

JUBELIE CONSTRUCTION (PTY) LTD

CIVIL SERVICES REPORT FOR THE PHASE 2 WRENCHVILLE HOUSING DEVELOPMENT IN KURUMAN

CIVIL ENGINEERING SERVICES REPORT

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Prepared for :

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CONTENTS LIST	PAGE
1 INTRODUCTION AND SCOPE OF WORK	3
2 INFORMATION UTILIZED	3
3 PRELIMINARY DESIGN CRITERIA	3
4 BULK EARTHWORKS	3
5 ACCESS AND ROADWAYS	4
5.1 INTERNAL ROADS	4
5.1.1 Road widths.....	4
5.1.2 Bellmouth radii and proposed refuse truck route	4
5.2 PROVISIONAL ROAD LAYER WORKS	4
6 WATER SUPPLY	4
6.1 EXISTING WATER SUPPLY.....	4
6.2 WATER DEMAND	4
6.3 INTERNAL RETICULATION	4
7 SEWERAGE.....	5
7.1 EXPECTED SEWAGE FLOW.....	5
7.2 EXISTING SERVICES.....	5
7.3 INTERNAL RETICULATION	5
8 STORMWATER	5
8.1 Internal Services:.....	5
8.2 Floodline Determination:.....	5
9 ELECTRICITY SUPPLY.....	5
10 CONCLUSION AND RECOMMENDATION.....	5

1 INTRODUCTION AND SCOPE OF WORK

Lyners Consulting Engineers and Project Managers was appointed by Jubelie Construction (Pty) Ltd as Consulting Civil Engineers for the provision of a Civil Engineering Services Report for the proposed Wrenchville Phase 2 housing development in Kuruman.

The purpose of this report is to provide background information in terms of engineering services required, as well as the intended design methodology thereof and possible restrictions and options in terms of providing engineering services.

This report is based on a draft town planning layout, site inspections, available existing services information and liaising with parties, such as the local authority and GLS Master Planning Consultants. All recommendations within this report are preliminary and can only be confirmed after further analysis and detail design.

2 INFORMATION UTILIZED

The following information was provided:

- A draft town planning layout

The following information was used in the preparation of the report:

- Project meetings and reports completed by the project professional team
- Site visits
- Town planning layout provided
- Aerial photograph

3 PRELIMINARY DESIGN CRITERIA

The development will provisionally consist of 200 residential units.

All design criteria will be based on the "Guidelines for Human Settlement Planning and Design" referred to as the "Red Book", the National Building Regulation (SABS 0400), the Code of Practice: Water Supply and Drainage for Buildings (Part 1 & 2) (SABS 0252), SANS 1936-3: Development of dolomite land and will comply with the standards of the Civil Engineering Departments of the Ga-Segonyana Municipality where applicable.

Further note that all funding for this development is made available by COGHSTA as part of the Level B Housing Subsidy for this development.

Level B services entails :

- (i) Full waterborne foul sewer to each erf.
- (ii) Domestic water supply to each erf.
- (iii) No underground stormwater reticulation, only free draining roadside drains.
- (iv) Gravel roads with no "black" top surfacing.

4 BULK EARTHWORKS

The topography's grade and the effect it has on the road layout and drainage as well as the size of usable area on the individual erven have to be considered within the bulk earthworks design philosophy. The general slope of the site is therefore designed at a 1% fall towards the dry riverbed to also comply with the requirements of the NHBRC.

5 ACCESS AND ROADWAYS

The structural design period of all pavement layers should provide a lifespan of at least 20 years. Structural design of layers will be in accordance with TRH4, the "Red Book" requirements and the envisaged traffic.

5.1 INTERNAL ROADS

5.1.1 Road widths

Ga-Segonyana Municipality's minimum design criteria require a 10m wide road reserve with a 5m gravel top width.

5.1.2 Bellmouth radii and proposed refuse truck route

Keeping with the urban design philosophy, the bell mouth radii will be kept at a minimum / small as possible to accommodate as many new proposed houses as possible. The radii vary between 8m and 10m. The 10m radii, where needed, were provided to accommodate refuse and fire trucks.

