



SUPPLY CHAIN MANAGEMENT

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As per e-mail:

Dear Sir /Madam

NOTICE TO BIDDERS

TENDER B/SM 25/22: THE CONSTRUCTION OF POLKADRAAI WATER SUPPLY SCHEME

This "Note to Bidders" is in addition to the Tender Documents in the Schedule of Documents. Any tender submitted will be deemed to be in accordance with the following instructions.

NB3.1 QUESTIONS

Some questions were raised during the past weeks of tendering and the relevant questions and answers are noted below and items changed are amended under Section NB3.2 ADDENDUM.

- Q1. *The tenderer requested where the single line drawings for the SDB Control Room and the SDB Security Kiosk could be obtained.*
- A1. The SDB Control Room is a sub-DB from the MCC at Skoonheid Pump Station. Items Y1.2 and Y1.3 will be omitted from the Bill of Quantities. Refer to Addendum for details. (Page 244)
- Q2. *The tenderers requested clarity on the amount of VSD drives, specification PSRE 7.1.1.1 makes reference to 3 VSD Drives and the drawings only indicate 2 VSD Drives.*
- A2. 2 VSD Drives are the correct amount and the specification will be amended as part of the Addendum. (Page 340)
- Q3. *The tenderer queried the correctness of the description of Items Y13.2 to Y13.4 for PVC Coated Medium Duty Cable Tray.*
- A3. Items 13.2 to Y13.4 will be revised to Hot dipped galvanized PVC coated cable tray. (Page 249)
- Q4. *The tenderer queried where they can find the detail of the lockable manhole cover as mentioned in Item K9.1 and what size the padlock is required.*
- A4. The detail of the lockable manhole cover is indicated on drawing 33803/03C-143-07. No padlock required.
- Q5. *The tenderer queried the electrical signage as per Items Y21 and Item Z14 and the relevant drawings.*
- A5. The drawings are correct according to the items. No signage drawing is required for the Skilpadvlei Reservoir.
- Q6. *The tenderer queried the allocation of Items I6.*
- A6. The Items under I6 refers to drawings 33803/03C-143-04 to 33803/03C-143-06.
- Q7. *The tenderer queried the items and breakdowns within Schedule J: Horizontal Directional Drilling and the method for the removal of the bentonite slurry.*
- A7. The class required for all pipe to be added to the pipe items in the schedule and the removal of bentonite allowances will be updated within the addendum.



- Q8. *The tenderer queried whether Schedule 25: Price basis for imported resources need to include items declared in the Local Content Forms?*
- A8. The local content should be local, thus not imported. Only imported items to be listed within this schedule.
- Q9. *The tenderer indicated typing errors to items in the bill of quantities.*
- A9. These Items will be rectified within the addendum. Items where typing errors occurred are G5.1.1, G5.2.12, H9.3.3, H9.3.4 and H9.4.3.
- Q10. *The tenderer queried the detail of the standard detail drawing SW4 and SW3 with regards to the material of the tee-piece.*
- A10. The tee-piece for the air valve to be a 50mm diameter flanged tee-piece butt welded together in the pipe. The payment item in the Bill of quantities will be revised in the addendum.
- Q11. *The tenderer queried the dimensions for the scour valve as it is not indicated on the standard drawing (SW3).*
- A11. The tee-piece for the scour valve to be a 75mm diameter flanged tee-piece butt welded together in the pipe. The leader will be 2 meters and the scour pipe will be 5 meters. This will be revised in the billing item within the addendum.
- Q12. *The tenderer requested that standard drawings SW11 and SW12 be provided as it is currently cut off.*
- A12. The correct drawings to be attached in Annexure B.
- Q13. *The tenderer queried the specification for the cover and frame for Item Q5.1.*
- A13. The cover and frame that needs to be priced with this item is a SABS EN124 D400 heavy duty hinged ductile iron cover and frame. This will be updated as part of the addendum.
- Q14. *The tenderer queried how item A5.2.1.3 will be utilised. The measuring unit is sum and the amount is 5.*
- A14. These items are for an additional 2 flagmen required for the specific work areas as indicated on the traffic accommodation drawings. The set-up of the traffic accommodation per work area will be the same; however, some require more flagmen.
- Q15. *The tenderer queried the specification of the concrete. The project specific specification PSG5.5.1.7 is different to that of the drawing.*
- A15. The specification as given on the drawing are correct, therefore specification PSG5.5.1.7 will be revised in the addendum.
- Q16. *The tenderer requested further information with regards to the water turbine for pricing purposes.*
- A16. The relevant information required are as follows:
- | | |
|-------------------------------|---|
| Available head: | 36m |
| Water flow rate: | 116l/s |
| Pipe diameter: | 350mm diameter respectively |
| Pipe length: | 1.0m respectively (to be adjusted for suitable turbine) |
| Transmission wiring distance: | 3m |
| Required voltage: | 48VDC to be converted to 230VAC |



- Q17. *The tenderer requested that the consultant indicated suppliers that can be used for the wind turbine, solar pv and water turbine.*
- A17. A typical supplier for a water turbine is Water Spout and a typical supplier for wind turbine and solar is Wind & Solar. Brochures attached in Annexure C.

