KANTEY & TEMPLER
CONSULTING ENGINEERS
ESTABLISHED 1953

ERF 6482 GRASSY PARK

ENGINEERING SERVICES REPORT

Western Cape Government

MARCH 2025

K&T PROJECT REFERENCE: 16894T

REVISION 4

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Details of this report

Client Name	Western Cape Government
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Prepared by	D Snyders
Approved by	RL Murray

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Revision	Date	Description
0	11-08-2023	First issue
1	15-08-2023	Second issue
2	12-03-2025	Report updated
3	17-03-2025	Service Capacity letters added
4	28-03-2025	DC's added

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We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

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For and on behalf of **Kantey & Templer (Pty) Ltd** Prepared by: D Snyders Signed: Position: Executive Associate Date: 28-03-2025	For and on behalf of **Kantey & Templer (Pty) Ltd** Approved by: RL Murray Signed: RL MURRAY Position: Associate Director Date: 28-03-2025

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ENGINEERING SERVICES REPORT
ERF 6482 - GRASSY PARK HOUSING PROJECT

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ANNEXURES:

1. INTRODUCTION

On behalf of the Western Cape Government – Department of Infrastructure, the projects Town Planners and Project Manager, Planning Partners, appointed Kantey & Templer Consulting Engineers (Pty) Ltd (K&T) as the civil, structural and electrical engineers for the proposed development of Erf 6482 Grassy Park, Cape Town.

The report aims to identify the availability of engineering services and any constraints that may exist. The following civil engineering services are addressed in this report.

- Potable Water
- Sewerage
- Solid Waste
- Stormwater
- Electricity
- Structural

1.1 Development Proposal

The Western Cape Government intends to provide an Affordable housing opportunities on the above-mentioned property.

A site development plan is included in Annexure A.

2. SITE DESCRIPTION

2.1 Site Location

The proposed development is located in Grassy Park, Cape Town. It is located at the south western corner of Edward Avenue and Hector Avenue.

Figure 1: Site Location

2.2 Topography

The site appears generally flat with a fall generally in a south westerly direction towards the existing open stormwater channel.

2.3 Access to the site

The site is currently un-fenced.

Vehicular access is currently from Hector Avenue to an existing school which is located on the development site which has reportedly been decommissioned years ago and the remaining buildings are unlawfully occupied.

3. EXISTING INFRASTRUCTURE

Annexure B contains details of the existing infrastructure which has been obtained.

Water

Visual observations on site indicate that there are existing water mains in Edward Avenue and Hector Avenue. This is supported by the GIS information.

Sewer

Visual observations on site indicate that there is an existing sewer outfall located to the west of the site. This is supported by the GIS information. A servitude is registered over the service in favour of the City of Cape Town where it crosses the property.

Stormwater

The Lotus River canal is located to the west of the site.

Electrical

Based on the GIS information obtained from the City of Cape Town, there is existing electrical infrastructure in the vicinity of the site.

4. GEOTECHNICAL OVERVIEW

A separate Geotechnical engineer has been appointed as part of the professional team. The input received from this engineer will inform the design of the structures, paved areas and services for the development.

5. ROAD INFRASTRUCTURE

5.1 Access to Site

A network of roads exists in the vicinity of the site. The roads include Edward Avenue and Marius Road.

It is envisaged that access to the development will be obtained from Edward and Hector Avenues.

A Traffic engineer has been appointed to prepare a Traffic Impact Assessment which will look in detail at the access to the proposed development.

6. POTABLE WATER

6.1 Existing Service

The existing water reticulation network within area is included in Annexure B.

6.2 Potable Water Connection

It is proposed to make a new water connection from the existing Municipal watermain located in Hector Avenue.

6.3 Design Demand

Proposed development

The water demand for the proposed development has been calculated in accordance with the "The Neighbourhood Planning and Design Guide" (Red Book), 2019 version. The calculated water demand for the proposed development is shown in Table 1.

Table 1: Water Demand – Proposed Development

WATER DEMAND				
Land Use	**Units**	**Total AADD (kL/day)**	**Peak Factor**	**Peak Flow (l/sec)**
Residential	323 units	148.6	3.6	5,38
Community Hall / Church	300m²	103.5	3.3	3,4
TOTAL		**252 kL/day**		**8,8 l/sec**

6.4 Fire Flows

Based on the "The Neighbourhood Planning and Design Guide" (Red Book), the development would be categorised as Moderate Risk 2 for firefighting design purposes. This requires that the firefighting reticulation mains should have enough capacity for a total flow of 50 litres/ sec with a minimum pressure of 10 meters at the fire node.

6.5 Municipal Capacity

An application has been submitted to the City of Cape Town to determine whether there is sufficient capacity in both the bulk supply and reticulation networks to supply potable water to the proposed development.

The City have indicated that there is sufficient capacity to supply the development however the pressure in the network currently ranges between 24m and 85meters. When the demand of the development is added the pressure is anticipated to drop to 18 meters which will be to low.

Consequently, on-site pressure boosting and on-site water storage (if buildings are 2 storey) will be required. It is therefore recommended that on-site flow and pressure testing be undertaken to verify the actual conditions on site.

7. FOUL SEWER

7.1 Existing Service

The existing sewer reticulation network within the area is included in Annexure B.

7.2 Foul Sewer Reticulation

It is proposed that the site will be drained to the existing municipal sewer reticulation running on the western property boundary. The City of Cape Town have however indicated that the site should drain to the infrastructure that is located to the East of the site, which is not possible

without a pumpstation as these lines are higher than the development site, we are currently awaiting feedback from the City related to our proposed connection to the west.

7.3 Design Discharge

Proposed development:

The "Redbook" 2019 version was used to calculate the Foul sewer discharge from the development. The calculated foul sewer discharge from the proposed development is shown in Table 2.

Table 2: Sewer Demand – Proposed development

WATER DEMAND				
Land Use	**Units**	**Total ADWF (kL/day)**	**Peak Factor**	**Peak Flow (l/sec)**
Residential	323 units	122.7	2.5	4.62
Community Hall / Church	300m²	72	1.5	1.63
TOTAL		**195 kL/day**		**6.24 l/sec**

7.4 Wastewater Treatment Works

The development falls within the catchment of the Cape Falts Wastewater Treatment Works (WWTW).

7.5 Municipal Capacity

An application has been submitted to the City of Cape Town to determine whether there is sufficient capacity in both the reticulation networks and the wastewater treatment works (WWTW) to service the proposed development.

8. STORMWATER

8.1 Existing Stormwater Infrastructure

An existing concrete lined open stormwater channel is located to the west of the development site into which the property drains.

There is an existing stormwater reticulation located in the surrounding roads of Edward Avenue and Hector Avenue. The above pipes discharge into the aforementioned open stormwater channel.

The site drains in a south westerly direction with an average overland slope of 0,5%. Careful planning will be required to ensure that the site is adequately drained.

8.2 Flood Lines

Floodlines where obtained from the City of Cape Town which are attached in Annexure C. As can be seen the site falls above the 1:50 year floodline and development should not be restricted as a result of the floodlines.

8.3 Stormwater Management

The City of Cape Town's Stormwater Management Policy encourages the implementation of stormwater runoff and stormwater quality control measures for all developments.

The development site is 51,138m2 in extent and thus needs to comply with the policy unless reginal facilities are available. The development site would thus need to make provision in public open spaces to address the following requirements:

- Improve water quality

- Control quantity and the rate of runoff.

A separate stormwater management report will be required for the development demonstrating proposed measures to address the requirements of the City of Cape Town Stormwater Management Policy.

9. SOLID WASTE

The City of Cape Town will be responsible for the collection of the solid waste generated by the development. The road infrastructure provides adequate access for municipal refuse vehicles.

The site development layout will need to make provision for refuse collection areas.

A formal request has been submitted to the City of Cape Town who have confirmed that sufficient capacity is available for the proposed development (refer to Annexure E).

10. ELECTRICAL

Based on the GIS information obtained from the City of Cape Town, there is existing electrical infrastructure in the vicinity of the site. Refer to Annexure B for the details of the GIS information related to the existing electrical infrastructure.

We estimate an electrical supply of approximately 1.2MVA to the development. Our assumptions are based on a low-income bracket (Township Area) which yields an After Diversity Maximum Demand (ADMD) of 2.66kVA per consumer.

