SERVICES REPORT

FOR

Mr. P. Parvus

PORTION 12 OF THE FARM

UITZICHT NO 216

KNYSNA

ROADS, STORMWATER, WATER AND SEWER

May 2022

Rev:1 **TK1454**

TUINIQUA CONSULTING ENGINEERS

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INDEX

Item **Description**

Annexure

SERVICES REPORT FOR PORTION 12 OF THE FARM UITZICHT NO 216

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1. INTRODUCTION

This report has been prepared by Tuiniqua Consulting Engineers at their Knysna office, who have been appointed by the Developer, P Parvus, as the Civil Consultants for this project. The purpose of this report is to provide the necessary information on the proposed civil services within this Development and the connections to the bulk infrastructure in the area.

2. LOCATION

The land to be developed is Portion 12 of the Farm Uitzicht No. 216, (Annexure A). The erf is approximately 10,869m^2 in extent. Erf 289 is located on the northern boundary, while erf 328 is located on the southern and western boundaries, as indicated on the Site Plan. Erven 264 to 267 is located on the eastern boundary.

3. TOPOGRAPHY AND ACCESS

A 13 meter wide servitude over erf 328, will provide access to the property. The servitude will connect the property to Upper Duthie Drive, which is an existing municipal tarred road. The property has a gradual slope in an easterly direction, with the lowest point positioned in the north-east corner of the property.

4. SUPPLY AUTHORITY

The supply authority for the area is Knysna Municipality, and therefore comment was requested from their Technical Services Department, on all matters relating to the civil services. Augmentation fees and capital contributions will be calculated and payable in accordance with Council's policy, regarding the increase in civil services demand.

5. BULK SERVICES

5.1 WATER RETICULATION

An existing 150Ø water main is located in Upper Duthie Drive. A new water connection and meter will be installed to supply the development with potable water. The proposed development will consist of 30 General Residential Zone 1 erven (Group Housing), with two Transport Zone III erven (Private Road).

5.2 SEWER RETICULATION

The existing municipal bulk sewer network in the area will not be utilized. A new sewer pump station will be constructed within the parameters of the development.

Sewer from the development will be pumped to the inlet structure of the Municipal Wastewater Treatment Plant, located on erf 328 (Western boundary).

5.3 ROADS

There is an existing road network servicing this area, the road leading to this property is tarred and of good quality. A new access road will be constructed within the access servitude, to connect the development to Upper Duthie Drive.

5.4 STORMWATER

An existing stormwater network is located in Upper Duthie Drive.

6. INTERNAL SERVICES

6.1 OUTLINE SCHEME

The design of the services for the development will be based on the principles contained in the Guidelines for Human Settlement Planning and Design published but the Department of Housing and to the Council's requirements for engineering services. The services will be installed according to SANS 1200 and materials will comply with ISO standards. Internal services will be located within the boundaries of the property.

6.2 WATER RETICULATION

There is an existing Municipal water main located along Upper Duthie Drive. The existing and proposed water demand is taken from the "GUIDELINES FOR THE PROVISION OF ENGINEERING SERVICES AND AMENITIES IN RESIDENTIAL TOWNSHIP DEVELOPMENT".
Fig 9.7

Existing	
Erf	Demand kl/day
PORTION 12 UITZICHT NO 216 (approximately 0.96ha)	3.5
TOTAL DEMAND	**3.5**

Existing Equivalent erven:

$$\frac{1277.5 \text{ kl/year}}{400 \text{ kl/year/equivalent erf}} = 3.2 \text{ equivalent erven}$$

The design criteria for the water reticulation will be as follows:

Consumption and Flow:

- The average water consumption of 600liter/unit/day (219kl/year). A gate house will also be required with the equivalent usage of 0,3 of a unit.
- A peak factor of 18.
- Maximum static head of 90m.
- Minimum static head of 25m.
- Maximum flow velocity of 1.2m/s in pipes.
- Fire risk is set at Low Risk – Group 2.

Materials:

- Minimum pipe diameter of 110mm.
- Pipes are SANS approved, Class 12 uPVC pipes on Class C bedding.
- Minimum cover on water pipes to be 1m.
- Fire hydrants to be spaced maximum 240m apart for Low Risk – Group 2.

Proposed development		
Erf	Quantity	Demand kl/day
Residential erf (212m^2 average) 600l/day	30	18
Guard house 0.3 x 600l/day	1	0.2
TOTAL DEMAND		**18.2**

The annual average daily water demand for the proposed development will be 18.2kl/day. The existing Municipal network has sufficient capacity to accommodate the increase in the daily demand, according to Technical Services Department.