NB3.2 ADDENDUM

The following detailed instructions for amendments to the Tender documents are forwarded for your information and necessary actions in terms of Clause C3.2 of the Standard Conditions of Tender and in accordance with Clause C1.4 in Part T1.2: Tender Data.

NB3.2.1 PART C2.2: BILLS OF QUANTITIES

- a) Please replace page 179, 180 and 190 with the revised pages 179(R), 180(R) and 190(R) with the correction to Items G5.1.1, G5.2.12, H9.3.3, H9.3.4 and H9.4.3 due to typing errors.
- b) Please replace page 188 and 189 with the revised pages 188(R) and 189(R) with the correction to Items H7.1.10, H7.1.13 and H9.3.
- c) Please replace page 199 with the revised page 199(R) with revision to Items J4 to J8.
- d) Please replace page 203 with the revised page 203(R) with the correction to Item K9.1, referring to specific drawing.
- e) Please replace page 244 with the revised page 244(R) omitting Items Y1.2 and Y1.3 and correction to Item Y1.1.
- f) Please replace page 249 with the revised page 249(R) with the revised description of Items Y13.2, Y13.3 and Y13.4.
- g) Please replace page 254 with the revised page 254(R) with the correction to Item Z1.1.
- h) Please replace page 256 with the revised page 256(R) with the revision to Item Z10.3.

NB3.2.2 PART C3.4: CONSTRUCTION

- a) Please replace page 300 with the revised page 300(R) with the correction to Specification Item PSG5.5.1.7.
- b) Please replace page 340 with the revised page 340(R) with the correction to Specification Item PSRE-7.1.1.

**DIRECTOR
CORPORATE SERVICES**

DATE: 31/2/22.



Note: Confirmation to the addendum

CONFIRMATION

I (Name) hereby declare on behalf of
..... (Company's name),
to agree/not agree (please encircle) to the above changes in the bidding documentation.

Address:
.....
.....

Tel no.:
Fax no.:

Signature of bidder:

Date:
.....



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ANNEXURE A

REVISED PAGES
(AS PER ADDENDUM)

THE CONSTRUCTION OF POLKADRAAI WATER SUPPLY SCHEME
BID NO.: B/SM 25/22
BILL OF QUANTITIES
SECTION 1 : CIVIL

SCHEDULE G: MEDIUM PRESSURE PIPELINE - SKOONHEID						
ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
G2.2.2	PSDB 8.5	Disposal of Surplus or unsuitable materials from trench excavations from site to an approved spoil site identified by the Contractor, including haulage.	m³	900		
G3	SANS 1200LB	BEDDING (PIPES)				
	8.2.1	Provision of bedding material compacted to 93% of MOD AASHTO density (100% for sand) with material from:				
G3.1	8.2.2.3	Commercial sources				
G3.1.1		a) Selected granular material	m³	500		
G3.1.2		b) Selected fill material	m³	200		
G3.2	8.2.2.1	Other excavations on site				
G3.2.1		a) Selected granular material	m³	110		
G3.2.2		b) Selected fill material	m³	90		
G4	SANS 1200 L	MEDIUM-PRESSURE PIPELINES				
G4.1	PSL 8.2.1	Supply, lay and bed class PE 100 PN12,5 HDPE water pipes on bedding for flexible pipes, test, flush and disinfect the following pipes:				
G4.1.1		25 mm dia	m	40		
G4.1.2		40 mm dia	m	3		
G4.1.3		250 mm dia	m	330		
G4.1.4		315 mm dia	m	440		
G4.1.5		400 mm dia	m	620		
G5		SPECIALS AND FITTINGS: WATER MAIN				
	8.2.2	Supply, lay, and bed for flexible pipes, joint, including cut pipes to lengths where required, test, flush and disinfect with necessary couplings				
G5.1		TEES				
		Buttwelded HDPE T-pieces				
G5.1.1		25 x 25 x 40 mm dia	No	1		
G5.2		BENDS				
		Buttweld HDPE Bends				
G5.2.1		200 mm dia 45 deg	No	2		
G5.2.2		250 mm dia 11,25 deg	No	1		
Total Carried Forward						