The supply to the erf and the design thereof will be designed to the requirements and specifications of the local electricity supply authority, to be clarified at a later stage.

Numerous mini-subs will have to be installed in appropriate positions to accommodate a new underground Medium Voltage (MV) cable and to avoid undesirable volt drops. These mini-subs are sufficiently sized for the possibility of minor future expansion and/or higher electricity demand.

Each consumer will be metered either from a credit meter situated in the local distribution kiosk or from a pre-paid meter. The local electricity supply authority will advise on which method is preferential.

Street-lighting will be designed in accordance with South African National Standards and the requirements of the City of Cape Town Public Lighting Department.

Owing to the current energy crisis, the development will need to comply to an energy efficiency specification as set out by the local electricity supply authority. The purpose is to ensure that the correct energy source is used for end use applications. Wherever viable and practical to do, alternative energies and technologies when available, should be deployed in preference to grid electricity. Examples include solar energy for heating water; liquid and solid fuels for thermal applications such as cooking and industrial heating. These requirements will need to be met in order to qualify for a new electricity supply.

A formal request has been submitted to the City of Cape Town inquiring whether the existing electrical infrastructure has sufficient capacity for the proposed development.

11. STRUCTURAL ENGINEERING

At this point, it is understood that the client is proposing single-storey & double-storey walk-up BNG units. No architectural layouts have yet been prepared and thus it must be understood that the following structural input is heavily dependent on the architectural layouts.

Such structures are typically most economically constructed with loadbearing masonry on conventional strip footings, with roofs either of monopitch rafters or duo-pitch trusses with gable

ends, depending on the span. Ground floor surface beds should be isolated mesh reinforced concrete slabs cast on damp proof membrane. Suspended floors could possibly be constructed of rib-and-block or hollow-core precast concrete construction, again dependant on the spans.

It is important to note that the site falls within the Southern Coastal Condensation Problem Area (SCCP area), as indicated in the National Building Regulations. Thus, walls need to built to resist damp, with the most appropriate solution being that of a burnt clay masonry ventilated cavity wall construction.

Furthermore, the site also falls in a seismic zone and thus architectural building layouts must be planned in conjunction with the structural engineer to enable brick walls to resist seismic shears.

The Geotechnical report notes that the site is covered with unacceptably loose fill, but with competent soils at depth. Furthermore, groundwater is expected to be shallow in winter months, meaning that dewatering and shoring of trenches will be required if excavating in winter. The Geotechnical report indicates three possible founding scenarios that allow the use of conventional strip footings:

a) Founding on competent soils at depths of 0.6 m – 1.65 m below existing ground level.
b) Improvement of founding conditions by partial reinstatement of selected and compacted excavated material from trenches excavated into the competent soils at depths of 0.6 m – 1.65 m below existing ground levels.
c) Bulk Improvement of founding conditions (wholescale reworking of site soils) followed by shallow founding.

It is anticipated that option (b) will be most cost effective, as there will be less brickwork used than in option (a) and less widescale heavy earthworks than in option (c), with the proviso that it must be understood that construction of foundations during the winter rainy season must be avoided to mitigate construction delays and buildability issues associated with a high ground water table. The soils under the surface beds will still be loose, and thus the isolation joints should be designed to tolerate a high degree of movement. All walls must thus be built off foundations and not off the surface bed.

12. MUNICIPAL APPROVALS

12.1 Service Capacity of Existing Municipal Infrastructure

K&T will submitt inquiries regarding the available capacity of existing infrastructure related to the following civil engineering services.

Table 3: Submitted Service Inquiries

Item	Service	Response
1	Foul sewer	Submitted and awaiting response
2	Potable water	Submitted and awaiting response
3	Solid Waste	Capacity available
4	Stormwater	Floodlines do not impact development
5	Electricity	Submitted and awaiting response

12.2 Development Contributions Estimate

The estimated Development Contribution for the development is included in Annexure F.

12.3 Schedule of Required Municipal Approvals

The following municipal approvals will be required with respect to the civil engineering services discussed in this report.

Table 4: Schedule of Required Municipal Approval

Item	Service	Approval required
1	Foul sewer	CoCT Water and Sanitation Branch
2	Potable water	CoCT Water and Sanitation Branch
3	Stormwater	CoCT Catchment, Stormwater & River Management Branch
4	Roads and Stormwater	CoCT Roads Infrastructure and Management Branch
5	Electricity	CoCT Electrical Branch

13. CONCLUSION

- Existing municipal infrastructure is in the vicinity of the development site.
- City of Cape Town are able to provide services to the site subject to certain criteria.

ANNEXURE A

SITE DEVELOPMENT PLAN

5239

5242

CHURCH
5243

EDWARD AVENUE

ERIC WAY

ENTRANCE

HECTOR AVE

HECTOR AVENUE

MARIUS ROAD

COMMUNITY/
CHURCH
±590m²

P.O.S.
PARK
±635m²

P.O.S.

P.O.S.

P.O.S.