5.2 PROVISIONAL ROAD LAYER WORKS

No preliminary geotechnical survey was conducted at the time of this report, and it is therefore proposed that the following road layer works be accepted for planning purposes.

Typically the layer works will be as described in Table 5.2.1.

Table 5.2.1: Provisional road layer works and details

Road Reserve	Gravel width / Road surface	Layer works		Verges (Insitu)	Bellmouth Radii Varies
		G4 Base	G7 Selected (sand/insitu)		
10m	5m	150mm	300mm	2.5m	8m to 10m

6 WATER SUPPLY

6.1 EXISTING WATER SUPPLY

(i) Discussion

The existing water supply in the surrounding Wrenchville area appears to be insufficient and will have to be upgraded as part of the bulk services investigation, currently being conducted.

6.2 WATER DEMAND

The design criteria (based on the "red book" guidelines):

- Average Annual Daily Demand : 600 ℓ/day/dwelling unit
- Number of proposed dwelling units : 200
- Total Annual Daily Demand : 120 kℓ/day
- Fire requirements : 5.83 ℓ /s
- Instantaneous Peak Factor : 7.06
- Instantaneous Peak Flow : 15.64 ℓ/s
- Minimum storage requirement : 240 kℓ Based on 48hr storage

6.3 INTERNAL RETICULATION

The internal reticulation system will comply with the minimum requirements of the Ga-Segonyana Municipality's Engineering Department.

The internal distribution network will consist primarily of HDPE PE100 PN12.5 (110mm diameter to 160mm diameter) pipes with individual erf connections.

Pipes will be installed according to SANS 1200 and SANS 1936 with a minimum cover of 800mm above pipes not constructed within roadways or erven, and 1000mm for pipes constructed within roadways.

7 SEWERAGE

7.1 EXPECTED SEWAGE FLOW

The expected flow rates are as follows:

• Average Dry Weather Flow	:	84 000 ℓ/day (Assumed to be 70% of water demand)
• Number of erven	:	200
• Average Dry Weather Flow per unit	:	420 ℓ/dwelling unit/day
• Infiltration factor	:	15%
• Average Wet Weather flow (AWWF)	:	1.12 ℓ/s
• Peak factor ("Redbook")	:	3.36
• Instantaneous Peak Wet Weather Flow rate (IPF):	:	3.76 ℓ/s

7.2 EXISTING SERVICES

There is currently no bulk sewerage on the perimeter of the proposed development, but it is proposed to tie-into a proposed new sewer outfall that forms part of the current bulk services investigation for this development

7.3 INTERNAL RETICULATION

The internal reticulation system will comply with the minimum requirements of the Ga-Segonyana Municipality's Engineering Department and the SANS 1936.

A new sewerage system consisting of 160mm diameter HDPE PE 100 PN 12.5 pipes are proposed. Individual erf connections will also be provided.

8 STORMWATER

8.1 Internal Services:

No additional stormwater services will be provided, other than the insitu soil roadside drain for overland drainage.

8.2 Floodline Determination:

Refer to the floodline report concluded by Graeme McGill Consulting cc for this development.

9 ELECTRICITY SUPPLY

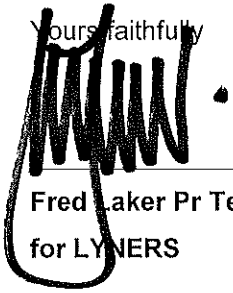
9.1 No provision for electricity are made, as the electrification of this development does not form part of this scope of services or the current available housing subsidy.

10 CONCLUSION AND RECOMMENDATION

The development seems feasible, subject to the upgrading of bulk engineering services to the development.

We are available to discuss any queries at your earliest convenience.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Fred Baker', written over a horizontal line. The signature is stylized and somewhat illegible.

Fred Baker Pr Tech Eng Pr CPM MSAICE
for LYNERS