SECTION 1 : CIVIL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
G5.2.3		250 mm dia 22,5 deg	No	1		
G5.2.4		250 mm dia 45 deg	No	3		
G5.2.5		315 mm dia 22,5 deg	No	1		
G5.2.6		315 mm dia 45 deg	No	4		
G5.2.7		315 mm dia 90 deg	No	4		
G5.2.8		400 mm dia 11,25 deg	No	1		
G5.2.9		400 mm dia 22,5 deg	No	1		
G5.2.10		400 mm dia 45 deg	No	4		
G5.2.11		400 mm dia 90 deg	No	4		
G5.2.12		450 mm dia 90 deg	No	2		
G5.3		FLANGED END				
		Supply and place flange adaptors, including stainless steel backing rings, bolts and nuts wrapped with denzo tape				
G5.3.1		350 mm dia	No	1		
G5.3.2		400 mm dia	No	1		
G5.3.2		450 mm dia	No	1		
G6		SPECIALS AND FITTINGS: CHAMBERS				
	8.2.5	Supply, deliver and install the following stainless steel pipework and specials into chambers (All items to be Class 16)				
G6.1		Item 1: 300 mm diameter SS316, flanged pipe with 30 mm puddle flange (L=1000 mm, puddle flange at 500 mm)	No	3		
G6.2		Item 2: 300 mm diameter SS304, flanged Tee-piece with 150 mm diameter flanged branch	No	2		
G6.3		Item 4: 300 mm diameter SS304 flanged adapter and Viking Johnson coupling combination (L=395 mm)	No	4		
G6.4		Item 6: 150 mm diameter 90 degree bend	No	2		
G6.5		Item 9: 150 mm diameter SS304 flanged adapter and Viking Johnson coupling combination (L=1183 mm)	No	1		
G6.6		Item 10: 150 mm diameter SS304 flanged pipe (L=1183 mm)	No	1		
G6.7		Item 11: 300 mm diameter SS316 pipe, one end flanged with 30 mm flange (L=1000 mm)	No	3		
Total Carried Forward						

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THE CONSTRUCTION OF POLKADRAA WATER SUPPLY SCHEME

BID NO.: B/SM 25/22

BILL OF QUANTITIES

SECTION 1 : CIVIL

SCHEDULE H: MEDIUM PRESSURE PIPELINE - POLKADRAA ROAD

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
H5.3.3		125 mm dia	No	2		
H5.3.4		355 mm dia	No	3		
H5.3.5		400 mm dia	No	2		
H6	8.2.5	SPECIALS AND FITTINGS: CHAMBERS				
		Supply, deliver and install the following stainless steel pipework and specials into chambers				
H6.1		Item 1: 350 mm diameter SS316, flanged pipe with 30 mm puddle flange (L=1000 mm, puddle flange at 500mm)	No	3		
H6.2		Item 2: 350 mm diameter SS304, flange adaptor and Viking Johnson coupling combination	No	3		
H6.3		Item 4: 350 mm diameter SS304 flanged Tee-piece with 350 mm diameter flanged branch	No	1		
H7		VALVES				
H7.1	PSL 8.2.3	Supply, in valve box and install on concrete support, joint, include cut pipes where necessary and test complete with (All Class 16 except where indicated):				
		RSV gate valves (AVK or similar approved)				
H7.1.1		50 mm dia	No	1		
H7.1.2		110 mm dia	No	1		
H7.1.3		125 mm dia	No	2		
H7.1.4		355 mm dia	No	4		
H7.1.5		400 mm dia	No	6		
H7.1.6		450 mm dia Class 20	No	2		
H7.1.7		Chamber Item 3: 350 mm diameter SS304 flanged gate valve	No	3		
H7.1.8		Chamber Item 5: 350 mm diameter SS304 flanged pressure reducing control valve	No	1		
H7.1.9		Extra over items H7.1.1 - H7.1.7 for valve spindle extensions, including brackets and fastening to wall.	No	16		
H7.1.10		300 mm diameter (ND) flanged pressure reducing valve	No	1		
		50 mm Air valves complete with 50 mm flanged hydrant T-pieces butt welded, distance piece and 50 mm dia butterfly valve with lever on flanged HDPE pipes on:				
H7.1.11		355 mm dia PE100 PN12,5	No	1		
Total Carried Forward						

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THE CONSTRUCTION OF POLKADRAAI WATER SUPPLY SCHEME

BID NO.: B/SM 25/22

BILL OF QUANTITIES

SECTION 1 : CIVIL

SCHEDULE H: MEDIUM PRESSURE PIPELINE - POLKADRAAIROAD

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
H7.1.12		400 mm dia PE100 PN12,5	No	3		
H7.1.13		75 mm Scour valves complete to dwg no SW3 with leader pipe of 2 m and scour pipe of 5 m on flanged HDPE pipes on:				
H7.1.13.1		355 mm dia PE100 PN12.5	No	0		
H7.1.13.2		400 mm dia PE100 PN12.5	No	3		
H7.1.13.3		450 mm dia PE100 PN20	No	1		
		Fire hydrants complete with T-pieces and extensions on HDPE pipes on:				
H7.1.14		110 mm dia	No	1		
H7.1.15		200 mm dia	No	1		
H7.1.16		355 mm dia	No	2		
H7.1.17		400 mm dia	No	1		
H8		ANCILLARIES				
H8.1	PS L 8.3	Anchor/Thrust blocks and pedestals	m ³	10		
H8.2		Markers for valves and firehydrants	No	25		
H8.3	SANS LF 8.2.8	Marker for water main along Provincial Road according to dwg WCS/22/4/C2 including all aluminium plates & screws	No	65		
H9	PSL 8.6	VALVE CHAMBERS AND MANHOLES				
H9.1		Isolating valve chambers according to drawing no SW1 on:				
H9.1.1		50 mm main up to 1,5 m depth	No	1		
H9.1.2		110 mm main up to 1,5 m depth	No	1		
H9.1.3		125 mm main up to 1,5 m depth	No	2		
H9.1.4		355 mm main up to 1,5 m depth	No	4		
H9.1.5		400 mm main up to 1,5 m depth	No	6		
H9.1.6		450 mm main up to 1,5 m depth	No	2		
H9.2		Air valve chambers complete to dwg no SW4 for depth up to 1,5m				
H9.2.1		355 mm dia	No	1		
H9.2.2		400 mm dia	No	3		
H9.3		Scour valve chamber complete to dwg no. SW3 for depth up to 1.5 m				
H9.3.1		355 mm dia	No	1		
Total Carried Forward						

