OUTLINE SCHEME REPORT

HELDERWYK EXTENSIONS – REM OF PORTION 62 of the farm WITPOORTJE 117-IR

1. **DEVELOPER**

PURPLE MOSS
P.O. BOX 227
BRUMA
2026

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TEL. (011) 615 7225
FAX. (011) 615 5924

CONSULTANTS

DE REUCK & ASSOCIATES
P.O. BOX 98
NORTHRIDING
2162

CONTACT: MR. R.D. DE REUCK
TEL. (011) 794 2299
FAX (011) 794 2288

2. **LOCATION**

The proposed development is situated on a portion of the Remainder of Portion 62 of the Farm Witpoortjie 117-IR on the eastern boundary the Van Dyk's slimes dam and Helderwyk Proper township. The future South Boundary Road forms the northern boundary of the proposed development, and the Barry Marias Road forms the western boundary. The existing railway line forms the southern boundary. Access to the development would be from the future intersection on Barry Marias Road which will provide access to the Helderwyk Extensions, and tie up with the future PWV 15, and ultimately to Heidelberg Road in the east.

3. **SCOPE OF THE DEVELOPMENT**

The total portion measures 570,43ha in extent, and the proposed Helderwyk Extensions comprises of an area measuring approximately 332ha in extent. The zoning of special residential (freehold stands) at a density of 28 stands per ha over 157ha equals 4396 erven, and general residential (sectional title and rental) at a density of 60 units per ha over 30ha equals 1800 units. The total development consists of a total potential of 6196 units. The scope of the works is as follows:

Roads class 4 urban local collectors	79 575m^2
Roads class 5 residential access	58 000m^2
Water reticulation: bulk and internal	25 400m
Sewer reticulation: link and internal	24 000m
Stormwater Management 6500m piped system	

4. TOWN PLANNING

Plan It Planning Solutions are responsible for the town planning and drawing up conditions of establishment, which are to be finalized. The contact person is Mr. Peter Botha on 011-849 7833.

5. GEOTECHNICAL INVESTIGATION

Partridge, Maud and Associates provided a revised geotechnical map in March 2009, of geotechnical investigations carried out in November 1974 (Report No. 5-8/74) and in June 1975 (Report No. 1-3/75), and from the profiles from the large diameter trial holes augered beneath the site and the results of the laboratory analyses on soil samples recovered from these trial holes in terms of their potential to generate differential movements as a result of potentially heaving, collapsing or compressible materials within the soil profile, were re-evaluated in terms of today's requirements that soil units be classified according to the 1995 Code. The site was classified as Zone C1/C2 and H1/H2 for NHBRC. From the report no reference is made to dolomite conditions or the risk of sinkhole formations, or the existence of underground caves or the likelihood of these conditions to occur. The ground conditions are suitable for township establishment.

The PWV 15 is located on the watershed centrally on the site running north to south, and the left hand portion drains to the northwest and west to possible wetlands, and the right hand portion drains to a natural water course to the east. The site has a slope to the northwest and to the southeast of 2 to 5%, and is covered by veld grasses. No defined watercourses were identified on the site.

A localized depression is noted on the northern and western boundary of the proposed development that would concentrate stormwater runoff, and is possible start of the wetlands.

6. EXISTING SERVICES

Existing services available to service the proposed township are as follows:

6.1 The Ekurhuleni Metro has to applied for a connection from the existing 2100mm diameter Rand Water line as a temporary supply to the development and an ultimate dedicated connection from the future reservoir to be constructed to the north of the proposed developments, as a permanents supply. A 400mm-diameter bulk watermain supply to the Development has been allowed for to service Helderwyk Extensions.

6.2 An existing 375 mm diameter outfall sewer reticulation is available in the road reserve of the South Boundary Road into Barry Marais Road, to the west of the development, to which the left hand portion of the development will drain. The right hand portion will drain to the existing 750mm diameter outfall sewer drain southwards along the watercourse. This system belongs to ERWAT and the total development drains to the Vlakplaats WWTW. It has been indicated that there is sufficient capacity in both systems to accommodate the development. This will however have to be confirmed by Council.