Masjidul Ummah
Mosque
6483

6484

6501

6481

6540

6539

6542

6543

6541

10m

8m

FENCE

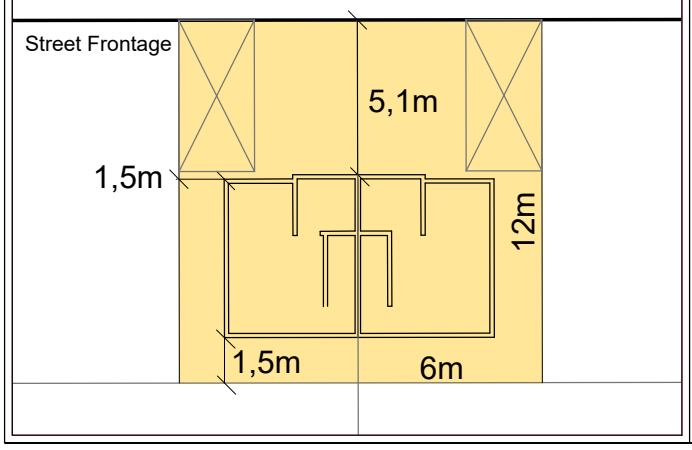
BUILDING

Source:
Base Plan: fjc consulting
August 2023

Freshwater Specialist:
Dr Liz Day
August 2023

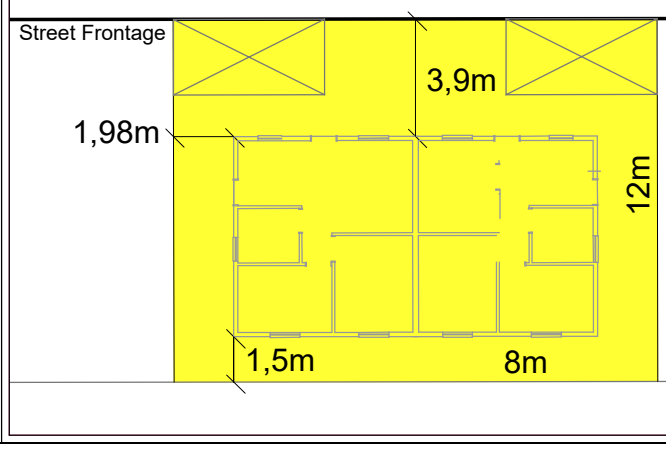
Unit = 45,5m²
Erf = 72m²

2 Storey Units



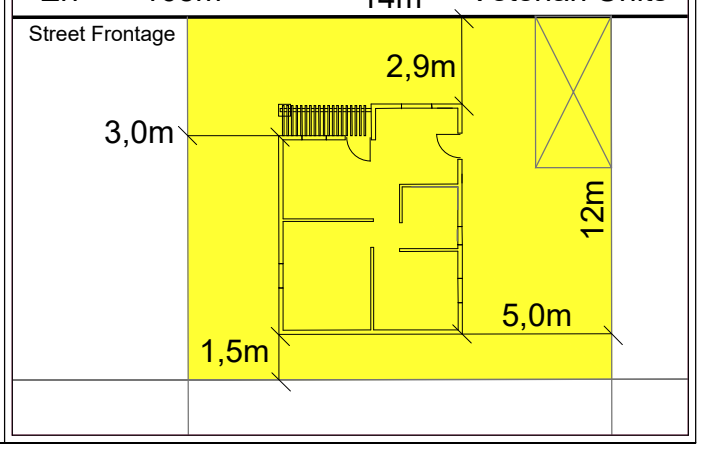
Unit = 40m²
Erf = 96m²

Single Storey Units



Unit = 45,6m²
Erf = 168m²

Single Storey
Veterian Units



THE SITE

WETLAND

INFILL

20m OFFSET BUFFER

WATER PIPE

SEWAGE PIPE

SERVITUDE

VEGETATION

ACCESS

STORMWATER
ATTENUATION
POND / SWALE

Average Erf Size
8 x 12 = 96m²
95 Units

Average Erf Size
6 x 12 = 72m²
228 Units

ERF 6482
GRASSY PARK

SINGLE & 2 STOREY WALK UPS

SCALE 1:1250

PLANNING
PARTNERS

NOVEMBER 2023
JOB No 4436

Option 6

ANNEXURE B

EXISTING SERVICES

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

THIS MAP WAS GENERATED BY THE

Water and Sanitation Business Viewer

Water and Sanitation Department

LEGEND

- Isolation
- Retic Water - Hydrant
- 1 - 200
- 201 - 400
- Sewer - Pump Station
- Sewer - Manhole
- Sewer - Connection Line (Leading)
- Sewer - Gravity Main (Flow Direction)
- -999 - 0 (Unknown diameter)
- 1 - 160
- 161 - 300
- 301 - 600
- 601 - 999999
- Manhole
- Catchpit
- Stormwater Inlet Outlet
- Pipe
- Culvert
- Connection
- Canal Lined (Main)
- Canal Lined
- Street Name
- Active Land Parcels
- City of Cape Town Boundary
- Main Roads
- Streets
- Suburbs

Land Topo 50000

RGB

- Red: Band_1
- Green: Band_2
- Blue: Band_3

1:3 000

Author:

Date: 07 August 2023

Projection: Transverse Mercator
Central Meridian: 19° East
Ellipsoid: WGS84
Datum: Hartebeesthoek94

PLEASE NOTE:

- Every effort has been made to ensure the accuracy of information in this map at the time of publication.

- The spatial data portrayed in this map is as current, accurate and complete as provided by the various line departments responsible for the maintenance of these datasets.

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CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

THIS MAP WAS GENERATED BY THE

Water and Sanitation Business Viewer

Water and Sanitation Department

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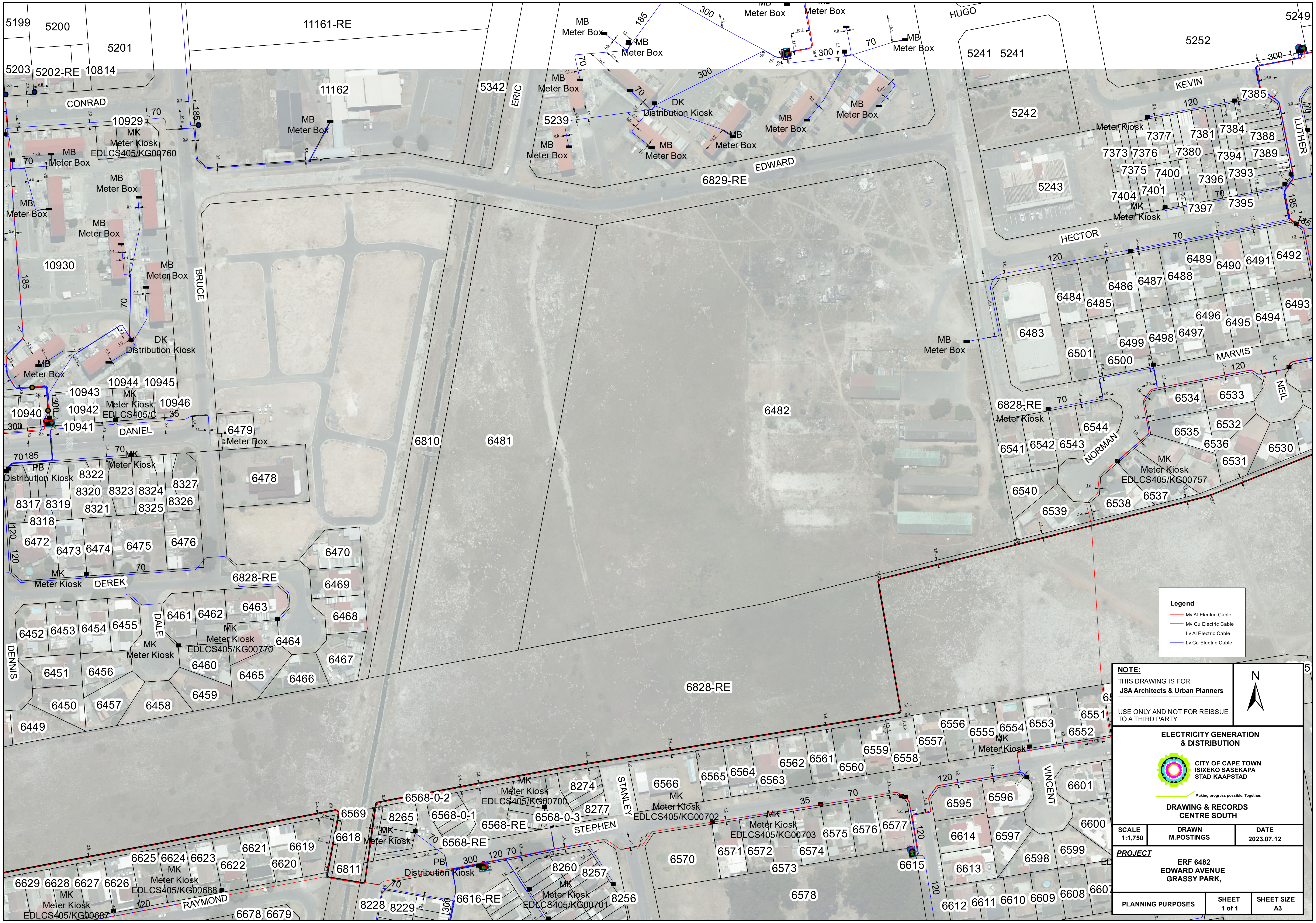
CONRAD
DANIEL
DEREK
DALE
DENNIS
BRUCE
ERIC
EDWARD
HUGO
KEVIN
LUTHER
HECTOR
MARVIS
NEIL
NORMAN
STANLEY
STEPHEN
VINCENT
RAYMOND
6482
6481
6810
6828-RE
6829-RE
Legend
Mv Al Electric Cable
Mv Cu Electric Cable
Lv Al Electric Cable
Lv Cu Electric Cable
NOTE:
THIS DRAWING IS FOR
JSA Architects & Urban Planners
USE ONLY AND NOT FOR REISSUE TO A THIRD PARTY
N
ELECTRICITY GENERATION & DISTRIBUTION
CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD
Making progress possible. Together.
DRAWING & RECORDS CENTRE SOUTH
SCALE 1:1,750
DRAWN M.POSTINGS
DATE 2023.07.12
PROJECT
ERF 6482
EDWARD AVENUE
GRASSY PARK,
PLANNING PURPOSES
SHEET 1 of 1
SHEET SIZE A3

ANNEXURE C

FLOODLINES

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CATCHMENT, STORMWATER AND RIVER MANAGEMENT
WATER AND SANITATION DIRECTORATE

Kristin Botes
Principal GIS Analyst

T: 021 444 4938
E: kristin.botes@capetown.gov.za

REF: Erf 6482 Grassy Park

DATE: 14 February 2025

Dear Sir/Madam

INFORMATION REGARDING FLOOD RISK AND FLOODLINES

Property: Erf 6482 Grassy Park

With reference to your enquiry at this Department, the following information is given in respect of the above property:

Flood Terms & Definitions

The term "100 year Flood" can be misleading because it leads people to believe that it will occur only once in a 100 year period. The truth is that uncommonly big floods can happen at any time in any year. The term "100 year flood" is a statistical designation, and means that there is a 1-in-100 chance that a flood of this size will occur during any given year. The "100 year flood" can also be referred to as the 1 in 100 year Return Period or Recurrence Interval flood event.