THE CONSTRUCTION OF POLKADRAAI WATER SUPPLY SCHEME

BID NO.: B/SM 25/22

BILL OF QUANTITIES

SECTION 1 : CIVIL

SCHEDULE H: MEDIUM PRESSURE PIPELINE - POLKADRAAI ROAD

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
H9.3.2		400 mm dia	No	1		
H9.3.3		450 mm dia	No	2		
H9.3.4		400 mm dia	No	2		
H9.4		Fire hydrant chambers complete to dwg no SW2 for depths up to 1,5 m				
H9.4.1		110 mm dia	No	1		
H9.4.2		200 mm dia	No	1		
H9.4.3		355 mm dia	No	2		
H10	SANS LF 8.2.4	WATER METERS				
H10.1		Supply, deliver and install the Pulse water meter complete to dwg no SW11 for:				
H10.1.1		40 mm dia	No	1		
H10.1.2		80 mm dia	No	1		
H10.1.3		100 mm dia	No	2		
H10.1.4		300 mm dia	No	1		
H11	SANS LF 8.2.1	WATER CONNECTIONS				
H11.1		Remove existing water connection from existing 110 mm dia uPVC water main for:				
H11.1.1		25 mm dia	No	2		
H11.1.2		32 mm dia	No	2		
H11.1.3		40 mm dia	No	2		
H11.1.4		50 mm dia	No	1		
H11.1.5		80 mm dia	No	2		
H11.2		Remove existing water connection from existing 90 mm dia uPVC water main for:				
H11.2.1		25 mm dia	No	4		
H11.2.2		32 mm dia	No	7		
H11.2.3		40 mm dia	No	4		
H11.2.4		50 mm dia	No	2		
H11.3		Remove existing water connection from existing 150 mm dia asbestos cement water main for:				
H11.3.1		25 mm dia	No	1		
Total Carried Forward						

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THE CONSTRUCTION OF POLKADRAAI WATER SUPPLY SCHEME

BID NO.: B/SM 25/22

BILL OF QUANTITIES

SECTION 1 : CIVIL

SCHEDULE J: HORIZONTAL DIRECTIONAL DRILLING

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
J		HORIZONTAL DIRECTIONAL DRILLING				
J1		Expose existing services within 4mx4m area	m³	100		
J2		Conventional shoring for launching pits	m	50		
J3		2mx2mx2m deep launching and receiving pits	No	8		
J4		Directional drilling of 710 mm diameter HDPE PIPE PE100 PN6, including bentonite removal.	m	200		
J5		Supply and install water main in drilled pipe				
J5.1		315mm diameter HDPE PIPE PE100 PN12,5	m	50		
J5.2		400mm diameter HDPE PIPE PE100 PN12,5	m	100		
J5.3		355mm diameter HDPE PIPE PE100 PN12,5	m	50		
J6		Extra over item J4 for the V-bins or approved lined holding pond to be located at the entry and exit pits	No	8		
J7		Extra over item J6 for a vacuum truck to remove the bentonite slurry from the or approved lined holding pond V-bins	Sum	1		
J8		Disposal of slurry bentonite at an approved legal dump site	Sum	1		
Total Carried Forward To Summary						

THE CONSTRUCTION OF POLKADRAAI WATER SUPPLY SCHEME

BID NO.: B/SM 25/22

BILL OF QUANTITIES

SECTION 1 : CIVIL

SCHEDULE K: STRUCTURES - SKOONHEID

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
K7		WATERTIGHTNESS TESTS				
		(Subclause 5.5.11)				
K7.1		Reservoir	Sum	1		
K8	SABS 1200 H	STRUCTURAL STEELWORK				
		Structural Steel				
	8.3.1	Supply, shop drawings, fabrication, transportation and erection of steelwork including plates, packs, nuts, bolts etc. to SABS 1431 Grade 200W (Nuts and bolts not measured but to be included in the steel rate) for:				
K8.1		Fibre tech 50mm mentis grid over scour and outlet.	m²	11		
	8.3.6	Holding down bolts				
K8.2		Supply and deliver Hilti HVA or similar approved chemical anchors with HAS ROD	No	40		
K8.3		5.5m Stainless steel catladder with 2.5 cage into reservoir as per detail	No	2		
K9		BUILDERS WORKS				
K9.1		Reservoir hot-dipped galvanized lockable hinged purpose-made mild-steel framed inspection manhole cover as shown on drawing 33803.03C-143-07	No	2		
K9.2		Supply and place 19mm crushed stone in 100m layer on roof slab	m³	80		
K9.3		2 layers of 375 micron DPM (under reservoir)	m²	900		
K9.4		Kaytech Flo-drain (or similar approved) at 1.7m above 0.3x0.3m gravel bed	m²	210		
Total Carried Forward To Summary						