6.3 The existing Barry Marais Road is surfaced, which will provides access to the Helderwyk Extensions developments. Traffic Impact Assessment has been carried out by the Moyeni Group on behalf of Council and submitted to Council.

6.4 Stormwater generated by the proposed development will be piped and discharged into lowlying wetland area to the west, and to the existing watercourse to the east of the proposed Helderwyk Extensions development. This is an existing drainage system of the surrounding area.

7. DESIGN OF ENGINEERING SERVICES

The design of Civil Engineering Services, are based on the "Guidelines for Engineering Services and Amenities" (Red Book) and design norms prescribed by the Ekurhuleni Metropolitan Municipality Water and Road Departments. All specifications as laid down in the SABS 1200 standard specification for Civil Engineering construction. The standard of services allowed for are as follows:

7.1 WATER RETICULATION

- Water supply to the development will be provided by connecting to a future 400mm-diameter water connection from the Rand Water 2100mm diameter main at the Barry Marais Road intersection with the Development and extending this reticulation to supply the proposed Helderwyk Extensions development.
- The proposed link and internal water reticulation will consist of uPVC Class 12 pipe (Z-lock type) in 400mm, 200mm, 160mm and 110mm diameter pipes with designed concrete restraint blocks
- All fire hydrants will be positioned to meet the requirements of the Emergency Services and Ekurhuleni Water Department.
- Water supply will be metered at each individual stand, and bulk metered to Residential 3 stands.
- The estimated average daily peak demand of the water is in the order of 22 756,8kl/day respectively, with a peak factor of 4,0 and an average demand of 2300 litres/500m^2/day for sectional title and 1200litres/day per stand (263,4litres/sec).

7.2 SEWER RETICULATION

- The proposed sewer reticulation will consist of 200mm and 160mm diameter uPVC Class 34 or Maincor Class 400 sewer pipes.
- All manholes will be 1050mm diameter precast rings, with concrete covers and frames and have sealed joints.
- A maximum spacing of 80m between manholes will be designed for.
- House connections will be provide for as either long or short connections, 1,0m within the stand boundary and a maximum depth of 2,5m.
- The design flow for the development is as follows:

Maximum development potential	6196 units
Discharge per 500m^2/day	2000 litres/500m^2/day
Peak factor	2,3
Extraneous flow	15%
Peak wet weather design flow	12 579,6kl/day
	145,6 litres/sec

7.3 ROADS

All roads linking onto Barry Marais Road are considered as Class 4 local urban distributors being 2 lane single carriage way with dual carriage way at major intersections and subject to the approval of Gautrans. It is proposed to construct the main access roads as 7,4m wide roadway with the 2% cross fall and Fig 8 (mountable) kerbing on both sides of the roadway. The internal roads are considered as Class 5 local residential access roads, and only serves the proposed developments. It is proposed to construct these access roads as 6,0m wide roadway with the 2% cross fall and Fig 8 (mountable) kerbing on both sides of the roadway. All the access roads will be constructed to council Specification and Standards, and the following layers are to be constructed:

30mm Premix wearing course
150mm G2 imported crusher-run compacted to 88% solid density
150mm G5 stabilized subbase compacted to 95% Mod. AASHTO.
150mm insitu rip and recompact to 93% Mod. AASHTO.

7.4 STORMWATER

The total area of the development is 332,0 ha draining to both the southeastern water course and to the north and west wetlands areas. The internal discharge for each residential 3 stand would be collected in attenuation dams sized to attenuate both the 5 year and 25 year post developed run-off to the pre-developed run-off. The attenuation dams will be sized on an average size of $360m^3$ per hectare. The pre-developed and post-developed discharge for the various stand areas will be tabled on the final layout drawings. The minor storm will be calculated on a 1:5 year recurrence period, and the major storm would discharge to the existing water course. The anticipated discharge from the free hold residential stands will be collected on site in order to be used for watering of gardens and possible flushing of toilets, and the excess discharged into piped system varying from 450mm to 900mm diameter pipes. The remaining stands will discharge to the existing wetlands and area drainage system.