What it actually implies, is that over a very long period in time, a flood of this size, will occur on average every 100 years or that over a period of 1 000 years there are likely to be 10 such events.

The probability of a 100 year occurring at least once in the next 5 years is 5%, in the next 50 years is 40% and in the next 100 years is 63%.

It is possible to experience 2 or more 100 year floods within a relatively short time, even in the same place.

The National Water Act

The National Water Act (Act No. 36 of 1998) *Part 3* requires that information relating to floods and potential risks be made available to the public, and that township layout plans must indicate a specific floodline. Floodlines should be determined using the most appropriate

means to inform the public about anticipated floods or risks posed by water quality, the failure of any dam and so forth. Early warning systems may be established to anticipate such events.

Section 144 of the National Water Act stipulates that no person may establish a township unless the layout plan shows, in a form acceptable to the City, lines indicating the maximum level likely to be reached by floodwaters on average once in every 100 years. This stipulation is to ensure that all persons who might be affected have access to information regarding potential flood hazards.

City of Cape Town: Floodplain and River Corridor Management Policy

The City's "Floodplain and River Corridor Management Policy" (the Policy) was approved and adopted by the City Council on 27 May 2009. The purpose of the policy is to reduce the impact of flooding on people and property, to safeguard human health, aquatic environments whilst improving and maintaining water quality.

The Policy compels a merit-based approach for dealing with land-use, development or activity proposals near watercourses and wetlands that:

- Limits or reduces exposure to flood risk by avoiding hazardous, uneconomic or unwise use of floodplains thereby protecting life, property and community infrastructure.
- Protects the natural flood carrying capacity of watercourses and wetlands.
- Protects and enhances the intrinsic value and the environmental function provided by watercourses and wetlands and their associated riparian areas and floodplains through the inclusion of ecological buffer requirements.
- Facilitates the beneficial integration of watercourses and wetlands into the urban landscape by creating an aesthetically pleasing public resource which will ultimately allow for the social and economic upliftment of communities adjacent to watercourses and wetlands.
- Provides an effective decision making tool for City officials, developers, land owners and built environment professionals by introducing an element of predictability with regard to applications for development along watercourses, in river corridors and adjacent to wetlands.
- Promotes sustainable development from engineering, environmental and socio economic perspectives.

The degree of flood and/or environmental protection recommended by this policy is considered reasonable for regulatory purposes and is based on engineering and scientific methods of study.

The Policy is available on the City's web site http://www.capetown.gov.za/en/Policies/ along with the other policy relating to stormwater, the "Management of Urban Stormwater Impacts Policy" which was also approved by the City Council on 27 May 2009. Alternatively either of these Policies can be viewed at the Catchment, Stormwater & River Management Branch office on the 3rd Floor, Water & Sanitation Head Office, 8 Voortrekker Road, c/o Voortrekker and Mike Pienaar, Bellville, Cape Town. Please call Annestia Morta on 021 400 1205 to make arrangements.

Flood Levels and Associated Floodlines and Hazard Zones

The determination of flood levels and their associated floodlines and hazard zones are based on relevant catchment hydrology considering the catchment's land-use and runoff characteristics and the river's geomorphology at the time of their determination, and therefore these can generally only be regarded as indicative.

The City conducted a floodline study along the Lotus River in 1994.

Should your property /erf fall below or partially below the estimated flood levels and / or the flood high hazard zone, as shown on the attached plan, then your proposed Rezoning / Sub-division / Land-use departure / Consent use / Amendment of plans / Conditions of approval / Building plan application are subject to the requirements of the City's "Floodplain and River Corridor Management Policy".

Should you wish to challenge the flood information provided by the City, we recommend you seek professional advice from a registered professional specialising in hydrological and hydraulic engineering.

For your guidance, the professional will be required to provide The City with the information regarding the flood level determination in relation to the development of the property, as given in Appendix A.

Additional information may also be requested in respect of any particular development.

Yours faithfully

……. Date: ……..

APPENDIX A: CITY OF CAPE TOWN FLOOD LEVEL DETERMINATION REQUIREMENTS

(i) Methodology / techniques used to determine and verify peak flow rates for the various flood events.
(ii) Contributing catchment hydrological characteristics and information e.g. catchment area, land-use, etc. including a map showing the property location and catchment area.
(iii) Rainfall data and information used to determine peak flow rates.
(iv) River geomorphological data and information used to determine flood levels e.g. topographical survey.
(v) Method used to undertake backwater analysis to determine flood levels and hazard zones.
(vi) Backwater analyses results in tabular form with accompanying river station cross-sectional and longitudinal section results drawings
(vii) Certified drawing showing a plan view of the property and the pertinent river reach for which the flood levels have been determined, positions of river cross-sections, river centreline, floodlines, hazard zones, contours and any other pertinent features that may impact on the flood levels e.g. culverts and a table indicating the flood level at the various cross-sections.

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CATCHMENT, STORMWATER & RIVER MANAGEMENT

FLOODLINES

Erf 6482, Grassy Park

LEGEND

Floodlines

50yr

Floodplain

Watercourse

Conduit

Culvert

Open Watercourse

Canal Lined

Land Parcel

N

1:2 500

Compiled: KBotes | Date: Feb 2025

Every effort has been made to ensure the accuracy of information in this map at the time of publication. The City of Cape Town accepts no responsibility for, and will not be liable for any errors or omissions contained herein.

ANNEXURE D

WATER & SANITATION CAPACITY

Robert Murray

From: Chanee Johnstone <Chanee.Johnstone@capetown.gov.za>
Sent: Friday, 14 March 2025 16:30
To: Robert Murray
Cc: Mckaylin Adonis; Darren Snyders; Charmion Cherry
Subject: RE: 16894T: ERF 6482 GRASSY PARK, WESTERN CAPE - SERVICE CAPACITY OF EXISTING MUNICIPAL INFRASTRUCTURE

Good day Robert,

With regards to your questions please see my response in red below:

From: Robert Murray <robertm@ct.kanteys.co.za>
Sent: Wednesday, 12 March 2025 18:34
To: Chanee Johnstone <Chanee.Johnstone@capetown.gov.za>
Cc: Mckaylin Adonis <Mckaylin.Adonis@capetown.gov.za>; Clyde Koen <Clyde.Koen@capetown.gov.za>; Aphiwe.Mankomo@capetown.gov.z; Darren Snyders <DSnyders@ct.kanteys.co.za>; Charmion Cherry <CCherry@ct.kanteys.co.za>
Subject: 16894T: ERF 6482 GRASSY PARK, WESTERN CAPE - SERVICE CAPACITY OF EXISTING MUNICIPAL INFRASTRUCTURE

CAUTION: This email originated outside of the City of Cape Town's network. Please do not click on any links or open attachments unless you know and trust the source. **STOP. THINK. VERIFY**.

Hi Chanee,

Thank-you for the attached in response to our enquiry for capacity for the development of Erf 6482, Grassy Park.

We have a few questions which we hope you can assist with:

1. Water:
    a. The report indicates that pressure boosting will be required based on height of the proposed buildings, if the buildings are restricted to single storey it would appear as though the current water pressure should suffice? The surrounding mains have approximately 24m pressure head under peak conditions, when the demand is added this drops to approximately 18m.
    b. We assume that the need for the on-site water storage is linked to the need to boost the water pressure on site if the buildings are not single storey houses?- Yes you are correct, boosting is generally a requirement with multi storey developments, however as stated above since the modelled pressures indicate a significant drop in pressure after the proposed flow has been added, it is recommended that an on-site flow and pressure test be performed and based on that results, further engagement with the reticulation officials may be required to ensure adequate pressure to the development.
2. Sewer:
    a. The site falls from the north-east to the south-west with a fall of 1.75meters (see attached survey), accordingly connecting into the existing sewer mains located to the north-east and south-east of the site are not feasible as both networks are significantly higher than the western side of the property. Based on this we would propose that the site be connected to the existing 1675mm dia pipeline (located on the western side of the site) at one of the existing manholes.- I am waiting for a response from the sewer reticulation officials as connecting to bulk sewers are not generally permitted.