THE CONSTRUCTION OF POLKADRAAI WATER SUPPLY SCHEME

BID NO.: B/SM 25/22

BILL OF QUANTITIES

SECTION 2 : MECHANICAL & ELECTRICAL

SCHEDULE Y: SKOONHEID - ELECTRICAL EQUIPMENT

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
Y13.1		300 mm wide heavy duty cable ladder				
Y13.1.1		Supply	m	32		
Y13.1.2		Install	m	32		
Y13.2		300 mm wide hot dipped galvanised PVC coated cable tray				
Y13.2.1		Supply	m	60		
Y13.2.2		Install	m	60		
Y13.3		200 mm wide hot dipped galvanised PVC coated cable tray				
Y13.3.1		Supply	m	60		
Y13.3.2		Install	m	60		
Y13.4		150 mm wide hot dipped galvanised PVC coated cable tray				
Y13.4.1		Supply	m	60		
Y13.4.2		Install	m	60		
Y13.5		127mm x 76mm (OL9000/P9000) wiring ducts with covers				
Y13.5.1		Supply	m	40		
Y13.5.2		Install	m	40		
Y14		BULK POWER SUPPLY				
Y14.1	PSE 7.7	GENERATOR				
		Supply and install 100 kVA Prime Rated diesel generator including Deep Sea 7310 controller, diesel engine, alternator, main circuit breaker inside cabinet and all accessories. The generator set shall include a sound proof canopy which shall comply with SANS 140, SANS 717 Specification and all local municipal by-laws. The plinth tank shall be 1000 litres tank and shall be included as part of the set.				
Y14.1.1		Supply	Item	1		
Y14.1.2		Install	Item	1		
Y14.1.3		Commission	Item	1		
Y14.1.4		Earthing of generator set	Item	1		
Y14.1.5		Change-over switch with 2 x 150 ATP rated circuit breakers in side dedicated plinth mounted AMF panel.	Item	1		
Total Carried Forward						

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THE CONSTRUCTION OF POLKADRAAI WATER SUPPLY SCHEME

BID NO.: B/SM 25/22

BILL OF QUANTITIES

SECTION 2 : MECHANICAL & ELECTRICAL

SCHEDULE Z: SKILPADVLEI - ELECTRICAL EQUIPMENT

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Z1	PSRE-5	DISTRIBUTION BOARDS Supply and installation of the distribution boards, complete with frame architecture, panels, 30% spare capacity, internal busbars, wiring protection and switching equipment as per line diagram drawings. Equipment type to be Schneider, ABB, Hager, Eaton or better approved, all DIN rail mounted, refer to drawing 33803.03E-312-01 Rev T0				
Z1.1		SDB - Reservoir				
Z1.1.1		Supply	No	1		
Z1.1.2		Install	No	1		
Z1.1.3		Test and Commission	No	1		
Z2	PSRE-7	CABLES, WIRING AND EARTHWIRE Note: For ordering of cables, measurement shall NOT be taken from this bill. Actual cable lengths shall be measured on site for ordering and installation purposes.				
Z2.1		LV cable markers with information labels				
Z2.1.1		Supply	No	4		
Z2.1.2		Install	No	4		
Z2.2		Cable warning tape				
Z2.2.1		Supply	m	30		
Z2.2.2		Install	m	30		
Z3		CABLES FOR POWER DISTRIBUTION				
Z3.1		Supply and install unarmoured PVC sheathed SWA LV cables to various power supply points				
Z3.1.1		6mm ² x 3 core CU cable	m	25		
Z3.1.2		4mm ² x 3 core CU cable	m	25		
Z3.1.3		2,5mm ² x 3 core CU cable	m	36		
Z4		WIRING				
Z4.1		PVC insulated conductors installed in conduits or wire trunking. Earth conductors shall be green PVC insulated (including off-cuts and waste)				
Z4.1.1		6mm ²	m	40		
Z4.1.2		4mm ²	m	60		
Z4.1.3		2,5mm ²	m	90		
Z4.1.4		1,5mm ²	m	120		
Total Carried Forward						

