

ENGINEERS REPORT FOR REZONING:

PROPOSED REZONING FROM SINGLE -RESIDENTIAL TO GENERAL RESIDENTIAL AND BUSINESS, ERF 2895 KNYSNA.

May 2015

PREPARED FOR: C Mulliner & F S Orzechowski



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PROPOSED REZONING FROM SINGLE -RESIDENTIAL TO GENERAL RESIDENTIAL AND BUSINESS, ERF 2895 KNYSNA.

1. INTRODUCTION AND BACKGROUND

This report was requested in support of the proposed rezoning from single residential to business zone.

The site was inspected on 2 March 2015. A meeting with the relevant technical personnel regarding water, sewer and traffic was held on 24 March 2015.

The erf is situated on the corner of Gray- and Gordon streets near the CBD of Knysna. The site borders various commercial properties.
(see Location plan-Annexure A)

The site is 584 m² in extent.

The size of the proposed building has been reduced in the latest redesign (5/05/2015).

2. SCOPE OF THE REPORT

- 2.1 The rezoning report deals with the individual supply of water, sewage and storm water disposal and access to the site.
- 2.2 Various augmentation fees as required by the local authority and will be applicable.
- 2.3 The proposed layout of the building is as per proposed sketch plan. (A2)

3. TECHNICAL DESIGN PARAMETERS AND STANDARDS.

This report and services designs will be based on the following:

- 3.3 Guidelines for the provision of engineering services for residential townships- Departmentt of Community Development-1983 (aka “the Blue Book”).
- 3.4 Human Settlement Planning and Design -2000 (aka “the Red Book”)
- 3.5 Council’s policy on new developments- storage and transportation.

4. WATER SUPPLY AND STORAGE

4.1 Existing water services:

The municipality has confirmed that water supply is under pressure in general.

4.2 Water requirements for the development:

The Average Demand is estimated at:

Business: Actual floor space = $353\text{m}^2 / 100 \times 400 \text{ l/day} = 1.41 \text{ } 0.82 \text{ m}^3/\text{day}$

Total = $1.41 \text{ m}^3/\text{day}$

Existing AD for single res (584 m^2 and 75 % bulk) = $1.2 \text{ m}^3/\text{day}$

Additional AD required = $0.21 \text{ m}^3/\text{day} \times 30 = 6.3 \text{ m}^3/\text{month}$

PF: The peak factor is estimated at 7

Additional Peak flow in mains due to development/rezoning = 0.017 l/s
Or 0.02 liter per second.

The additional requirement for the proposed rezoning is therefore minimal.

4.3 Sources of water supply

There are existing water mains that run in Gordon Street and Grey Street.

There is a fire hydrant at the corner of the property at the Grey- and Gordon street intersection.

There is another fire hydrant in Gordon street just north-east of the property.

There are various valve boxes in the road adjacent to the property.

4.4 Water augmentation

In terms of Section 74 of the Municipal Systems Act nr 32 /2002 --water augmentation is payable to the Municipality. This augmentation is to join the existing water supply system from source to water purification works.

4.5 Transportation and storage -water

The Municipality may require a further contribution for transportation from the water purification works to the reservoir, for storage in the Municipal reservoir and transportation to the connection point at the property.

4.5.1 Trunk mains to be sized for the design instantaneous peak domestic demand and fire flow.

4.5.2 Storage capacity for development:

Total Storage = 2 days of AD + Fire Storage (moderate risk) 4 hours

Fire flow and storage:

The zoning is categorized as “Moderate Risk” within a larger “High Risk” area.

The fire risk increase is not for an **area** as defined in the “Guidelines” but for a single erf- the requirements therefore cannot be implemented directly.

There various business and general residential zoned erven within 120m radius of erf 2895 that should in terms of their establishment conditions have fire flow for a high risk category. The high risk storage should therefore be available,

The proposed development borders on the high risk zone of the business centre and should therefore contribute only partially to the fire flow.

Further fire requirements: All further fire requirements as per the NBR- SABS 0400 minimum standards must be met and here it is proposed that 9kg powder fire extinguishers be provided on site and that the adjacent underground Fire Hydrant be checked and serviced.

Hose reels are to be supplied to the satisfaction of the fire chief with hose reels to supply a pressure of 300kPa at a rate of 0.5 l/s and to function automatically with the opening of the reel nozzle.