It is proposed that where roadways cross the wetlands, that these crossings be constructed as culvert sections of say 2,0x 2.0m sections in order to allow for the build up of stormwater discharge to flow freely through out the wetland area, and also allow for safe movement of animals. There are 3 proposed crossings which will be addressed as above, as the crossing widths vary from 10m to 40m, and would not suit bridge construction.

8. CONSTRUCTION COST ESTIMATE

Our estimate of the construction costs for the civil services on the above development is as follows:

Preliminary & General		R 15 500 000-00
Water reticulation	Internal	R 11 250 000-00
	Link	R 4 350 000-00
Sewer reticulation	Internal	R 13 250 000-00
	Link	R 2 700 000-00
Stormwater management:	Internal	R 22 750 000-00
	Culverts	R 5 000 000-00
Roads		R 65 000 000-00
Contingencies (10%)		R 14 000 000-00
SUB TOTAL		R153 800 000-00
VAT (14%)		R 21 532 000-00
TOTAL		R175 332 000-00

The proposed development consists of 4426 stands with a servicing cost of R39 614-10(Incl. VAT) per stand.

9. WASTE DISPOSAL MANAGEMENT PLAN

The Ekurhuleni Metroplitan Municipality would be responsible for the collection and frequent removal of domestic waste.

10. BULK CONTRIBUTION

Should bulk contributions be payable on the development, these are to be calculated by Council.

11. CONCLUSION

The contentious points to be addressed are:

- Approval of design norms as proposed in the report.
- The calculation of bulk contributions.
- The calculation of guarantees.
- All internal roads and stormwater management, water and sewer reticulation are to be handed over to the Local Authority and be maintained by them.
- It must be taken into account that the development of the 4426 stands would be over a 5 year period and subject to market demand, and therefore peak demand on water and sewage would only be in say 6 years from now.
- A SDP would be submitted for each sectional title stand (30) to be developed, and these internal services would be maintained by the Home Owners Association.