THE CONSTRUCTION OF POLKADRAAI WATER SUPPLY SCHEME

BID NO.: B/SM 25/22

BILL OF QUANTITIES

SECTION 2 : MECHANICAL & ELECTRICAL

SCHEDULE Z: SKILPADVLEI - ELECTRICAL EQUIPMENT

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
Z8	PSRE-11.5	SWITCH SOCKET OUTLETS				
		Supply and installation of switched socket outlets complete with cover plates connected to wiring and fitted in box. Switchgear to be Crabtree, CBI or better approved.				
Z8.1		Double 16A 3-pin switched weatherproof socket outlets installed in 4 x 4 box.				
Z8.1.1		Supply	No	4		
Z8.1.2		Install	No	4		
Z9	PSRE-10	CABLE TRAYS & LADDERS				
		Supply and install cable ladder complete with all accessories and fixtures				
Z9.1		150mm wide PVC coated medium duty cable tray				
Z9.1.1		Supply	m	12		
Z9.1.2		Install	m	12		
Z10		POWER GENERATING SYSTEMS				
		Supply and install the following power generating equipment and components to operate as a complete system				
Z10.1	PSRE-14	Wind Turbine, rated 1,2kW output, complete with AC/DC converter and fixing equipment. DC output to be 48V DC				
Z10.1.1		Supply	No	1		
Z10.1.2		Install	No	1		
Z10.1.3		Test and Commissioning	Sum	1		
Z10.2	PSRE-15	Solar PV installation, consisting of 6 x 405kW Polycrystalline solar panels, DC/DC inverter including connections and fixtures. DC output to be 48V DC				
Z10.2.1		Supply	No	1		
Z10.2.2		Install	No	1		
Z10.2.3		Test and Commissioning	Sum	1		
Z10.3	PSRE-16	1kW Hydro electric generator connected in the necessary pipe work and isolating valves. Installation to include the AC/DC converter and connections to complete the installation. DC output to be 48V DC				
Total Carried Forward						

256 (R)

PSRE-6 CONTROL PHILOSOPHY

Pumps will be level operated, and the first pump (duty pump) will start at a designated high water level in the 3Mh Reservoir, a second pump will start at a lower set level to allow the sumps to be emptied.

Stops and starts across all two pumps will be alternated after every pumping event to ensure a even distribution of work load across all three pump sets.

The pumps will stop in auto if one of the following conditions occur.

- Low level in sump
- Should a no-flow situation arise
- High reading of flow meter (pipe burst conditions)
- Full level signal from the Reservoir

A high level and low level float switch will be installed to stop or start the pumps should any of the ultrasonic sensors malfunction.

PSRE-7 EQUIPMENT

PSRE-7.1 PUMP STATION – MOTOR CONTROL CENTRES

PSRE-7.1.1 Pump Station

This MCC shall consist of 2 x 576mmW x 1800mmH x 600mmD and 2 x 770mmW x 1800mmH x 600mmD floor standing cabinets with doors, IP54 rated.

The first 576mm panel will accommodate the incoming main switch. Whilst 2 x 770mm panels will accommodate the 2 VSD drives. Each VSD cubicle shall be equipped with an extraction fan at the rear door top side of the MCC and a ventilation grid at the bottom of the rear door. All circuit breakers supplying the VSD's shall be rotary type and lockable with a padlock in front of the MCC. One 576mm panel will be reserved for control equipment and one for the PLC with 15" HMI and UPS. Controls for the Raking Screens, Washer Compacter and Conveyor will also be housed in the Main MCC. A separate cubicle will be provided for the Skip Bogey in the Screen Room. Circuit breakers and earth leakage for lights and socket outlets to be mounted in separate dedicated sub distribution board. Positioning of panels in the pump stations will be finalised in consultation with the Engineer.

The following minimum control and operating information will be displayed.

- a) Sump level
- b) Flow meter displayer
- c) Delivery pipe pressure
- d) Pump stations (Run, Stop, Trip)
- e) Pump & Meter Efficiency
- f) Generator Status

PSRE-7.1.2 MCC – CONSTRUCTION

This unit shall be floor standing in its own weatherproof cubicle all DB/MCC boards shall be IP54 rated. Material of constructions shall be 3RC12 steel painted with an epoxy paint. The unit shall be placed in such a position that the cables from control room to the motor can enter the cubicle at the bottom. This cubicle shall be complete and shall be fully operational as a stand-alone unit.

The MCC shall include the terminal strips for the relaying of the following signals by means of telemetry to the SCADA system:

- Delivery pressure.
- Pump running indicator and trip alarm.
- Flow measurement indicator.
- Motor RPM's from VSD.
- Sump level.
- The emergency switches / E-Stops shall be pull-type switches.
- Level sensors in the wet wells for level control.



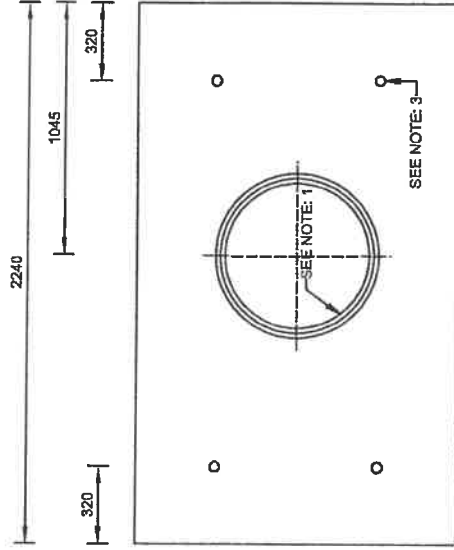
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ANNEXURE B