Regards

KANTEY & TEMPLER
CONSULTING ENGINEERS
ESTABLISHED 1953

Robert Murray
Associate Director

PrCPM
PrTechEng
AAArb

Email robertm@ct.kanteys.co.za
Tel +27 21 405 9600
Cell +27 82 822 3144
www.kanteys.co.za
Disclaimer

B-BBEE
LEVEL 1

From: Chanee Johnstone <Chanee.Johnstone@capetown.gov.za>
Sent: Wednesday, 12 March 2025 13:10
To: Charmion Cherry <CCherry@ct.kanteys.co.za>
Cc: Za-eemah Hare <Zaeemah.Hare@capetown.gov.za>; Mckaylin Adonis <Mckaylin.Adonis@capetown.gov.za>; Bulk Water Info <BulkWater.Info@capetown.gov.za>; Sven Sotemann <Sven.Sotemann@capetown.gov.za>; Clyde Koen <Clyde.Koen@capetown.gov.za>; Chad Snell <Chad.Snell@capetown.gov.za>; Aphiwe Mankomo <Aphiwe.Mankomo@capetown.gov.za>
Subject: RE: 16894T: ERF 6482 GRASSY PARK, WESTERN CAPE - SERVICE CAPACITY OF EXISTING MUNICIPAL INFRASTRUCTURE

Good day Charmion,

Attached please find the completed capacity report.
I trust that all is in order.

Kind regards

Chanee Johnstone
Senior Professional Officer: Integrated Planning
Water Demand Management, Regulation and Planning
Technical Services - Water and Sanitation Directorate

4th Floor, Water and Sanitation Head Office, C/O Mike Pienaar Blvd and Voortrekker Road, Bellville
Tel: 021 400 5244 | **Email:** chanee.johnstone@captown.gov.za | **Website:** www.capetown.gov.za | **Customer feedback:** Customer Feedback – IP | **Development-related Water and Sanitation matters:** water.info@capetown.gov.za

CCT Contacts | CCT Media and News | Report a fault | Account Queries |

CITY OF CAPE T
ISIXEKO SASEK
STAD KAAPSTAI

From: Charmion Cherry <CCherry@ct.kanteys.co.za>
Sent: 19 February 2025 13:48

To: Water Info <Water.Info@capetown.gov.za>
Cc: Robert Murray <robertm@ct.kanteys.co.za>; Darren Snyders <DSnyders@ct.kanteys.co.za>
Subject: 16894T: ERF 6482 GRASSY PARK, WESTERN CAPE - SERVICE CAPACITY OF EXISTING MUNICIPAL INFRASTRUCTURE
Importance: High

You don't often get email from ccherry@ct.kanteys.co.za. Learn why this is important

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City of Cape Town
Water & Sanitation Directorate

Good Afternoon

We herewith submit a letter regarding the above-mentioned project.

Encl.
Attachments 3

Regards,

KANTEY & TEMPLER
CONSULTING ENGINEERS
ESTABLISHED 1953
B-BBEE LEVEL 1

Charmion Cherry
Secretary
Document Controller

Email ccherry@ct.kanteys.co.za
Tel +27 21 405 9600
Cell +27 82 7711 832
www.kanteys.co.za
Disclaimer

Disclaimer: This e-mail (including attachments) is subject to the disclaimer published at: http://www.capetown.gov.za/general/email-disclaimer Please read the disclaimer before opening any attachment or taking any other action in terms of this e-mail. If you cannot access the disclaimer, kindly send an email to disclaimer@capetown.gov.za and a copy will be provided to you. By replying to this e-mail or opening any attachment you agree to be bound by the provisions of the disclaimer.
Disclaimer: This e-mail (including attachments) is subject to the disclaimer published at: http://www.capetown.gov.za/general/email-disclaimer Please read the disclaimer before opening any attachment or taking any other action in terms of this e-mail. If you cannot access the disclaimer, kindly send an email to disclaimer@capetown.gov.za and a copy will be provided to you. By replying to this e-mail or opening any attachment you agree to be bound by the provisions of the disclaimer.

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD
Making progress possible. Together.

Water & Sanitation Head Office
Cnr Voortrekker & Mike Pienaar Blvd
Bellville 7530
Tel: **+27 021 400 5219**
Fax: **+27 21 970 3140**
E-mail: water.info@capetown.gov.za
Evaluator: Z.Hare

Water & Sanitation Head Office
Cnr Voortrekker & Mike Pienaar Blvd
Bellville 7530
Umnxeba: **+27 021 400 5219**
Ifeksi: **+27 21 970 3140**

Water en Sanitasie Hoof Kantoor
H/V Voortrekker & Mike Pienaar Blvd
Bellville 7530
Tel: **+27 021 400 5219**
Faks: **+27 21 970 3140**

Reference: 20250213_Z

Date: 12 March 2025

Attention: Charmion Cherry
Company: Kantey & Templer Consulting Engineers
Email: ccherry@ct.kanteys.co.za

COMMENT ON WATER AND SANITATION CAPACITY AND DEVELOPMENT CONDITIONS FOR THE PROPOSED DEVELOPMENT OF ERF 6482

Background

This comment covers the impact of the proposed development on Erf 6482: Grassy Park. The proposed development is for a new residential project consisting of single and double-storey units, totalling 323 units. The site is zoned as Community 1 (CO1) and currently contains existing structures.

This letter provides an overview of the existing water and sewer infrastructure near the development, the capacity of both complete systems to service it as well as associated conditions that would apply. The information provided is based on City of Cape Town master plan model as well as comments from relevant branches of the department.

Table 1: Estimated water demand and sewer flow anticipated for the proposed development

Description	Potable Water Demand[1]				Sewer Flow[2]	
	Quantity (Units/Area/ No. people)	Total AADD (kℓ/d)	Peak Flow (ℓ/s) (PF = 5)	Fire Flow (ℓ/s)	Total ADWF (kℓ/d)	Peak Flow (Dry weather) (ℓ/s) (PF = 2.5)
Existing	323 units	145	8.4	25	116	3.3

Notes:
[1] Based on a 450l/unit/day
[2] Based on 80% sewer flows according to the design criterion (as per the W&S Tariff Policy)

Water Reticulation

Distribution zone

The proposed development falls within Grassy Park PRV distribution zone within the CMC110 network. This zone is supplied from the Blackheath & Faure reservoirs.

Present situation

There is an existing 150mm Ø water reticulation main east of the site in Hector Avenue which is supplied by the 915mm Ø bulk distribution main further east in Old Strandfontein Road. According to the latest GIS data and hydraulic modelling, these connections have sufficient capacity to support the development.

The pressure at these connection points ranges between 24 and 85 meters. Due to the height of the building the 24m pressure will be inadequate. Consequently, pressure boosting and on-site water storage will be required to ensure sufficient supply.

There is sufficient network supply capacity to accommodate the development as per the demand calculations reflected in table 1 above. The developer is to provide evidence of water saving initiatives that will be incorporated in the development

See figure 2 & 3 for water reticulation layout.

Bulk Water

No bulk water pipelines or infrastructure under the control of the City of Cape Town's Bulk Water Branch exist in the immediate vicinity of this land.

The bulk supply system has sufficient water resource, treatment, bulk storage and conveyance capacity to supply the estimated annual average daily demand of **145 kℓ/d** of the proposed development.

Sewer Reticulation

Drainage area

The proposed development falls within the catchment area of the Cape Flats Wastewater Treatment Works (WwTW). The sewage flows via gravity in a southerly direction, crossing Klip Road. From there, wastewater continues south along Grysbok Road, with the flow eventually reaching the inlet works of the WWTW.

Present situation

An existing 150mm Ø sewer take-off point is located in the north eastern section of the site. However, this sewer main alone will not be sufficient to service the site. There is another 150mm Ø sewer in the south eastern section of the site, which should also be utilised. Both of these sewer mains feed into the 1 675mm Ø bulk sewer on Buck Road.

It is important to note that two bulk sewer mains (a 1 1372mm Ø and a 1 675mm Ø) traverse the site and will require a servitude.

Preliminary assessments indicate that both the surrounding network and downstream infrastructure have sufficient capacity to accommodate the proposed development.

See figure 4 & 5 for sewer reticulation layout.

Wastewater

The anticipated wastewater flow from the proposed development has been calculated to be **116 kℓ/d**.