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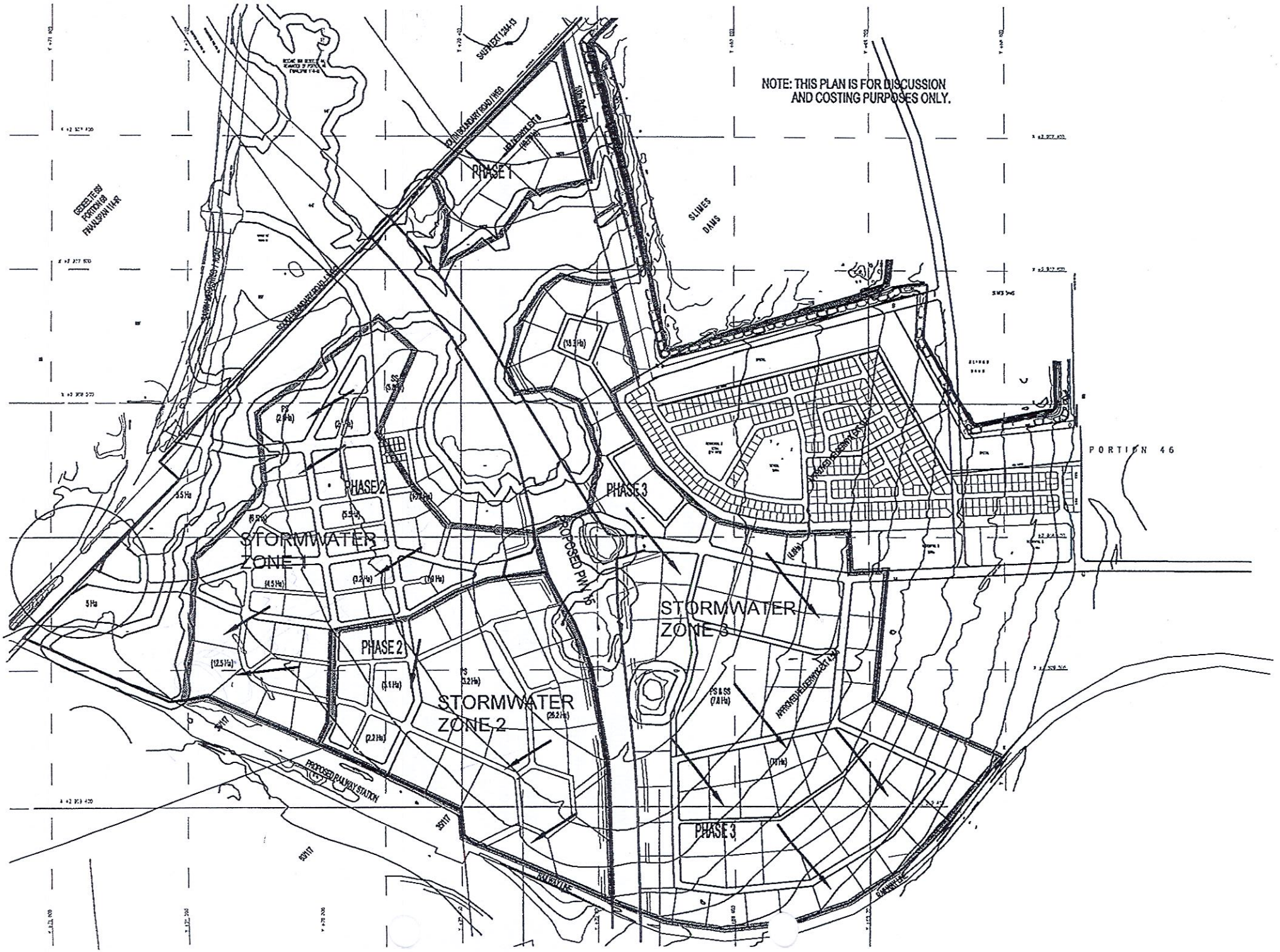
R.D. DE REUCK PrTech(Eng)


NOTE: THIS PLAN IS FOR DISCUSSION AND COSTING PURPOSES ONLY.
PHASE 1
PHASE 2
PHASE 3
PHASE 2
PHASE 3
STORMWATER ZONE 1
STORMWATER ZONE 2
STORMWATER ZONE 3
PROPOSED PWM 15
PROPOSED PARKWAY STATION
PROPOSED BOULEVARD (DR 1)
PROPOSED BOULEVARD (DR 2)
SOUTH BOUNDARY ROAD (HB3)
SOUTH BOUNDARY ROAD (HB2)
SOUTH BOUNDARY ROAD (HB1)
SLIMES DAMS
PORTION 46
PORTION 69
PARKWAY
PARKWAY


NOTE: THIS IS FOR DISCUSSION
AND COSTING PURPOSES ONLY.
proposed new
160 water line
PORTION 46
SLIMES
DAMS
PHASE 1
PHASE 2
PHASE 2
PHASE 3
PHASE 3
EXISTING
700mm RAND
WATER LINE
EXISTING
700mm RAND
WATER LINE
proposed new
400 water line
proposed new
400 water line
proposed new
400 water line
proposed new
400 water line
PROPOSED PWV 15
SS
(5.8Ha)
FS
(3.2 Ha)
FS & SS
(7.8 Ha)
(18.3 Ha)
(26.2 Ha)
(12.5 Ha)
(5.1 Ha)
(2.2 Ha)
(4.5 Ha)
(3.2 Ha)
(1.9 Ha)
(5.5 Ha)
(7.5 Ha)
PROPOSED RAILWAY STATION
RAILWAY LINE
RAILWAY LINE