4.6 Motivation for water supply.

4.6.1 The site is currently zoned as residential and availability is paid, this would infer that at least the domestic supply must be made available.

4.6.2 The proposed business is mostly retail with a very low water demand- lower than the prescribed red book values The plan indicates four toilets and a small kitchen. This would mean that the water usage will be less than for a normal household and the domestic supply will be more than adequate.

4.6.3 Water usage will be typically between 8:30 am and 5 pm, this is outside the domestic peak times and water supply can be balanced. The Peak Demand requirement placed on the water purification works and affected reservoir is therefore not increased by this development.

4.6.4 In order to ensure minimal municipal water usage a series of **water saving measures** are proposed:

- Apply for a reduced, 15 mm, connection for domestic use to restrict water flow and connect fire hose reels via a secondary 50 mm connection for emergency use only.
- Use of aeration tap heads, and water saving sanitary installations.
- Implement a water saving information program where all tenants and visitors are informed of water saving targets and actual consumption by way of a public notice board.
- Install three 10 00 liter water collection tanks for water harvesting of the roof and reduction of stormwater runoff peaks. The total capacity roof water harvesting is estimated at $0,8 \times \text{average yearly rainfall} \times \text{roof area}$:
 $0,8 \times 716 \text{ mm /year} \times 280\text{m}^2 = 160\text{m}^3 \text{ per year}$
This equates to 438 liter available per day if storage is adequate.
- Collected water to be used for toilet systems, gardening and general cleaning.
- A solar pump and 100 liter storage vessel on the roof and 32 mm piped gravity system will be used to convey water to the toilets.

5. SEWERAGE

5.1 Existing municipal sewerage services.

The municipality has indicated that the existing system under pressure and spare capacity is available at the sewer pumpstation at the fire station.

Upgrades to the existing system is planned but in the meantime a conservancy tank is proposed.

5.2 The developments total Peak design sewer flows

Figures are based on the “Blue book”:

Business: Actual floor space = 353 m²
assumed future flow : 0.68 m³/day

Total Peak Flow including infiltration: = 0.68 m³/day
 = 0.008 l/s

(Design flow for current zoning = 0.025 l/s)

Reduced flow due to rezoning = - 0.017 l/s

5.3 Routing and positioning of bulk sewer

There is an existing sewer mains adjacent to the property in the middle of Grey Street.

5.4 Sewage Augmentation

The municipality may require Augmentation capital levies and upgrades to existing network.

5.5 Motivation for sewerage

- 5.5.1 The site is currently zoned residential and the basic availability charges are paid. The site therefore should have access to at least a normal domestic connection.
- 5.5.2 The calculated sewerage load from the proposed business development is less than expected from a fully developed residential site and should therefore be accommodated in the Municipal sewerage system.
- 5.5.3 In order to proceed with the development the developer has proposed to install a 8000 liter conservancy tank to be serviced by private contractor to deal with on site sewer.

6. ROADS and STORMWATER

6.1 Access

The site is currently being used as a parking area with a hardened gravel surface. Current access to the site is via an entrance off Gordon Street, near the north eastern corner of the site.

The proposed new layout indicates an access 2.2 m away from the south western corner off Gray street with a site exit onto Gordon street.

The Municipality has concerns regarding any increase in traffic and a decrease of the level of service at the adjacent intersection of Grey street and Gordon street.

The proposed development plan and site plan was submitted to Bertie Phillips-Traffic engineer at Kantey and Templer, whom confirmed that site access and circulation appear to be acceptable.(email attached)

The Level of service (LOS) at the intersection of Gray and Gordon Streets would not be adversely affected by the proposed development.

6.2 Collection conveyance and storage of runoff

6.2.1 Existing storm water system:

The current hardened surface of the site does not allow for retention on-site with drainage to the north eastern side of the property.

There is an existing municipal piped stormwater system in the Grey Street on the western boundary of the property. There is a catch pit inlet along this boundary.

There is also a deep concrete storm water channel on the northern side of the property.

Directly across Grey- and Gordon streets there are surface storm water grid inlets.

The developed site will exhibit much the same runoff, with no real increase in runoff apart from delivering less polluted storm water to the municipal system.