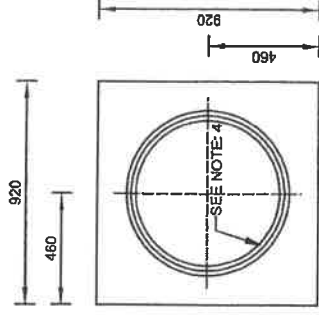
REVISED STANDARD DETAIL DRAWINGS

NOTES

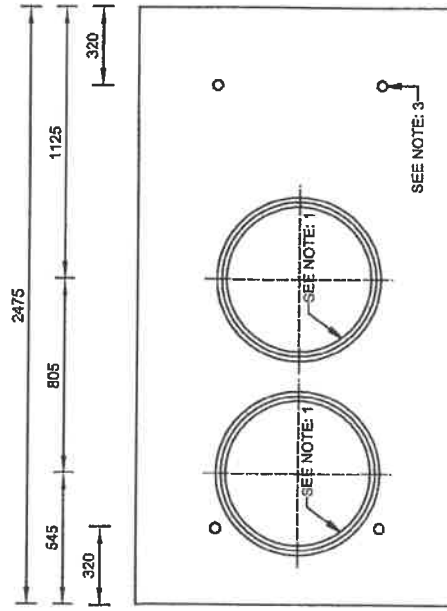
- NOTE 1: DUCTILE IRON COVER FRAMES TO BE PLACED ABOVE WATER METER & STRAINER
- NOTE 2: CUT & BEND MESH TO SUIT COVER OPENING & SUMP
- NOTE 3: PROVIDE 4 NO. 40mmØ LIFTING HOLE IN ROOF SLAB (PLUGGED WITH BITUMEN AFTER ROOF SLAB IS IN PLACE TO PREVENT WATER SEEPAGE)
- NOTE 4: HINGED DUCTILE IRON : SAINT GOBAIN SECUREX Z - 600 D (SANS 50124 CLASS D400) OR SIMILAR APPROVED



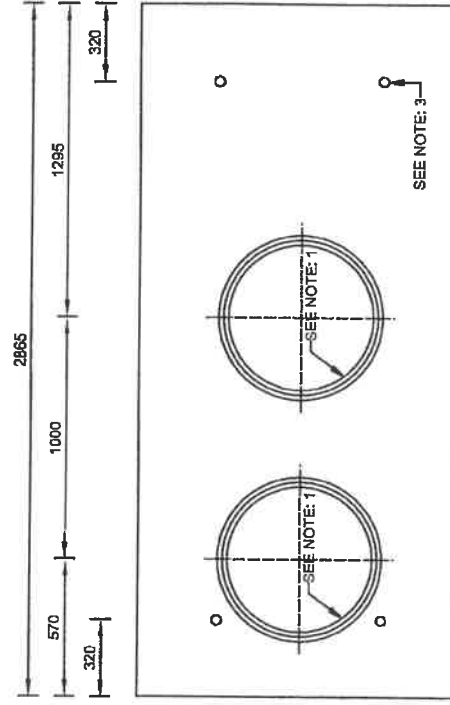
FOR 80mmØ METER



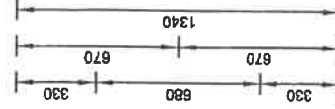
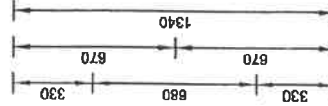
FOR CONSUMER VALVE CHAMBER



FOR 100mmØ METER



FOR 150mmØ METER



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STANDARD DETAIL DRAWING

Scale N.T.S.

Paper Size A4

Drawing No.

SW12

TYPICAL BULK WATER METER CHAMBER (2 OF 2)