NOTE: THIS PLAN IS FOR DISCUSSION AND COSTING PURPOSES ONLY.
SLIMES DAMS
PHASE 1
PHASE 2
PHASE 2
PHASE 3
PHASE 3
PROPOSED PWV 15
Existing 750Ø Outfall Sewer
TIWE OUTFAL SEWER
PORTION 46
PROPOSED 200Ø LINK SEWER
PROPOSED 200Ø LINK SEWER
PROPOSED 200Ø LINK SEWER
PROPOSED 200Ø LINK SEWER
EXISTING 343 Ø OUTFALL SEWER
EXISTING 343 Ø OUTFALL SEWER
PROPOSED RAILWAY STATION
RAILWAY LINE
SS (5.8Ha)
FS (2.8Ha)
(10.3 Ha)
(4.5 Ha)
(3.2 Ha)
(12.5 Ha)
(2.2 Ha)
(26.2 Ha)
FS & SS (7.8 Ha)
(7.8 Ha)
5 Ha
3.5 Ha

9750625

METER CONNECTION - ESTIMATED BREAK DOWN OF COSTS

DATE:	11-Aug-09
PROJECT :	FINAALSPAN
CUSTOMER NAME	Ekurhuleni Metropolitan Municipality
RW DISTRICT	Benoni
DISTANCE TO METER	3# Kms From Central Depot
CONNECTION SIZE (mm)	160 mm valve to Stilfontein - Rynfield
METER SIZE (mm)	100
METER TYPE	Meinecke
SCOPE OF WORK	Installation

CATEGORY	ITEM DESCRIPTION	SIZE	UNIT	TYP kPa	QTY	COST (ZAR)
SUPPLY AND DELIVERY OF MAYERIAL TO CENTRAL DEPOT						
METER (Cost not to Client)	Meinecke Flow meter	100	No.		1	-
	Electricity supply to meter		No"		1	-
	Road crossing		No		1	-
	Administration					-
VALVES	Standard Rondwater Dirt Box				20,000	
	with 25mm tool plug cock	100	No.		1	2,000
	Block joint	100	No	3500	1	2,000
	Bluko Valves	100	mm	3500	2	22,400
	Bluko Valve - Bypass	100	mm	3500	2	-
PIPES					8,600	
	Steel Pipe	0	mm	3500	0 (6m length)	-
	Steel Pipe	100	mm	3500	1 (6m length)	3,000
	45 Degree Bends (Optional)	100	No.	3500	0	-
	90 Degree Bends (Optional)	100	No.	3500	3	3,000
	90 Degree Bends (Bypasses)	100	No.	3500	0	-
	Semi-ellipsoidal dome	100	No.	3500	0	-
	Pipework Ancillaries		%		10% of pipework	600
Fabrication in workshop					10,200	10,200
Excavation, Laying and jointing of pipes and backfill & compact					28,126	
	Site Inspection					2,050
	Excavation					9,765
	Under pressure cut					-
	Install 100mm dia pipes					9,492
	Install 600mm dia pipes, valves & magflow meter					-
	Backfill & compact					8,849
SUB TOTAL (Magnetic flow meter excluded)					68,326	66,326
CIVIL WORK						
	4.1 Concrete Chambers Valve according to RW Std. Dwgs.		Connection size	0	60,000	-
	4.2 Chambers (Brick)		Sum	1		60,000
	SUB-TOTAL (Excl. VAT and 5% professional fees)				128,326	126,326

Consumer undertakes to design chambers and drawings (if non-standard), provide all materials and construct chambers
SUB-TOTAL (Excl. VAT and 10% professional fees) 66,326

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METER CONNECTION - SUMMARY ESTIMATE

PROJECT DESCRIPTION :	INSTALLATION OF A NEW 100mm CONNECTION AND 100m FINAALSPAN METER ON THE 2100MM MAPLETON - RYNFIELD S1 PIPELINE
CUSTOMER NAME :	EKURHULENI METROPOLITAN MUNICIPALITY
DATE :	11-Aug-08