Proposed Equivalent Erven:

$$\frac{219 \text{ kl/year} \times 30.3 \text{ units}}{400 \text{ kl/year/equivalent erf}} = 16.6 \text{ equivalent erven}$$

Increased EE will be16.6 - 3.2 = 13.4ee

Instantaneous peak flow = 18 x 30.3 x (600/3600x24)l/sec = 3.79 l/sec
(Figure 9.11 peak factor of 18)

6.3 SEWER RETICULATION

The internal sewer network will consist of a gravitational pipe system, that will drain towards a private sewerage pumpstation. The pumpstation will be linked to the existing Wastewater Treatment Plant by means of a private rising main.

The design criteria for the sewer reticulation will be as follows:

Discharge & Flow:

- The average discharge of 420l/erf/day for the 30 group housing erven.
- A peak factor of 2.5.
- Infiltration rate of 15%.
- Minimum flow velocity of 0.7m/s.
- Maximum velocity of flow in rising main 2.5m/s.

Materials:

- Pipes are SANS approved, Class 34 heavy duty, solid wall uPVC pipes, on Class C bedding.
- Minimum pipe diameter is 160mm for main lines and 110mm for house connections.
- Minimum sewer gradient for 110mm pipe is 1:120.
- Minimum sewer gradient for 160mm pipe is 1:200.
- Minimum cover on sewer pipes to be 1m.
- Maximum distance between manholes is 90m.
- Fibre cement manholes with suitable waterproofing.

The calculated expected sewage flow for the proposed consolidation will be as follows:

Table: Sewage Discharge

Existing	
Erf	Flow kl/day
PORTION 12 UITZICHT NO 216 (French drain)	0
TOTAL DEMAND	**0**

Proposed development		
Erf	Quantity	Flow kl/day
Residential erf (600l/day x 0.7 = 420l/day)	30	12.6
TOTAL DEMAND		**12.6**

6.4 INTERNAL ROADS

Access to the proposed development will be provided from Upper Duthie Drive, within a 13m wide servitude.

Security control will be implemented at the access to the property approximately 100m from Upper Duthie Drive.

The access road as well as all the internal roads will be private roads. All roads to be brick paved surfaces with a minimum width of 5m.

6.5 INTERNAL STORMWATER

The runoff from the development drains towards the northeast and southeast corners of the property.

The stormwater design of the development will make provision for minor and major storms.

The minor stormwater system will be underground pipe system that will collect the runoff, to accommodate a 1 in 2 year storm event. The system will release into the exiting municipal storm water system.

The major stormwater system will consist of suitably shaped roads with kerbing, to accommodate storm events in excess of 1 in 2 year storm event.

Surface runoff will be channelized to the access road.

6.6 SOLID WASTE MANAGEMENT

A refuse removal storage area will be provided at the entrance gate. Provision will be made for the storage of 30 wheelie bins.

The storage area to be constructed with a 100mm thick concrete floor, shaped and drained into a 110mm floor trap fitted with a grease trap. The area to be enclosed to prevent rodent and bird access.

The collection and disposal of the solid waste from the storage area, will be done by the Knysna Municipality.

ANNEXURE A

Locality Plan

ALL DIMENSIONS AND LEVELS ARE TO BE VERIFIED ON SITE BY THE CONTRACTOR BEFORE COMMENCING ANY WORK

ON ORIGINAL

0 5 10 15 20 25 30 40 50MM

No	Date	Details	Chd	Appd

Revisions

CLIENT:

PARVUS

TUINIQUA CONSULTING ENGINEERS
TEL (044) 382-3474

Prepared by	Checked by	Reviewed by
TM	SM	SM

Project: SERVICES REPORT
PORTION 12 OF THE FARM UITZICHT NO 216, KNYSNA

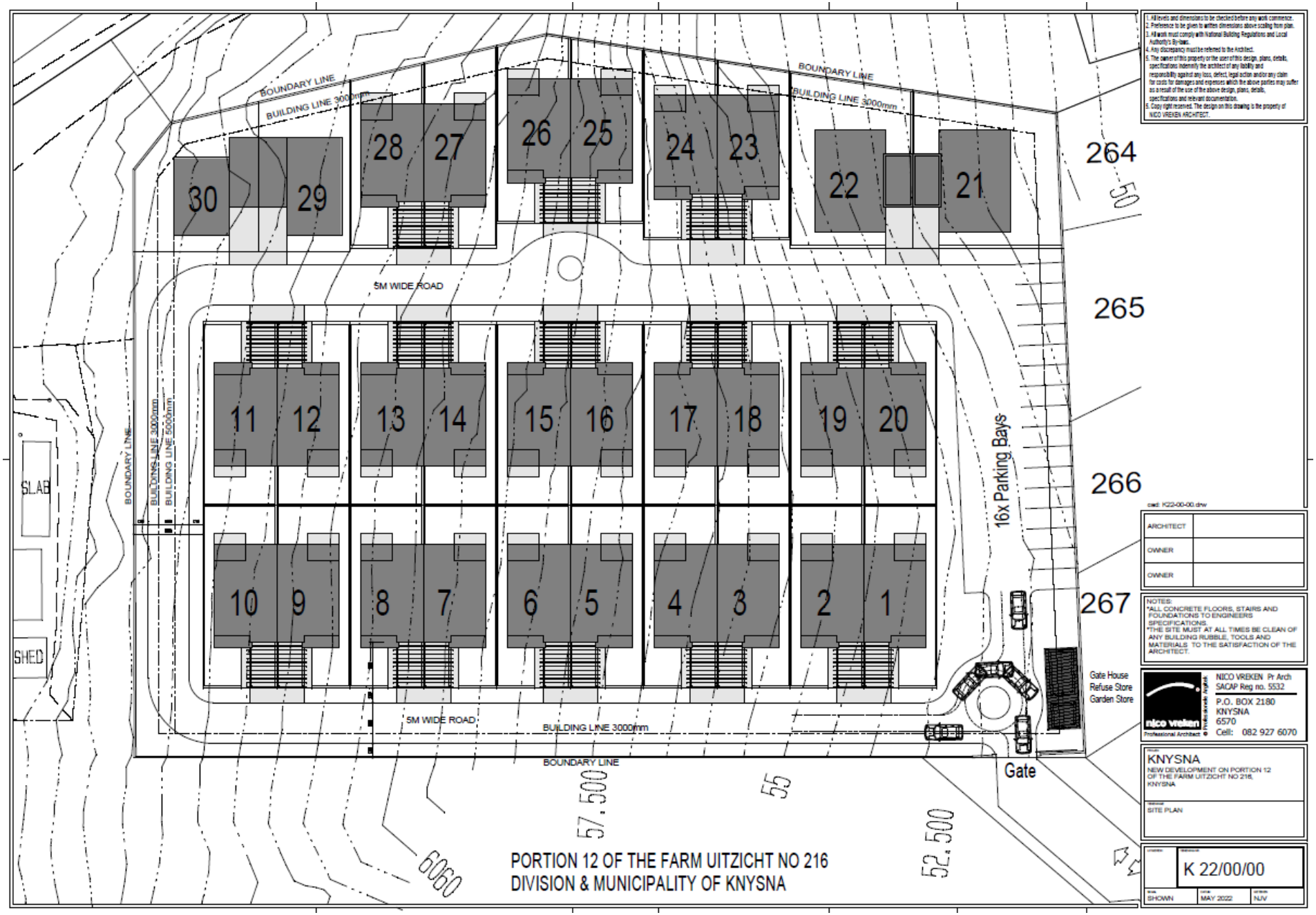
Detail: LOCALITY PLAN

Scale:	Date:
N.T.S.	30/04/2022

Project No.	Dwg. No.
TK 1454	/ LP / R0

ANNEXURE B

Site Plan


BOUNDARY LINE
BUILDING LINE 3000mm
BOUNDARY LINE
BUILDING LINE 3000mm
30
29
28
27
26
25
24
23
22
21
264
50
5M WIDE ROAD
265
11
12
13
14
15
16
17
18
19
20
266
16x Parking Bays
SLAB
SHED
BOUNDARY LINE
BUILDING LINE 3000mm
BUILDING LINE 5000mm
10
9
8
7
6
5
4
3
2
1
267
Gate House
Refuse Store
Garden Store
5M WIDE ROAD
BUILDING LINE 3000mm
BOUNDARY LINE
Gate
57.500
55
52.500
6060
PORTION 12 OF THE FARM UITZICHT NO 216
DIVISION & MUNICIPALITY OF KNYSNA
1. All levels and dimensions to be checked before any work commence.
2. Preference to be given to written dimensions above scaling from plan.
3. All work must comply with National Building Regulations and Local Authority's By-laws.
4. Any discrepancy must be referred to the Architect.
5. The owner of this property or the user of this design, plans, details, specifications indemnify the architect of any liability and responsibility against any loss, defect, legal action and/or any claim for costs for damages and expenses which the above parties may suffer as a result of the use of the above design, plans, details, specifications and relevant documentation.
6. Copy right reserved. The design on this drawing is the property of NICO VREKEN ARCHITECT.
cad: K22-00-00.drw
ARCHITECT
OWNER
OWNER
NOTES:
*ALL CONCRETE FLOORS, STAIRS AND FOUNDATIONS TO ENGINEERS SPECIFICATIONS.
*THE SITE MUST AT ALL TIMES BE CLEAN OF ANY BUILDING RUBBLE, TOOLS AND MATERIALS TO THE SATISFACTION OF THE ARCHITECT.
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Professional Architect
NICO VREKEN Pr Arch
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KNYSNA
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KNYSNA
NEW DEVELOPMENT ON PORTION 12 OF THE FARM UITZICHT NO 216, KNYSNA
SITE PLAN
K 22/00/00
SHOWN
MAY 2022
NJV