6.2.2 Proposed storm water management.

- The storm water runoff volume will not increase due to the development.
- The runoff peak may increase slightly due to the roof
- The developer is aware that flooding has taken place in the vicinity.
- Alleviation measures will include –rainwater harvesting to reduce the peak of any storm. In this regard it is proposed that at least one 10 000 liter tank be kept empty to reduce the peak runoff.
- **This would mean that runoff to the existing system will in fact be reduced and the current situation will be improved.**
- It is proposed to drain the site to the northern boundary and into the existing storm water box channel.
- Spaced concrete slabs will be used to cross the concrete box channel.

7 SUMMARY AND RECOMMENDATION

- 7.1 Water supply: Water supply will be similar or less than a domestic connection and should therefore not impact the current system. Water saving will be implemented.
- 7.2 Sewage flow for the proposed development will be less than a domestic connection and should in terms of the existing zoning be accommodated in the existing Municipal system.
The developer has undertaken to construct and service a conservancy tank until the municipal connection can be made.
- 7.3 Storm water runoff will be reduced due to rainwater harvesting.
- 7.4 The development will not have a negative impact of the level of service at the crossing and not impact the traffic in the area.
- 7.5 The proposed rezoning is recommended from a services point of view.

FRANCOIS SCHOLTZ Pr.Eng.

TUINIQUA CONSULTING ENGINEERS

LIST OF ANNEXURES

ANNEXURE

- | | |
|----|-------------------|
| A1 | LOCATION PLAN |
| A2 | SITE PLAN SDP |
| A3 | EXISTING SERVICES |



TEL (044) 533-6369 FAX (044) 533-2858 engineer@tuiniqua.co.za

Project

Indalo Emporium
Erf 2895
District Knysna

Layout Description

Location Plan

Scale

1 : 1 0 0 0

Prepared By

B A H

Date

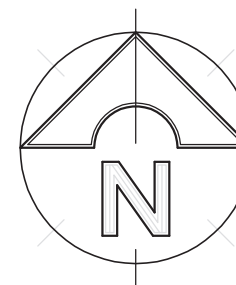
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Annexure

A1

GRAY STREET

GORDON STREET



Legend

Business Area	
Parking	

Areas

Coverage

Allowed		
584m.sq. x 1.00	=	584m.sq.
Total Footprint	:	292m.sq.

Bulk

Allowed		
584m.sq. x 1.5	=	876 m.sq.
Total Enclosed/Covered	:	382 m.sq.

Usage Areas

<u>First Level (Ground Floor)</u>		
Internal Business	:	267 m.sq.
Toilets	:	10 m.sq.
<u>Second Level (Mezzanine)</u>		
Storage	:	76 m.sq.
Total (New)	:	353 m.sq.