	ITEM DESCRIPTION	COST (ZAR)	COST (ZAR) (VAT included)
1.	METER INSTALLATION	126,329	144,011
3.	PROFFESIONAL FEES (10% of Sub-total)	12,633	14,401
4.	SURVEYOR	-	-
6.	ADD 14% VAT (for items 1-4)	19,454	-
	TOTAL COST TO CUSTOMER	168,412	168,412

Prepared by : For Rand Water Planning Section 26/08/2008

Approved by : Chief Planning Engineer

Consumer undertakes to design chambers and drawings (if non-standard), Consumer provide all materials and construct chambers		
TOTAL COST TO CUSTOMER	94,958	106,252

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RAND WATER

HEAD OFFICE
522 Impala Road Glen Vista 2058
P O Box 1127 Johannesburg 2000 South Africa
Tel (011) 682 0603 (Direct Line) Fax (011) 682 0444/0555

Reference : 9/1/1-E37Vol2

Enquiries : Pieter Reyneke

Direct Line: 011 682 0603

Date: 20 August 2008

Attention: Mr Thabang Motla

Director Water Services
Ekurhuleni Metropolitan Municipality
P O Box 215
BOKSBURG
1460

Dear Sir

WATER SUPPLY TO EKURHULENI METROPOLITAN MUNICIPALITY: FINAALSPAN METER

Your Application for a water supply of 17 July 2008 refers.

Rand Water is prepared to make a new water supply to Ekurhuleni Metropolitan Municipality off the 2100 mm S1 Mapleton - Rynfield pipeline as shown on the attached map fragment. A 100 mm connection and 100 mm meter (Meinecke or equivalent) with a maximum allowable continuous flow rate of 100 kilolitres per hour can be installed off the above pipeline. The water supply will be in terms of the Water Services Act and the bulk water supply agreement with Ekurhuleni Metropolitan Municipality.

The cost of the connection, pipework and chambers is R 158 412,00 including 14% for value added tax (VAT). A summary and break down of costs are attached. Rand Water will allow your Municipality to appoint a contractor and to project manage / supervise and to supply all building materials and construction of a brick chamber complete with all appurtenances required for the 100 mm valves and 100 mm meter to Rand Water drawings and specification. The cost payable to Rand Water will then be reduced to R 108 252,00 including VAT.

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Work will proceed on receipt of acceptance of the above conditions and either receipt of the amount of R 158 412,00 (VAT included), or the amount of R 108 252,00 (VAT included) plus an undertaking from your Municipality to provide the project management / supervision and supply of all materials and construction of the brick chamber complete with all appurtenances. A Tax Invoice can be provided to your Municipality on receipt of the above. Please arrange for the Tax Invoice and banking details with Miss N Ngoma at tel 011 682 0885. Should the above amounts not be paid to Rand Water within 6 months of the date of this letter, the cost for the metering installation will be recalculated and adjusted to allow for price increases.

The proposed connection will be off the Mapleton system with estimated maximum pumping pressure 1745 metres above mean sea level (mMSL). The estimated elevation at the proposed supply point is 1605 mMSL and the estimated maximum pumping pressure equivalent to 14 Bar. Please allow 5 Bar in addition to the estimated maximum pumping pressure for surge or water hammer. The operating head at the proposed supply point are estimated to vary between 1685 – 1665 mMSL (equivalent to operating pressure that varies 6 - 8 Bar. It is recommended that the chamber is constructed after installation of the pipework, meter and valves to suit the actual dimensions.