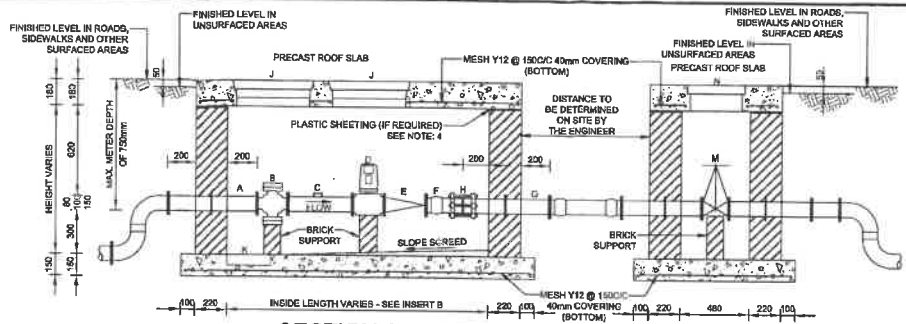
PARTS LIST

- ITEM A: PUDDLE PIECE, FLANGED T16
 ITEM B: STRAINER, FLANGED T16 (SENSUS)
 ITEM C: SPOOL PIECE, FLANGED T16 (BOTH SIDES) WITH PRESSURE NIPPLE & 25mmØ BALL VALVE
 ITEM D: COMBINATION WATER METER, FLANGED T16 (SENSUS) (SENSUS, METWIN = 80 & 100 mm) (SENSUS, WPVD = 150 mm)
 ITEM E: (AVK SWING CHECK VALVE)*, FLANGED (PN16) T16
 ITEM F: FLANGED ADAPTOR, T16
 ITEM G: PUDDLE PIECE, PLAIN & FLANGED ENDED T16
 ITEM H: VIKING JOHNSON COUPLING
 ITEM J: 800 DIA, LIGHT DUTY, DUCTILE IRON COVER & FRAME [HINGE WITH SNAP LOCK]
 ITEM K: SUMP
 ITEM L: MUNICIPAL VALVE TO BE (AVK TYPE 1)* LEFT HAND CLOSE WITH CAP TOP
 ITEM M: CONSUMER VALVE TO BE (AVK TYPE 1)* RIGHT HAND CLOSE WITH HAND WHEEL
 ITEM N: HINGED DUCTILE IRON : SAINT GOBAIN, SECUREX Z - 600 D (SANS 50124 CLASS D400) OR SIMILAR APPROVED.

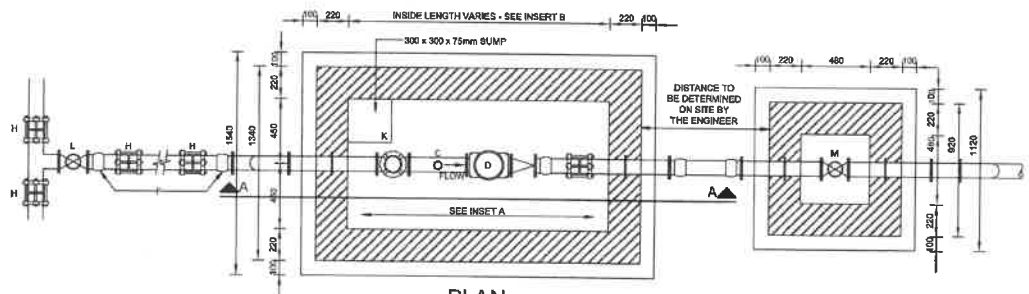
* AVK OR SIMILAR APPROVED BY PROJECT ENGINEER

NOTES

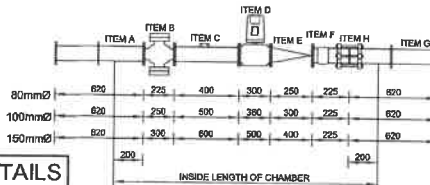
- NOTE 1: PLASTIC SHEETING 375 MICRON EMBOSSED D.P.C. SABS 9521062 TYPE B TO BE PLACED ON WALLS BEFORE PLACING ROOF SLAB IN PLACE AND SEAL INTERNAL AND EXTERNAL JOINTS WITH SIKAFLEX-PRO 2HP
 NOTE 2: CONCRETE GRADE 25/19 FOR FLOOR AND ROOF SLABS
 NOTE 3: AVOID PLACING THE METER CHAMBER IN THE ROAD AND ENTRANCES WHEREVER POSSIBLE
 NOTE 4: CHAMBER WALLS TO BE PLASTERED, EXTERNAL AND INTERNAL TO PREVENT SEEPAGE OF GROUND WATER INTO MANHOLE (PLASTER 13mm THICK, STEEL TROWELLED TO SMOOTH SURFACE)
 NOTE 5: EXTERNAL PLASTERED WALLS TO BE COATED WITH 2 COATS FLINTKOTE (ABE) AND 1 FINAL COAT SILVAKOTE (ABE) AND INTERNAL PLASTERED WALLS TO BE COATED WITH 3 COATS DURASLURRY (ABE)
 NOTE 6: ALL FLANGES TO BE DRILLED T16
 NOTE 7: VIKING JOHNSON COUPLING TO BE SEALED WITH DENSO TAPE
 NOTE 8: ONLY STAINLESS STEEL 316L SHOULD BE USED FOR BOLTS & NUTS
 NOTE 9: INTERNAL, PIPE PIECES SHALL BE COATED WITH 3 COATS CARBOLINE 891, MINIMUM TOTAL THICKNESS OF 250 MICRON
 NOTE 10: EXTERNAL, PIPE PIECES SHALL BE COATED WITH 3 COATS CARBOLINE 891, MINIMUM TOTAL THICKNESS OF 250 MICRON
 NOTE 11: EXTERNAL, VIKING JOHNSON/ FLANGE ADAPTOR TO BE SEALED WITH DENSO TAPE
 NOTE 12: EXTERNAL BENDS, TEES & FLANGE ADAPTORS SHALL BE COATED WITH 3 COATS CARBOLINE 891, MINIMUM TOTAL THICKNESS OF 250 MICRON



SECTION A - A



PLAN



INSET A

CHAMBER DIMENSIONS		FLOOR SLAB	WATER METER
INSIDE DIMS	OUTSIDE DIMS	OUTSIDE DIMS	METER SIZE
1800x900	2245x1340	2245x1340	80mm
2035x900	2475x1340	2475x1340	100mm
2425x900	2865x1340	3065x1340	150mm

INSET B

FOR COVER SLAB DETAILS
SEE DRAWING SW12

STANDARD DETAIL DRAWING

TYPICAL BULK WATER METER CHAMBER (1 OF 2)



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SW11