The proposed site is located in the Cape Flats WwTW catchment. There is sufficient unallocated spare capacity at the Cape Flats WwTW to accommodate the sewage generated from this proposed development.

Conclusion

The existing water and sewer reticulation network is able to support the proposed development. However, pressure boosting and on-site water storage will be required for both domestic and fire requirements. Furthermore, the implementation of water-saving measures is recommended.

For confirmation of the existing water system pressures, please make contact with the Regional Manager (water): Clyde.Koen@capetown.gov.za and the Depot Manager (water) Aphiwe.Mankomo@capetown.gov.za.

The Cape Flats Wastewater Treatment Works has sufficient capacity to accommodate the proposed development.

Conditions

The Water and Sanitation Department supports the proposed application provided the following conditions are implemented:

1. Subject to building plan approval.

2. That the developer may be responsible for the payment of the Development Contributions for bulk civil engineering services, if any, as determined annually by Council and contained in the attached signed Acknowledgement of Debt.
3. All costs, relating to alterations to the existing water and sewerage systems and the provision of new water and sewer connections, will be for the account of the applicant.
4. Detailed drawings of water and sewer services must be submitted for approval, before the commencement of any work.
5. The Reticulation Branch to be contacted 72 hours before the commencement of construction activities.
6. The developer must install all the required sewer and water infrastructure and connections, as per Water & Sanitation Department Standards at his/her own cost, before transfer of erven will be allowed.
7. As-built drawings (as per protocol attached) of installed sewer and water services to be submitted to the City before transfer of erven will be allowed.

Additional Technical Requirements

1. The water and sewer capacities allocated according to this document shall not be reserved if not taken up before the lesser of 5 years or the approved development period.
2. Water and Sanitation municipal service designs to be designed according to Departmental Service Standards and be approved prior to construction. These standards can be obtained on the City of Cape Town Website

General/ Disclaimer

Information provided is based on best available data. The infrastructure as-built information referred to and used in the analysis is based on the GIS asset records, while modelled pressures, flows, velocities, capacities and volumes are based on hydraulic models of the current land use and demands. Where appropriate, future land use and demands are considered. The flows and pressures provided are theoretical and not measured. All levels provided to be verified on site.

Yours faithfully

On behalf of
Zolile Basholo
DIRECTOR: TECHNICAL SERVICES, WATER AND SANITATION DIRECTORATE

W&S Infrastructure

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

THIS MAP WAS GENERATED BY THE

Water and Sanitation Business Viewer

Water and Sanitation Department

LEGEND

- Isolation
- Retic Water - Hydrant
- 1 - 200
- 201 - 400
- Sewer - Pump Station
- Sewer - Manhole
- Sewer - Connection Line (Leading)
- Sewer - Gravity Main (Flow Direction)
- -999 - 0 (Unknown diameter)
- 1 - 160
- 161 - 300
- 301 - 600
- 601 - 999999
- Street Name
- All Land Parcels
- City of Cape Town Boundary

Land Topo 50000

RGB

- Red: Band_1
- Green: Band_2
- Blue: Band_3

1:3 000

Author: Z.Hare

Date: 20 February 2025

Projection: Transverse Mercator
Central Meridian: 19° East
Ellipsoid: WGS84
Datum: Hartebeesthoek94

PLEASE NOTE:

- Every effort has been made to ensure the accuracy of information in this map at the time of publication.

- The spatial data portrayed in this map is as current, accurate and complete as provided by the various line departments responsible for the maintenance of these datasets.

- The City of Cape Town accepts no responsibility for, and will not be liable for, any errors or omissions contained herein.

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

LEGEND

- Network Pipes (Ï)
- Bulk Water Pipes
- Schematic pipes
- Bulk Connection
- Reservoir / Tower
- Pump Station
- Zone Valve
- Isolating Valve
- Hydrant
- PRV
- Non-return valve
- Air Valve
- Scour Valve
- End Cap
- Flow Meters

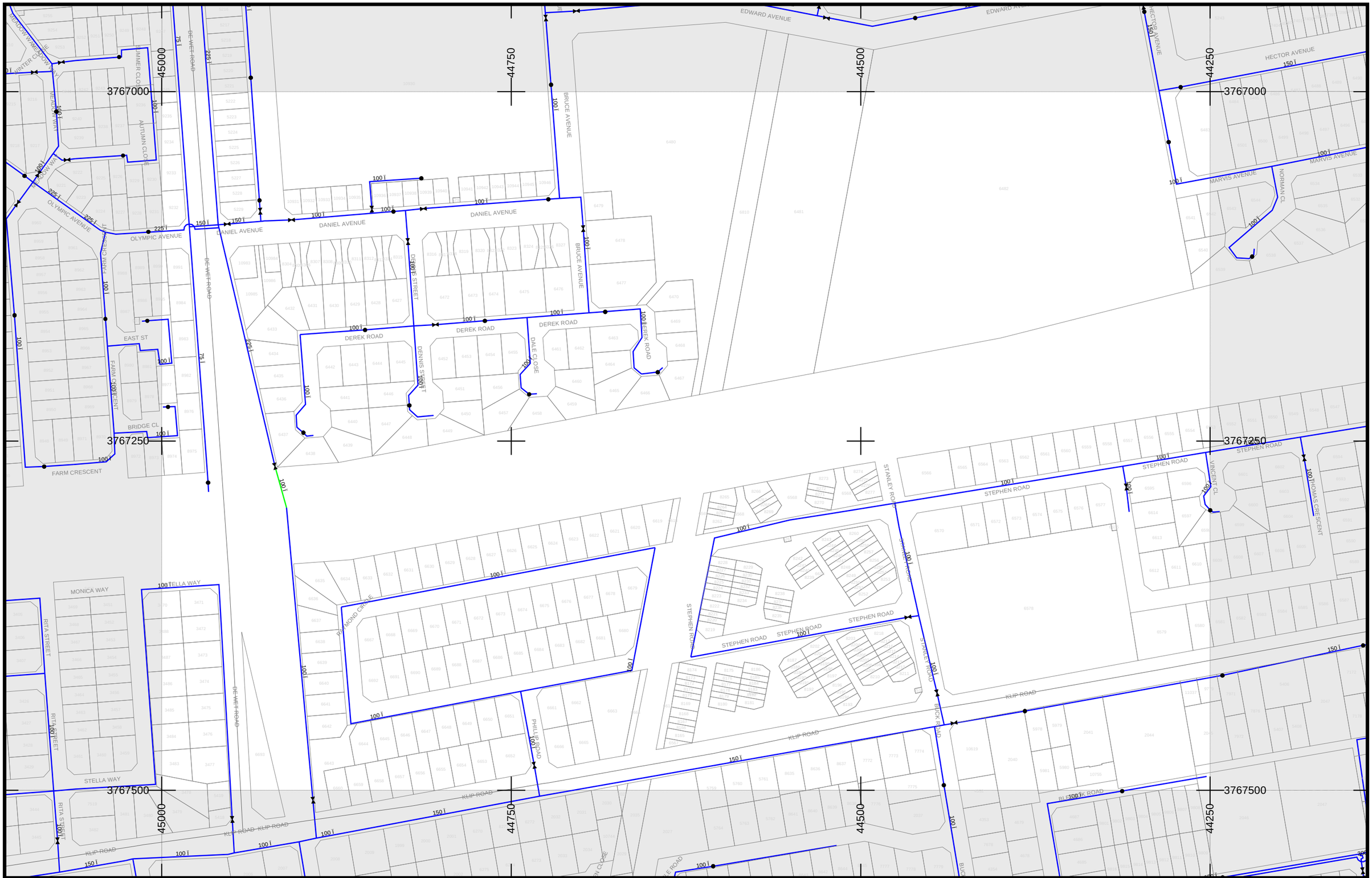
INDEX

CTN-Z124	CTN-AA124	CTN-AB124
CTN-Z125	CTN-AA125	CTN-AB125
CTN-Z126	CTN-AA126	CTN-AB126

Water distribution system
City of Cape Town

DATE:	REV:	SCALE: WGS 19A
Nov 2014	1	1 : 2 500 (0m 10m 20m 30m 40m 50m)