Yours faithfully

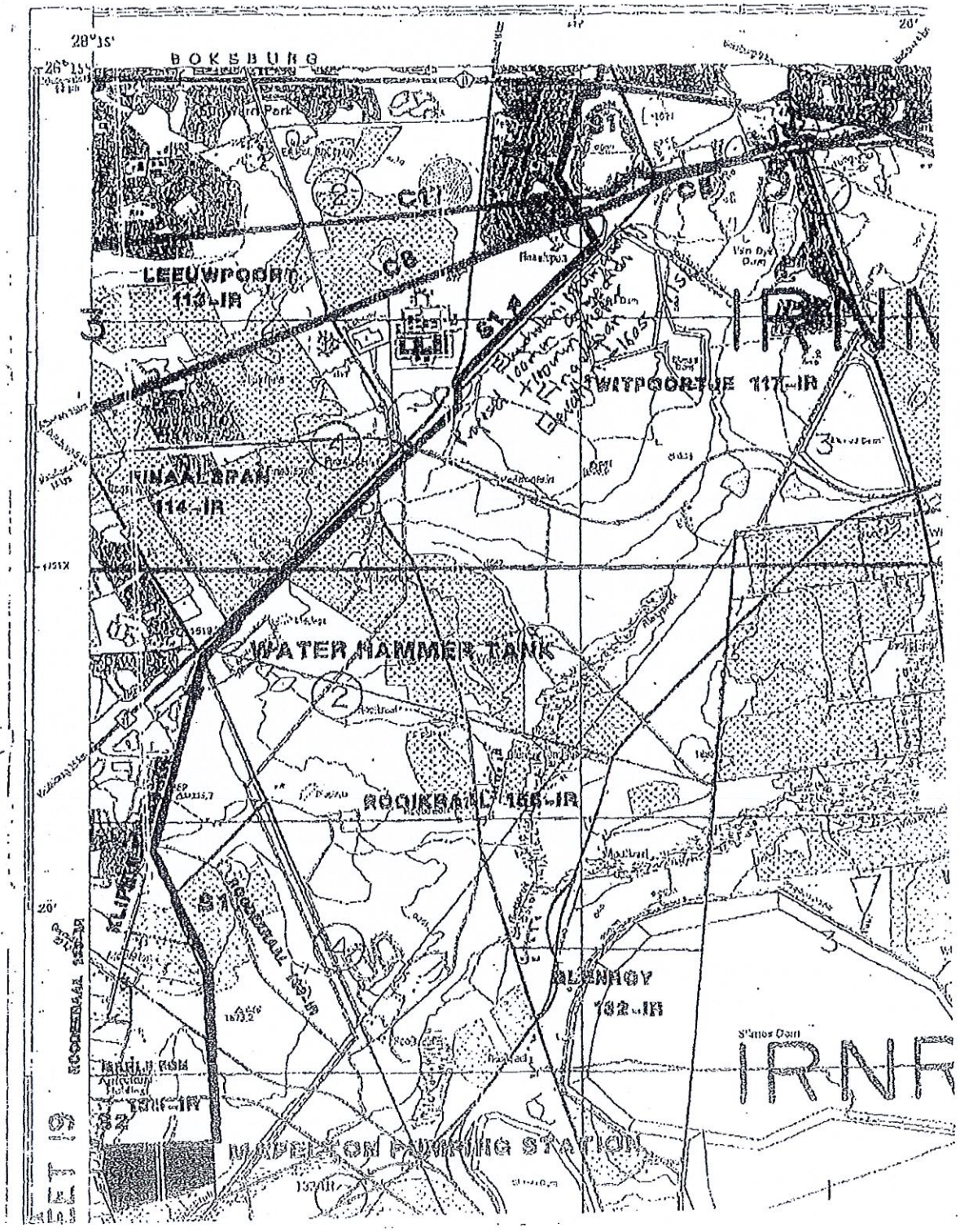
John Critchley

CHIEF PLANNING ENGINEER

Attached: Meter connection – Summary sheet
Meter connection - Estimated break down of costs
Map fragment

Copy to: Mr JJB Van Niekerk, BVN Consulting Engineers (Pty) Ltd,
Fax 011 975 0625

2628AD SPRINGS



Appendix E
Traffic Impact Study