Site Access

Site Exit

Open
Courtyard

Total Proposed
Business area - 267m²

Toilets

Erf 16940

Erf 614



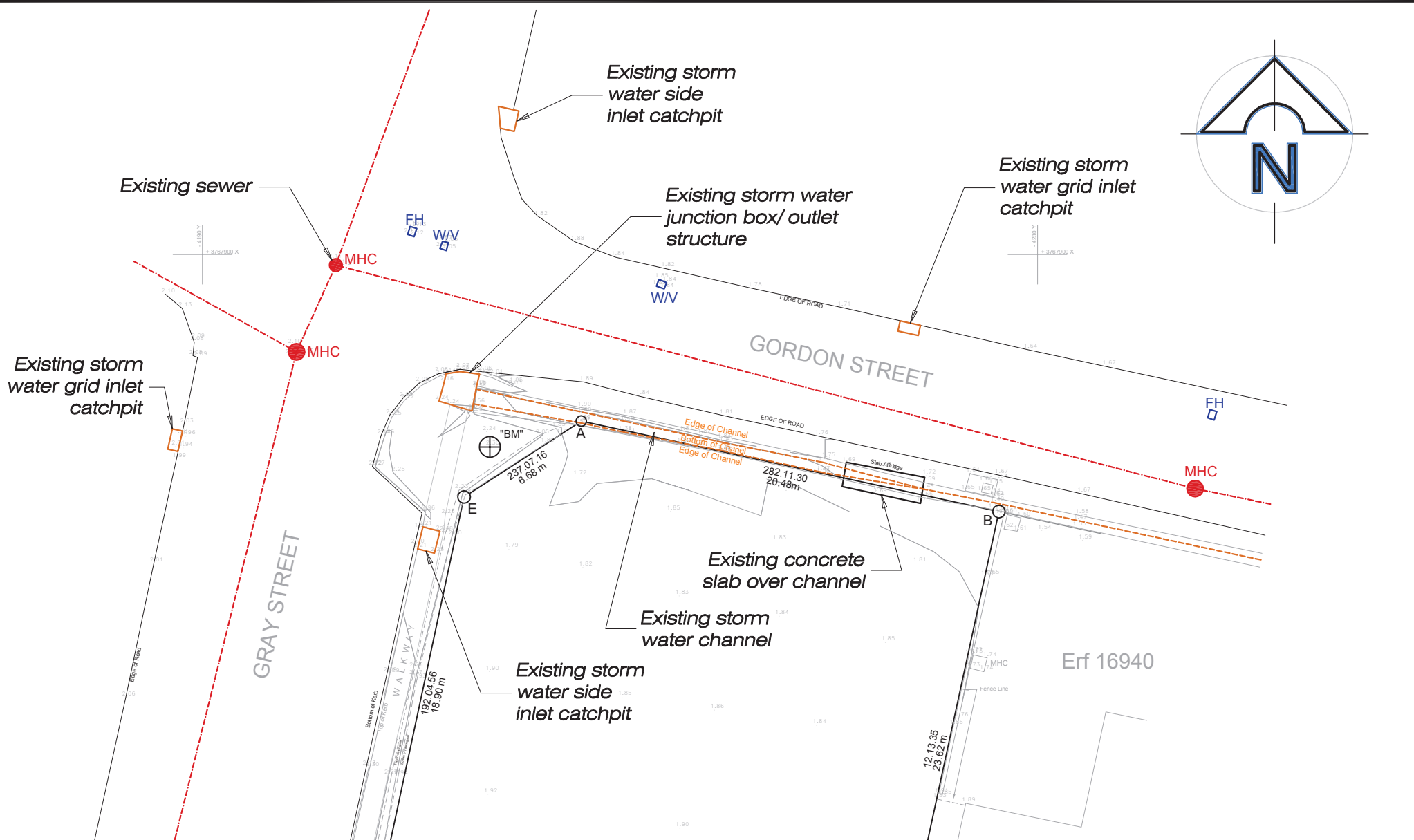
New Retail

05/05/2015

Indalo Emporium

Erf 2895 Knysna

First Level Layout
scale 1:150
(A3 Sheet)



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Project

Indalo Emporium
Erf 2895
District Knysna

Layout Description

Existing
Services Plan

Scale
1 : 2 5 0

Prepared By
B A H

Date
02 - 03 - 2015

Annexure

A3

Geraldine

From: Bertie Phillips <bertiep@ct.kanteys.co.za>
Sent: 24 April 2015 10:01 AM
To: francois; 'Tessa- The Planet Thing'; brendon@tuiniqua.co.za
Subject: RE: Revised Indalo Emporium

Hi Francois,

The SDP looks good to me. Site access and circulation appear to be acceptable.

Level of service (LOS) at the intersection of Gray and Gordon Streets would not be adversely affected by the proposed development.

Let me know if you require further inputs.

Regards

BERTIE PHILLIPS
EXECUTIVE ASSOCIATE



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DISCLAIMER



From: francois [<mailto:francois@tuiniqua.co.za>]
Sent: 24 April 2015 09:31 AM
To: 'Tessa- The Planet Thing'; brendon@tuiniqua.co.za
Cc: Bertie Phillips
Subject: RE: Revised Indalo Emporium

Dear Tessa

Based on the negative picture regarding spare capacity for services and the request for the traffic comments received from the Municipality, I recommend that each of the services be dealt with in a high level of detail and that water and electricity saving be implemented.

I have discussed this with Bertie Phillips(included in this mail) and he indicated that, due to the small scale of the project he could possibly confirm that the level of service of the intersection and adjacent roads will not be affected.

Regards

Francois

From: Tessa- The Planet Thing [<mailto:theplanetthing@telkomsa.net>]
Sent: 24 April 2015 06:11 AM
To: 'Francois Scholtz'; brendon@tuiniqua.co.za
Subject: FW: Revised Indalo Emporium

Dear Francois and Brendon