No.: CTN-AA125



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

LEGEND

- Network Pipes (i)
- Bulk Water Pipes
- Schematic pipes
- Bulk Connection
- Reservoir / Tower
- Pump Station
- Zone Valve
- Isolating Valve
- Hydrant
- PRV
- Non-return valve
- Air Valve
- Scour Valve
- End Cap
- Flow Meters

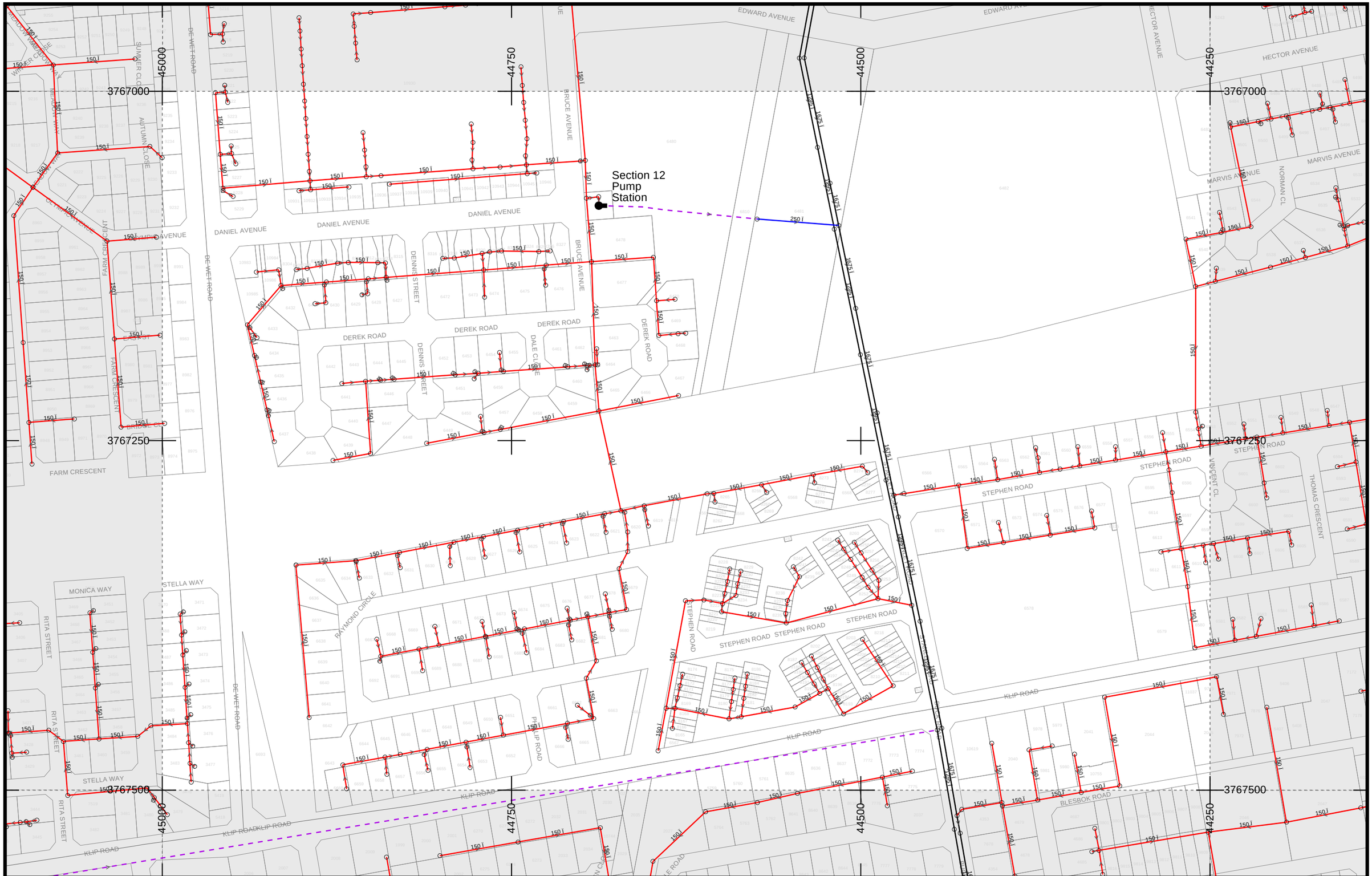
INDEX

CTN-Z125	CTN-AA125	CTN-AB125
CTN-Z126	CTN-AA126	CTN-AB126
CTN-Z127	CTN-AA127	CTN-AB127

Water distribution system
City of Cape Town

DATE:	REV:	SCALE:	WGS 19A
Nov 2014	1	1 : 2 500	0m 10m 20m 30m 40m 50m

No.: CTN-AA126



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

LEGEND

- <= 175 mmĪ
- > 175 <= 325 mmĪ
- > 325 mmĪ
- Schematic pipes
- 149mmI — Unknown diameter
- Flow direction
- Rising Mains
- Manhole
- Pump station
- Diversion structure
- WWTW

INDEX

CTN-Z125	CTN-AA125	CTN-AB125
CTN-Z126	CTN-AA126	CTN-AB126
CTN-Z127	CTN-AA127	CTN-AB127

Sewer drainage system
City of Cape Town

DATE:	REV:	SCALE:	WGS 19A
Nov 2014	1	1 : 2 500 (0m 10m 20m 30m 40m 50m)	

No.: CTN-AA126

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

LEGEND

- <= 175 mmĭ
- > 175 <= 325 mmĭ
- > 325 mmĭ
- Schematic pipes
- 149mmI Unknown diameter
- Flow direction
- Rising Mains
- Manhole
- Pump station
- Diversion structure
- WWTW

INDEX

CTN-Z124	CTN-AA124	CTN-AB124
CTN-Z125	CTN-AA125	CTN-AB125
CTN-Z126	CTN-AA126	CTN-AB126

Sewer drainage system
City of Cape Town

DATE:	REV:	SCALE: WGS 19A
Nov 2014	1	1 : 2 500 (0m 10m 20m 30m 40m 50m)

No.: CTN-AA125

ANNEXURE E

SOLID WASTE CAPACITY

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

WASTE SERVICES: COLLECTIONS DEPARTMENT:
RESEARCH AND DEVELOPMENT

Gévarnia Petersen
Senior Clerk

T: +27 21 400 5239
E: SWMLUM@capetown.gov.za

Reference Number:

Date:	**19 FEBRUARY 2025**
Subject:	**SERVICE CAPACITY OF EXISTING MUNICIPAL INFRASTRUCTURE – ERF 6482, GRASSY PARK**
Attention:	**CHARMION CHERRY**

The council wishes to ensure that all new developments, require planning permission, contain suitable accommodation for the storage and disposal of waste to a licenced landfill site.

Council reserves the right to service all residential properties that falls within its boundaries for refuse removal services. In terms of the Waste Management Tariff Policy, Section 18.2.1 all residential properties are compelled to use council refuse removal services and may not use private contractors directly. Please refer to the attached Waste management tariff policy for more information. **Non-residential properties may opt to use either Council services or a private contractor directly.**

ENVIRONMENTAL IMPACT ASSESSMENTS (EIA) – SERVICE CAPACITY OF EXISTING MUNICIPAL INFRASTRUCTURE – ERF 6482, GRASSY PARK

WITH REFERENCE TO YOUR EMAIL DATED 19 FEBRYARY 2025 FROM CHARMION CHERRY, PLEASE SEE COMMENTS HEREUNDER:

In connection with the above proposal / development, I confirm that Solid Waste (Collections) as the Service Provider in the Grassy Park Area has **NO OBJECTION** to and has sufficient unallocated capacity to accept and collect and dispose of all types of waste to a designated licence landfill site. A good waste management system must be in place to handle all waste generated by the activities and to mitigate against negative impact on the environment. The generation of construction waste and waste during the operation phases should be recycled on site or re used to fill up other sites and clean builder's rubble can be disposed of at the nearest licenced under the guidance of the City of cape Town. Please refer to the attached disposal tariff list for more information. The waste generated by the construction personnel e.g. lunch remains and packaging etc. must be placed in approved refuse bins on site during the construction phases. The proposed development will not have any implications on the infrastructure of the area provided that the contractors identify a permitted refuse disposal site for various categories of waste, provided that a refuse room is included in the planning stages of the development for the storage of waste to the satisfaction of the Director: Waste Services.

