing informal open channels currently indicated on the layout will be abandoned for a formal earth channel (16m wide). The channel construction south of Wisteria Avenue will fall outside the wetland and floodline area. The open channel will form part of the major stormwater system. The open channel will further extend to the existing battery culverts in New Kleinfontein Road. The battery culvert will be upgraded to accommodate the 1:50 Year return flow. It is proposed to make Wisteria Avenue a dead end at the new stormwater channel. This will reduce costs and also the wetland occupies the extent of the western sections development area. The new development will drain toward the new stormwater channel and the existing 1050dia stormwater pipe.

It is a requirement for the Ekurhuleni Metropolitan Municipality that stormwater runoff from the site must be retained in such a way that the runoff before development for a 5-year or a 25-year storm be retained after development to restrict the flows to values before development. In the calculations, it was determined that 7155 m³ needs to be attenuated.

There are numerous ways in which attenuation can be achieved and below are some examples.

Attenuation Pond

Permeable Paving

Soak Away Pits

Parking Area Low Points

Rainwater Harvesters

The above-mentioned methods will be used in conjunction with each other to reach the required attenuation volume. Detail designs will be finalized once the Site Development Plan is submitted.

I trust you will find the above in order and please don't hesitate to contact me should you have any queries.

Kind Regards

Willem Geyer Pr. Ing.

APPENDIX A



Range View Rd

Blyde Ave

Sudwala Ave

Soenie St

Wisteria Ave

Waterbok Ave

Springbok Ave

Zala Ave

Waterval Rd

Boven St

Waterval Rd

Klipspringer Ave

Rangeview St

R23

Witheid St

Hexrivier St

APPENDIX B

APPENDIX C