A. STANDARD BUILDING REGULATIONS: CONDITIONS FOR REMOVAL / COLLECTION OF REFUSE
Applicable to sectional title or cluster development, secured complexes, flat complex, shopping mall/centre (retail) or office complexes, factories and warehousing.
U1- PROVISION OF AREAS
Any building, excluding a dwelling house, in which refuse will be generated, shall be provided with an adequate centralised refuse room (which comply with the attached standards and guidelines for refuse storage areas). That the refuse room be provided in a position nearest to an access road (public road) and be accessible for the Council's refuse collection vehicles at all times as this vehicle and/ its crew members (Council staff) will not enter onto private property. Premises such as Places of Worship (churches, mosques and temples) and vacant land units do not require a refuse room however if the complex is large with function halls and large volumes of waste is generated or the vacant land is ear marked for (depending on the land use/zoning status) then a refuse room may be considered at the discretion of the Director: Waste Services.
Should there be an existing refuse area in use to accommodate the changes, alterations or additions to the building for the storage of bins, then this area should be utilised for any for any additional bins required for this development, or provision should be made for added space.

U2 – ACCESS TO AREA

Council's refuse collection vehicles or its staff will not enter private property, therefore the removal of domestic solid waste is effected from the kerbside of a public street. The location of any area contemplated in regulation U1 shall be of such access thereto from any street for the purpose of removing the refuse is of the satisfaction of the local authority.

B. HAZARDOUS BIOLOGICAL OR CHEMICAL WASTE

No hazardous, chemical or medical waste enters the general waste stream. Solid waste (collections) does not remove hazardous, chemical or medical waste. A private specialised waste company must be engaged for this purpose. These types of waste must be disposed of by a private specialised waste company in accordance with the minimum requirements for the handling classification and disposal of Hazardous waste (DWAR 1998) with the approval by the department of Health. The installation of cellular communications base stations does not require a refuse removal service and does not pose a health risk to the environment.

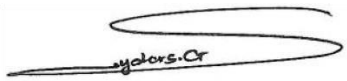
C. MINIMUM REQUIREMENTS FOR SINGLE RESIDENTIAL/RURAL UNITS – ACCESS FROM PUBLIC ROADS

1) **Council departmental or contracted waste collection teams will not enter private property;** therefore the removal of domestic solid waste (general waste) is effected from the kerbside of a public street. Residential units located near mountain areas or areas frequented by baboons will be issued with baboon proof bins for the storage of waste at an additional cost as determined by the Waste Services. The owner/s will have to place the refuse bins on the side walk (kerbside) of a public street on the scheduled day of refuse collection. In some instances a hardened washable surface, in the road reserve, must be provided for bins depending on the number of units situated in a cull-de-sacks that exceeds 20 metres and that does not have direct access for reuse collection vehicles or flat units that have no ground floor storage facilities for the tenants located on an upper level in the building. **Please refer to the attached minimum requirements for vehicular access.**
2) Where the internal roads are developed as private roads and the development is designed for the purpose as private residential town house complexes, a refuse room with an embayment for refuse vehicles will have to be provided. **Please refer to the attached requirements for refuse storage areas.**
3) Applications by the owner/s to operate …… from residential existing dwelling units must make sure of all Solid Waste Services. The owner/tenant are required to place the refuse bin/s on the Kerbside (Sidewalk) of a Public Street on the Scheduled Day of Refuse Collection.
4) Should the owner/s make alterations or additions to the Residential Property or Subdivide the Property into 2 or more portions for residential purposes and require Additional Refuse Containers / Bins, the owner/s must liaise with the Corporate Call Centre for Waste Services Enquiries on 086 010 3089 to make the necessary arrangements and place the container/s nearest to an Access Road (Public Road) on the Scheduled Day of Collection.

D. SUBDIVISION CONDITION COMPLIANCE ITO SECTION 31:

Solid Waste Conditions must be clearly stated with the Attached "Annexure A" forms to avoid delays with the clearances given by Waste Services.

Yours Faithfully,



Gévarnia Petersen:
For the Director: Waste Services

ANNEXURE F

DC CALCULATION

City Of Cape Town Development Charges Calculator

Version 3.13 | June 2024

Erf Number(s) *	6482
Suburb/Allotment *	Grassy Park
Developer/Owner *	Dept of Infrastructure
Erf Size (ha) *	5.11386
Date (YYYY/MM/DD) *	March 24, 2025
Current Financial Year	2024/2025
Application Reference	

Code	Land Use	Unit	Development Parameters	
			Existing Right	Total New Right
RESIDENTIAL				
A1	Single Residential > 1000m² Erf	Dwelling unit		
A2	Single Residential > 650m² Erf	Dwelling unit		
A3	Single Residential > 350m² Erf	Dwelling unit		
A4	Single Residential < 350m² Erf	Dwelling unit		
A5	State Funded Housing	Dwelling unit		
A6	GAP/Affordable Housing	Dwelling unit		323
A7	Group Housing >650m² Erf	Dwelling unit		
A8	Group Housing >200m² Erf	Dwelling unit		
A9	Group Housing <200m² Erf	Dwelling unit		
A10	Flats > 100m²/Unit	Dwelling unit		
A11	Flats < 100m²/Unit	Dwelling unit		
A12	Additional Dwelling/Unit (up to 100m²)	Dwelling unit		
A13	Rural / Undetermined / Agricultural	Dwelling unit		
A14	Rural Intensification / Agri-subdivisions	Dwelling unit		
ACCOMMODATION ESTABLISHMENTS				
B1	Hotel	Rooms		
		m^2 GLA		
B2	Accommodation Establishments	Rooms		
		m^2 GLA		
BUSINESS				
C1	General Business	m^2 GLA		
C2	Office	m^2 GLA		
C3	Retail/Shop	m^2 GLA		
INDUSTRIAL				
D1	Warehouse	m^2 GLA		
D2	Industrial	m^2 GLA		
INSTITUTIONAL/COMMUNITY				
E1	Early Childhood Development Centres / Home Child Care	Learner		
		m^2 GLA		
E2	Universities / Schools	Learner		
		m^2 GLA		
E3	Care / Accommodation *(Hospitals, Clinics, Old age home)*	Bed		
		m^2 GLA		
E4	Office/ Consulting rooms *(welfare offices, clinics, hospitals & env. facilities)*	m^2 GLA		
E5	Meeting Places (places of assembly, place of worship)	m^2 GLA		300
E6	Open Spaces / Public Open Spaces	m²		
Land uses not reflected on the calculator		Actual Demand	Click yellow button to enter demand	

Is the development located within Public Transport (PT2) zone? Please select

Calculation of bulk engineering services component of Development Charge

Service	Units	Additional Demand	Unit Cost	Amount	VAT	Total
Roads	trips/day	270.0000	R 8 468.48	R 2 286 490.16	R 342 973.52	R 2 629 463.68
Transport	pers.trips/peak period	393.8300	R 1 268.57	R 499 602.81	R 74 940.42	R 574 543.23
Stormwater	ha*C	4.7673	R 250 401.48	R 1 193 730.94	R 179 059.64	R 1 372 790.58
Sewerage	kl/day	114.0100	R 25 459.26	R 2 902 610.60	R 435 391.59	R 3 338 002.19
Water	kl/day	130.4000	R 3 122.96	R 407 233.45	R 61 085.02	R 468 318.47
Solid Waste	kg/day	690.5300	R 630.10	R 435 100.87	R 65 265.13	R 500 366.00
Total bulk engineering services component of Development Charge payable				**R 7 724 768.83**	**R 1 158 715.32**	**R 8 883 484.15**

City of Cape Town		Developer/Owner	
Calculated :		Received :	
Signature :		Signature:	
Date :		Date:	

NOTE : THIS CALCULATION IS BASED ON THE DEVELOPMENT INFORMATION PROVIDED AND UNIT COSTS APPLICABLE FOR THE FINANCIAL YEAR IN WHICH THE DEVELOPMENT APPLICATION IS MADE. UNIT COSTS ARE ESCALATED ANNUALLY ON 1 JULY WITH THE CPAF AND THE ACTUAL AMOUNT DUE WILL BE BASED ON THE UNIT COST APPLICABLE ON THE DATE PAYMENT BECOMES DUE.

Notes: