City of Johannesburg

Johannesburg Water SOC Ltd

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ADDENDUM	No. 02
CONTRACT NUMBER:	JW14358
CONTRACT TITLE:	**WOODMEAD INLET BULK WATER PIPELINE**
SUBJECT	Addendum 2
Date	13 September 2024
Sender	Gcina Ndela 011 688 1796 gcina.ndela@jwater.co.za Sijabuliso Tshuma 011 688 1570 sijabuliso.tshuma@jwater.co.za

Tenderers are required to incorporate the updated documents into their tender submission by replacing the BOQ and Contract Data with the revised versions, along with other specified sections of the Tender document as outlined below and return the Addendum.

1. Replace current BOQ with a revised BOQ. The changes on the BOQ are as follows,

BOQ Page Number	BOQ Line Item	Description of Change
2	Item 1.01.01.01	New line item - Insurance
2	Item 1.01.01.02	New line item - Insurance
2	Item 1.01.01.03	New line item - Insurance
2	Item 1.01.01.04	New line item - Insurance
3	Item 1.02.01.01	New line item - Insurance
3	Item 1.02.01.02	New line item - Insurance
3	Item 1.02.01.03	New line item - Insurance
3	Item 1.02.01.04	New line item - Insurance
14	Item PSL 8.2.16 – 3.01.01	Amended line item – Jointing method
15	Item PSL 8.2.35 – 3.08	New line item – Trial Joint
23	Item PSL 8.2.16 – 3.01.01	Amended line item – Jointing method
177	Item PSA 8.9	New line item - Contingencies
177	Item PSA 8.9	New line item - Escalation

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2. Replace current Contract Data with a revised Contract Data. The changes on the Contract Data are as follows,

Contract Data Page number	Contract Data Clause	Description of Change
C.8	Clause 80.1 (1)	New Clause - Insurance
C.9	Clause 80.1 (2)	New Clause - Insurance
C.9	Clause 80.1 (3)	New Clause - Insurance
C.9	Clause 80.1 (4)	New Clause - Insurance
C.9	Clause 80.1 (5)	New Clause - Insurance
C.17	Item Z8 - Clause 6	New Clause - Penalties
C.17	Item Z8 – Clause 7	New Clause - Penalties
C.31	Section C1.3.1	Amended Performance Guarantee

3. To replace specific drawings with revised ones as indicated below,

Drawing Page number	Drawing number	Description of Change
Page 128	JW14358-16941-T-017-S16-00-TMS	New pipe jointing method - DN600 Convex heat sink steel ring joint
Page 122	JW14358-16941-T-017-S10-00-TMS	Amended Pipe Support Details – Lifting hook detail added

4. To issue changes to the Tendering Procedures to address the following,

Tendering Procedures Page number	Tendering Procedures Item	Description of Change
TP.34	Item (c)	Replace ‘Part T2.2.22’ with ‘Part C1.3.1 on page C31’

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5. To issue changes to the Scope of Work to address the following,

Scope of Works Page number	Scope of Works Item	Description of Change
Page 128	Item PSL 8.2.35	New Line Item – Forming Trial Joint

6. Closing date will be extended from 2 October 2024 to 9 October 2024.

Any inconvenience caused is indeed, regretted.

Yours faithfully

16/09/2024

Malefa Mpitso
Senior Manager: Supply Chain Management

Addendum Received

Name of Tenderer:……

Signatory:……

Signature:……

Date:……

Johannesburg Water (SOC) Ltd

JW14358

Construction of Woodmead Inlet Bulk Water Pipeline

Schedule of Quantities

Client:		**Contractor:**	
Witness:		**Witness:**	

Part A - Section 1: Preliminary and general

General

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 A	**1**	**GENERAL**				
8.3	**1.01**	**Scheduled fixed-charge and value-related items:**				
PSA 8.3.1	**1.01.01**	**Contractual Requirements**				
	1.01.01.01	Loss of or damage to the *works*, Plant and Material	sum	1		
	1.01.01.02	Loss of or damage to Equipment	sum	1		
	1.01.01.03	Loss of or damage to property (except the *works*, Plant, Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the *Contractor*) arising from or in connection with the *Contractor* Providing the Works for any one event	sum	1		
	1.01.01.04	Death of or bodily injury to employees of the *Contractor* arising out of and in the course of their employment in connection with the contract for any one event	sum	1		
PSA 8.3.2	**1.01.02**	**Establishment of Facilities on the Site**				
PSA 8.3.2.1	1.01.02.01	Facilities for Engineer				
	1.01.02.01.01	a) Furnished offices (2 No.)	sum	1		
	1.01.02.01.02	c) Name Boards (4 No.)	sum	1		
	1.01.02.01.03	d) JW ISD team office (2 No.)	sum	1		
	1.01.02.01.04	e) CLO's office (1 No.)	sum	1		
	1.01.02.01.05	f) Meeting Room (1 No.)	sum	1		
	1.01.02.01.06	g) Latrine Facilities (1 No.)	sum	1		
	1.01.02.01.07	h) Parking (3 No.)	sum	1		
	1.01.02.01.08	i) Communication	sum	1		
	1.01.02.01.09	j) Survey equipment, assistants and material	sum	1		
	1.01.02.01.10	k) Computer facilities	sum	1		
PSA 8.3.2.2	1.01.02.02	Facilities for Contractor				
	1.01.02.02.01	a) Offices and storage sheds	sum	1		
	1.01.02.02.02	b) Workshops	sum	1		
	1.01.02.02.03	e) Ablution and latrine facilities	sum	1		
	1.01.02.02.04	f) Tools and equipment	sum	1		
	1.01.02.02.05	g) Water supplies, electric power and communications	sum	1		
	1.01.02.02.06	h) Dealing with water (See 5.5)	sum	1		
	Carried forward					

Part A - Section 1: Preliminary and general

General

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	1.01.02.02.07	i) Access (See 5.8)	sum	1		
	1.01.02.02.08	j) Plant	sum	1		
PSA 8.3.3	**1.01.03**	**Other Fixed charge Obligations**	sum	1		
8.3.4	**1.01.04**	**Removal of Site Establishment**	sum	1		
PSA 8.3.5	**1.01.05**	**Additional Contractual Obligations**				
PSA 8.3.5.1	1.01.05.01	Notice and warning to consumers	sum	1		
PSA 8.3.5.2	1.01.05.02	Compile Health and Safety Plan	sum	1		
PSA 8.3.5.3	1.01.05.03	EMP Obligations	sum	1		
PSA 8.3.5.4	1.01.05.04	Provision of Photographic Records	sum	1		
8.4	**1.02**	**Scheduled time-related items:**				
PSA 8.4.1	1.02.01	Contractual Requirements	sum	1		
	1.02.01.01	Loss of or damage to the *works*, Plant and Material	sum	1		
	1.02.01.02	Loss of or damage to Equipment	sum	1		
	1.02.01.03	Loss of or damage to property (except the *works*, Plant, Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the *Contractor*) arising from or in connection with the *Contractor* Providing the Works for any one event	sum	1		
	1.02.01.04	Death of or bodily injury to employees of the *Contractor* arising out of and in the course of their employment in connection with the contract for any one event	sum	1		
PSA 8.4.2	**1.02.02**	Operation and Maintenance of Facilities on Site, for Duration of Construction, except where otherwise stated				
PSA 8.4.2.1	**1.02.02.01**	**Facilities for Engineers**				
	1.02.02.01.01	a) Furnished offices (2 No.)	sum	1		
	1.02.02.01.02	c) Name Boards (2 No.)	sum	1		
	1.02.02.01.03	d) Survey assistants and materials	sum	1		
	1.02.02.01.04	e) JW ISD team office (2 No.)	sum	1		
	1.02.02.01.05	f) CLO's office (1 No.)	sum	1		
	1.02.02.01.06	g) Meeting Room (1 No.)	sum	1		
	1.02.02.01.07	h) Latrine Facilities (1 No.)	sum	1		
	1.02.02.01.08	i) Parking (3 No.)	sum	1		
	Carried forward					

Part A - Section 1: Preliminary and general

General

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	1.02.02.01.09	j) Communication	sum	1		
	1.02.02.01.10	k) Computer facilities	sum	1		
PSA 8.4.2.2	**1.02.02.02**	**Facilities for Contractor**				
	1.02.02.02.01	a) Offices and storage sheds	sum	1		
	1.02.02.02.02	b) Workshops	sum	1		
	1.02.02.02.03	e) Ablution and latrine facilities	sum	1		
	1.02.02.02.04	f) Tools and equipment	sum	1		
	1.02.02.02.05	g) Water supplies, electric power and communications	sum	1		
	1.02.02.02.06	h) Dealing with water (See 5.5)	sum	1		
	1.02.02.02.07	i) Access to site (See 5.8)	sum	1		
	1.02.02.02.08	j) Plant	sum	1		
PSA 8.4.3	**1.02.03**	**Supervision for duration of construction**	sum	1		
PSA 8.4.4	**1.02.04**	**Company and head office overhead costs for**	sum	1		
PSA 8.4.5	**1.02.05**	**Other time-related obligations**	sum	1		
PSA 8.4.6	**1.02.06**	**Additional Obligations**				
PSA 8.4.6.1	1.02.06.01	Implementation of Health and Safety Plan	sum	1		
PSA 8.4.6.2	1.02.06.02	Full-time OHS Officer	sum	1		
PSA 8.4.6.3	1.02.06.03	Provide protective safety clothing	sum	1		
PSA 8.4.6.4	1.02.06.04	EMP Obligations	sum	1		
PSA 8.4.6.5	1.02.06.05	Full-time Environmental Representative	sum	1		
PSA 8.4.6.6	1.02.06.06	On-site security	sum	1		
PSA 8.4.6.7	1.02.06.07	On-site security at Office Park during electrical fence	sum	1		
PSA 8.4.6.8	1.02.06.08	Electrical Safety Officer (ESO)	sum	1		
PSA 8.4.6.9	1.02.06.09	Advertising on the Billboard	P. Sum	1	R360 000.00	R360 000.00
	1.02.06.09.01	a) Overheads, charges and profit on above	%			
PSA 8.4.6.10	1.02.06.10	Temporary Removal and reinstatement of billboard	P. Sum	1	R920 000.00	R920 000.00
	Carried forward					

Part A - Section 1: Preliminary and general

General

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSA 8.5	1.03.01	a) Community Liaison Officer (CLO and CSO)	P. Sum	1	R400 000.00	R400 000.00
	1.03.02	b) Overheads, charges and profit on above	%			
	1.03.03	c) Alteration to existing services by authorities	P. Sum	1	R1 000 000.00	R1 000 000.00
	1.03.04	d) Overheads, charges and profit on above	%			
	1.03.05	e) Reinstatement of asphalt by JRA	P. Sum	1	R8 000 000.00	R8 000 000.00
	1.03.06	f) Overheads, charges and profit on above	%			
	1.03.07	g) Training	P. Sum	1	R400 000.00	R400 000.00
	1.03.08	h) Overheads, charges and profit on above	%			
	1.03.09	i) Temporary protection of services	P. Sum	1	R400 000.00	R400 000.00
	1.03.10	j) Overheads, charges and profit on above	%			
	1.03.11	k) Relocation of endangered plant species	P. Sum	1	R150 000.00	R150 000.00
	1.03.12	l) Overheads, charges and profit on above	%			
	1.03.13	m) Provision of OHS Mentorship	P. Sum	1	R80 000.00	R80 000.00
	1.03.14	n) Overheads, charges and profit on above	%			
	1.03.15	o) Internships	P. Sum	1	R960 000.00	R960 000.00
	1.03.16	p) Overheads, charges and profit on above	%			
	1.03.17	q) Social Consultant	P. Sum	1	R600 000.00	R600 000.00
	1.03.18	r) Overheads, charges and profit on above	%			
	1.03.19	s) 10% Preliminary and General Items for SMMEs	P. Sum	1	R5 500 000.00	R5 500 000.00
PSA 8.6	**1.04**	**Prime Cost Items:**				
	1.04.01	a) Additional tests required by the Project Manager	PC Sum	1	R200 000.00	R200 000.00
	1.04.02	b) Charge required by Contractor on subitem 1.04.01	%			
PSA 8.7	**1.05**	**Dayworks**				
	1.05.01	**Labour**				
	1.05.01.01	Foreman	h	40		
	1.05.01.02	Welder	h	40		
	1.05.01.03	Skilled labour	h	80		
	1.05.01.04	Semi-skilled labour	h	80		
	1.05.01.05	Unskilled labour	h	160		
	Carried forward					

Part A - Section 1: Preliminary and general

General

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	1.05.02	**Plant**				
	1.05.02.01	Excavator (20 t)	h	40		
	1.05.02.02	Excavator (30 t)	h	40		
	1.05.02.03	Loader (0,5 m³ bucket)	h	40		
	1.05.02.04	Tipper truck (10 m^3)	h	40		
	1.05.02.05	Walk-behind vibrating roller	h	40		
	1.05.02.06	Welding Machine	h	40		
	1.05.02.07	Water truck (5 000ℓ)	h	40		
	1.05.02.08	Water pump (4 inch)	h	40		
PSA 8.8	**1.06**	**Temporary works (See 8.1.2.1(d))**				
PSA 8.8.4	**1.06.01**	**Existing services (see 5.4)**				
	1.06.01.01	a) Supply or hire of Ground Penetrating Radar equipment	Sum	1		
	1.06.01.02	b) Excavation by hand to expose existing services in all	m³	1500		
PSA 8.8.7	1.06.02	Temporary Plastic Barrier Fence	m	6600		
	Carried forward to summary (Part A - Section 1)					

Part A - Section 1: Preliminary and general

General

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 A		**GENERAL**				
Total carried forward to summary						

Client:		**Contractor:**	
Witness:		**Witness:**	

Part B - Section 1: DN 600 Steel Main Pipeline

Site clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawing:** **JW14358-16941-T-012-S01-00-TMS**				
PSC 8.2.1	**1.01**	**Clear and grub**				
	1.01.01	Strips, 3 m wide	m	4200		
8.2.2	**1.02**	**Remove and grub large trees and tree stumps of girth**				
	1.02.01	Over 1 m and up to and including 2 m	No.	9		
	1.02.02	Over 2 m and up to and including 3 m	No.	15		
PSC 8.2.5	**1.03**	**Take down existing fences, guardrails and masonry walls**				
	1.03.01	a) Guardrails	m	800		
	1.03.02	b) Diamond mesh fencing	m	400		
	1.03.03	c) Steel palisade fencing	m	800		
	1.03.04	d) Clearview fencing	m	400		
	1.03.05	e) 110 mm masonry wall	m	100		
	1.03.06	f) 220 mm masonry wall	m	100		
	1.03.07	g) Masonry columns	m³	100		
8.2.10	1.04	Remove topsoil to nominal depth of 150 mm and stockpile	m³	1890		
PSC 8.2.11	**1.05**	**Temporary fencing or hoarding**				
	1.05.01	a) 1.8 m High Diamond mesh fencing	m	1000		
PSC 8.2.12	**1.06**	**Removal of man-made surfaces and kerbing**				
	1.06.01	a) Road materials with Asphalt ≤ 50mm thick	m²	325		
	1.06.02	b) Road materials with Asphalt > 50 ≤ 100mm thick	m²	1125		
	1.06.03	c) Interlocking concrete segmental paving blocks, Class	m²	3820		
	1.06.04	d) Concrete paving blocks, Class 2.6/40MPa (various	m²	500		
	1.06.05	e) Brick paving	m²	100		
	1.06.06	f) Unreinforced concrete ≤ 75mm thick	m²	100		
	1.06.07	g) Reinforced concrete ≤ 75mm thick	m²	250		
	1.06.08	h) Garden, lawns and grassing	m²	2550		
	1.06.09	i) All types of Kerbing including channel	m	2550		
	Carried forward					

Part B - Section 1: DN 600 Steel Main Pipeline

Site clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSC 8.2.13	**1.07**	**Backfilling and reinstatement of man-made surfaces**				
	1.07.01	a) Interlocking concrete segmental paving blocks, Class 2.6/40MPa (all colours)	m²	2000		
	1.07.02	b) Concrete paving blocks, Class 2.6/40MPa (various sizes)	m²	500		
	1.07.03	c) Brick paving	m²	100		
	1.07.04	d) Kerbing (all types of kerbing)	m	1500		
PSC 8.2.14	**1.08**	**Take down and re-erect existing fences and guardrails**				
	1.08.01	a) Guardrails	m	1200		
	1.08.02	b) Diamond mesh fencing	m	800		
	1.08.03	c) Steel palisade fencing	m	800		
	1.08.04	d) Clearview fencing	m	400		
PSC 8.2.15	**1.09**	**Reinstatement of existing masonry walls, steel fences and guard rails using new materials**				
PSC 8.2.15.1	1.09.1	Face brick walls				
	1.09.1.1	a) 110 mm wall	m²	150		
	1.09.1.2	b) 220 mm wall	m²	150		
	1.09.1.3	c) Masonry columns	m³	100		
PSC 8.2.15.2	1.09.2	Plastered walls				
	1.09.2.01	a) 110 mm wall	m²	150		
	1.09.2.02	b) 220 mm wall	m²	150		
	1.09.2.03	c) Masonry columns	m³	100		
PSC 8.2.15.3	1.09.3	Steel fences				
	1.09.3.01	a) Diamond mesh fencing	m²	200		
	1.09.3.02	b) Palisade fencing	m²	1800		
	1.09.3.03	c) Clearview fencing	m²	150		
PSC 8.2.16	1.10	Protection of trees	No	20		
	Carried forward					

Part B - Section 1: DN 600 Steel Main Pipeline

Site clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSC 8.2.21	**1.11**	**Temporary removal and reinstatement of electrical infrastructure**				
	1.11.01	a) Electrical Poles	No	20		
	1.11.02	b) Street Lights	No	20		
	1.11.03	c) Traffic Signals	No	40		
PSC 8.2.22	**1.12**	**Temporary removal and reinstatement of electrical fencing**				
	1.12.01	a) Wall top mounted	m	175		
	1.12.02	b) Free standing (fence height up to 3 meter)	m	500		
	1.12.03	c) Add-On Fence attached to palisade fence (fence height up to 3 meter)	m	500		
PSC 8.2.23	**1.13**	**Temporary electrical fencing**				
	1.13.01	a) Wall top mounted	m	500		
	1.13.02	b) Free standing (fence height up to 3 meter)	m	500		
PSC 8.2.24	**1.14**	**Construction of dry stack precast block retaining wall**	m²	60		
	Carried forward to summary (Part B - Section 1)					

Part B - Section 1: DN 600 Steel Main Pipeline

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS (PIPE TRENCHES)**				
		Refer to Drawing: JW14358-16941-T-012-S01-00-TMS				
PSDB 8.3.2	**2.01**	**a) Excavate in all materials, for trenches, backfill**				
	2.01.01	**Pipes of diameter of DN 600 for depths**				
	2.01.01.01	Up to 1,0 m	m	100		
	2.01.01.02	Over 1,0 m up to 2,0 m	m	2500		
	2.01.01.03	Over 2,0 m up to 3,0 m	m	2500		
	2.01.01.04	Over 3,0 m up to 4,0 m	m	380		
PSDB 8.3.2	**2.02**	**b) Extra over item 2.01 above for**				
	2.02.01	1) Intermediate excavation	m^3	2250		
	2.02.02	2) Hard rock excavation	m^3	2250		
	2.02.03	3) Hand excavation where ordered by the Project Manager				
	2.02.03.01	a) Soft material	m^3	700		
	2.02.03.02	b) Intermediate material	m^3	700		
	2.02.03.03	c) Hard material	m^3	200		
PSDB 8.3.2	2.02.04	4) Backfill stabilized with 5% cement where directed by	m^3	700		
PSDB 8.3.2	2.02.05	5) Soilcrete backfill where directed by the Project Manager	m^3	700		
8.3.2	2.02.06	c) Excavate and dispose of unsuitable material from	m^3	800		
8.3.3	**2.03**	**Excavation Ancillaries**				
8.3.3.1	**2.03.01**	**Make up deficiency in backfill material**				
	2.03.01.01	a) from other necessary excavations on site	m^3	600		
	2.03.01.02	c) by importation from commercial or off-site sources	m^3	600		
PSDB 8.3.3.3	2.03.02	Compaction in roadways	m^3	850		
PSDB 8.3.4	**2.04**	**Particular Items**				
PSDB 8.3.4 (a)	2.04.01	a) Shore trench opposite structure or service	m	1000		
PSDB 8.3.4 (c)	2.04.02	Dealing with groundwater				
	2.04.02.01	(1) Crushed stone (14 mm or 20 mm)	m^3	400		
	2.04.02.02	(2) Nonwoven, needle punched, continuous filament,	m^2	3600		
	Carried forward					

Part B - Section 1: DN 600 Steel Main Pipeline

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSDB 8.3.5	**2.05**	**Existing Services that Intersect or Adjoin a Pipe**				
PSDB 8.3.5	**2.05.01**	**a) Services that intersect a trench**				
	2.05.01.01	Water pipes up to DN 200	No.	20		
	2.05.01.02	Water mains DN 250 and larger	No.	10		
	2.05.01.03	Sewer pipes up to DN 160	No.	20		
	2.05.01.04	Sewer mains DN 200 and larger	No.	10		
	2.05.01.05	Stormwater pipes (any size)	No.	40		
	2.05.01.06	Cables (Electrical, data or telephone)	No.	50		
	2.05.01.07	Drainage furrows and channels	No.	20		
PSDB 8.3.5	**2.05.02**	**b) Services that adjoin a trench**				
	2.05.02.01	Water pipes up to DN 200	m	500		
	2.05.02.02	Water mains DN 250 and larger	m	200		
	2.05.02.03	Sewer pipes up to DN 160	m	500		
	2.05.02.04	Sewer mains DN 200 and larger	m	200		
	2.05.02.05	Stormwater pipes (any size)	m	1000		
	2.05.02.06	Cables (Electrical, data or telephone)	m	1000		
	2.05.02.07	Drainage furrows and channels	m	200		
PSDB 8.3.5 c	**2.06.03**	**c) Services that require special care**				
	2.06.03.01	Crossing underneath power lines up to 11 kV	No.	2		
	2.06.03.02	Crossing underneath power lines up to 300 kV	No.	1		
	2.06.03.03	Crossing underneath telephone lines	No.	20		
	2.06.02.04	Working alongside electricity poles	No.	25		
	2.06.02.05	Working alongside telephone poles	No.	55		
	2.06.02.06	Working alongside traffic signals	No.	100		
	2.06.02.07	Working alongside street lights	No.	200		
	Carried forward					

Part B - Section 1: DN 600 Steel Main Pipeline

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSDB 8.3.6	**2.07**	**Finishing**				
PSDB8.3.6.1	**2.07.01**	**Reinstate road surfaces complete with all courses**				
	2.07.01.01	a) Gravel on shoulders	m²	126		
	2.07.01.02	b) Asphalt of thickness 40 mm in parking area	m²	210		
	2.07.01.03	c) Asphalt of thickness 40 mm in roadway	m²	420		
	2.07.01.04	d) Re-instatement of unreinforced concrete	m²	2050		
	2.07.01.05	e) Re-instatement of reinforced concrete	m³	2050		
	2.07.01.06	f) Re-instatement of bricks, concrete pre-cast units and	m²	4100		
	2.07.01.07	g) Re-instatement of grouted brick paving, complete	m²	4100		
	2.07.01.08	h) Re-instatement of gardens, lawns and grassing	m²	3420		
PSDB8.3.6.2	**2.07.02**	**Reinstatement of surfacing for walkways**				
	2.07.02.01	a) Re-instatement of walkways with unreinforced concrete	m²	200		
	2.07.02.02	b) Re-instatement of walkways with interlocking concrete	m²	1500		
PSDB8.3.6.3	**2.07.03**	**Reinstatement of kerbs and channels**				
		a) Re-instatement of all types of precast kerbing,	m	500		
		b) Re-instatement of precast concrete gutter, complete	m	300		
		c) Re-instatement of all types of insitu cast concrete	m	100		
		d) Re-instatement of all types of insitu cast concrete	m	300		
PSDB 8.3.7	**2.08**	**Accommodation of traffic**	sum	1		
	Carried forward to summary (Part B - Section 1)					

Part B - Section 1: DN 600 Steel Main Pipeline

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**3**	**MEDIUM-PRESSURE PIPELINES** **Refer to Drawing:** **JW14358-16941-T-012-S01-00-TMS**				
PSL 8.2.16	**3.01**	**Supply, Lay and Bed Steel Pipes Complete with Welded Joints**				
	3.01.01	DN 600 welded steel; 6 mm wall thickness; convex heat sink steel ring joint; API 5L X42 steel pipe, with Rigid Polyurethane Coating (RPU) and Solvent Free Liquid Epoxy lining (SFE). Bedded and jointing as per Drawing: JW14358-16941-T-017-S05-00-TMS Drawing: JW14358-16941-T-017-S16-00-TMS	m	5000		
PSL 8.2.17	**3.02**	**Supply and install Steel Pipes inside Concrete Pipe Jacking Sleeve Complete with Flanged Joints**				
	3.02.01	DN 600 flanged steel; 6 mm wall thickness; API 5L X42 steel pipe; with Rigid Polyurethane Coating (RPU) and Solvent Free Liquid Epoxy lining (SFE); supplied in lengths of exactly 6000 mm; both ends flanged to SANS 1123 Table 1600/3	m	110		
PSL 8.2.18	**3.03**	**Supply and install Steel Pipes inside Concrete Pipe Tunnel at M1 crossing Complete with Flanged Joints**				
	3.03.01	DN 600 flanged steel; 6 mm wall thickness; API 5L X42 steel pipe; with Rigid Polyurethane Coating (RPU) and Solvent Free Liquid Epoxy lining (SFE); supplied in lengths of exactly 6000 mm; both ends flanged to SANS 1123 Table 1600/3	m	84		
PSL 8.2.19	**3.04**	**Extra over 3.01 for the Supplying, Laying, Welding or Jointing and Bedding of Steel specials**				
	3.04.01	DN 600 steel; 6 mm wall thickness; API 5LX42 steel, long long radius bends, with Rigid Polyurethane Coating (RPU) and Solvent Free Liquid Epoxy lining (SFE):				
	3.04.01.01	Item 1: DN 600, 46° up to 90°, 5 segment bend to SANS 719; centre line radius R = 1220 mm, unflanged	No.	8		
	3.04.01.02	Item 2: DN 600, 23° up to 45°, 3 segment bend to SANS 719; centre line radius R = 1220 mm, unflanged	No.	6		
	3.04.01.03	Item 3: DN 600, 11.25 up to 22.5°, 2 segment bend to SANS 719; centre line radius R = 1220 mm, unflanged	No.	8		
	3.04.01.04	Item 4: DN 600, 90°, Flanged 5 segment bend to SANS 719; centre line radius R = 1220 mm	No.	1		
	3.04.02	Mitres up to 11.25°	No.	46		
	3.04.03	DN 600 loose flanges to SANS 1123 table 1600/3 for welding on site	No.	24		
	Carried forward					

Part B - Section 1: DN 600 Steel Main Pipeline

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSL 8.2.22	**3.05**	**Flushing and sterilising of pipelines**				
	3.05.01	DN 600 steel pipe	m	5180		
PSL 8.2.23	**3.06**	**Hydraulic field-testing of pipelines**				
	3.06.01	DN 600 steel pipe	m	5180		
PSL 8.2.24	**3.07**	**Pipeline and Valve Markers**				
	3.07.01	a) Precast Concrete Marker: Drawing JW14358-16941-T-017-S07-00-TMS	No.	40		
	3.07.02	b) Kerb Marking Drawing JW14358-16941-T-017-S07-00-TMS	No.	40		
PSL 8.2.35	**3.08**	Extra-Over 8.3.16 for Forming Trial joint	Sum	1		
	Carried forward to summary (Part B - Section 1)					

Part B - Section 1: DN 600 Steel Main Pipeline

Bedding (pipes)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 LB	**4**	**BEDDING (PIPES)** **Refer to Drawing:** **JW14358-16941-T-012-S01-00-TMS**				
PSLB 8.2.1.1	**4.01**	**Provision of bedding from trench excavations without the need for screening or other treatments**				
	4.01.01	Selected granular material	m³	300		
	4.01.02	Selected fill material	m³	600		
PSLB 8.2.1.2	**4.02**	**Provision of bedding from trench excavations including screening or other treatments**				
	4.02.01	Selected granular material	m³	600		
	4.02.02	Selected fill material	m³	400		
8.2.2	**4.03**	**Supply only of bedding by importation**				
	4.03.01	**From other necessary excavations (Provisional)**				
	4.03.01.01	Selected granular material	m³	100		
	4.03.01.02	Selected fill material	m³	100		
	4.03.02	**From commercial sources (Provisional)**				
	4.03.02.01	Selected granular material	m³	3700		
	4.03.02.02	Selected fill material	m³	400		
8.2.4	**4.04**	**Encasing of pipes in concrete**				
	4.04.01	**Encasing DN 600 steel pipe**				
	4.04.01.01	Class 15 MPa/19 mm	m³	20		
	4.04.01.02	Class 30 MPa/19 mm	m³	10		
PSLB 8.2.6	4.05	Extra over items 4.01 and 4.02 for bedding stabilized with 5% cement	m³	400		
PSLB 8.2.7	4.06	Compaction Testing using a Nuclear Moisture Density Gauge	No.	52		
	Carried forward to summary (Part B - Section 1)					

Part B - Section 1: DN 600 Steel Main Pipeline

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS (PIPE TRENCHES)				
SANS 1200 L		MEDIUM-PRESSURE PIPELINES				
SANS 1200 LB		BEDDING (PIPES)				
	Total carried forward to summary					

Part B - Section 2: DN 600 Steel Bypass Pipeline

Site clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawing:** **JW14358-16941-T-012-S11-00-TMS**				
PSC 8.2.1	**1.01**	**Clear and Grub**				
	1.01.01	Strips, 3 m wide	m	500		
8.2.2	**1.02**	**Remove and grub large trees and tree stumps of girth**				
	1.02.01	Over 1 m and up to and including 2 m	No.	3		
	1.02.02	Over 2 m and up to and including 3 m	No.	5		
PSC 8.2.5	**1.03**	**Take down existing fences, guardrails and masonry walls**				
	1.03.01	a) Guardrails	m	200		
	1.03.02	b) Diamond mesh fencing	m	50		
	1.03.03	c) Steel palisade fencing	m	30		
	1.03.04	d) Clearview fencing	m	50		
	1.03.05	e) 110 mm masonry wall	m	30		
	1.03.06	f) 220 mm masonry wall	m	30		
8.2.10	1.04	Remove topsoil to nominal depth of 150 mm and stockpile	m³	225		
PSC 8.2.11	**1.05**	**Temporary fencing or hoarding**				
		a) 1.8 m High Diamond mesh fencing	m	300		
PSC 8.2.12	**1.06**	**Removal of man-made surfaces and kerbing**				
	1.06.01	a) Road materials with Asphalt ≤ 50mm thick	m²	200		
	1.06.02	b) Road materials with Asphalt > 50 ≤ 100mm thick	m²	600		
	1.06.03	c) Interlocking concrete segmental paving blocks, Class	m²	100		
	1.06.04	d) Concrete paving blocks, Class 2.6/40MPa (various	m²	50		
	1.06.05	e) Brick paving	m²	50		
	1.06.06	f) Unreinforced concrete ≤ 75mm thick	m²	50		
	1.06.07	g) Reinforced concrete ≤ 75mm thick	m²	50		
	1.06.08	h) Garden, lawns and grassing	m²	50		
	1.06.09	i) All types of Kerbing including channel	m	300		
	Carried forward					

Part B - Section 2: DN 600 Steel Bypass Pipeline

Site clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSC 8.2.13	**1.07**	**Backfilling and reinstatement of man-made surfaces re-using removed materials**				
	1.07.01	a) Interlocking concrete segmental paving blocks, Class 2.6/40MPa (all colours)	m²	100		
	1.07.02	b) Concrete paving blocks, Class 2.6/40MPa (various sizes)	m²	50		
	1.07.03	c) Brick paving	m²	50		
	1.07.04	d) Kerbing (all types of kerbing)	m	200		
PSC 8.2.14	**1.08**	**Take down and re-erect existing fences and guardrails**				
	1.08.01	a) Guardrails	m	160		
	1.08.02	b) Diamond mesh fencing	m	80		
	1.08.03	c) Steel palisade fencing	m	40		
	1.08.04	d) Clearview fencing	m	40		
PSC 8.2.15	**1.09**	**Reinstatement of existing masonry walls, steel fences and guard rails using new materials**				
PSC 8.2.15.1	**1.09.1**	**Face brick walls**				
	1.09.1.1	a) 110 mm wall	m²	20		
	1.09.1.2	b) 220 mm wall	m²	20		
PSC 8.2.15.2	**1.09.2**	**Plastered walls**				
	1.09.2.01	a) 110 mm wall	m²	20		
	1.09.2.02	b) 220 mm wall	m²	20		
PSC 8.2.15.3	**1.09.3**	**Steel fences**				
	1.09.3.01	a) Palisade fencing	m²	20		
	1.09.3.02	b) Clearview fencing	m²	20		
PSC 8.2.16	**1.10**	**Protection of trees**	No	6		
PSC 8.2.21	**1.11**	**Temporary removal and reinstatement of electrical infrastructure**				
	1.11.01	a) Electrical Poles	No	6		
	1.11.02	b) Street Lights	No	6		
	1.11.03	c) Traffic Signals	No	5		
	Carried forward to summary (Part B - Section 2)					

Part B - Section 2: DN 600 Steel Bypass Pipeline

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS (PIPE TRENCHES)**				
		Refer to Drawing: JW14358-16941-T-012-S11-00-TMS				
PSDB 8.3.2	**2.01**	**a) Excavate in all materials, for trenches, backfill compact and dispose of surplus material**				
	2.01.01	**Pipes of diameter of DN 600 for depths:**				
	2.01.01.01	Up to 1,0 m	m	30		
	2.01.01.02	Over 1,0 m up to 2,0 m	m	50		
	2.01.01.03	Over 2,0 m up to 3,0 m	m	360		
	2.01.01.04	Over 3,0 m up to 4,0 m	m	150		
PSDB 8.3.2	**2.02**	**Extra over item 2.01 above for:**				
	2.02.01	1) Intermediate excavation	m^3	180		
	2.02.02	2) Hard rock excavation	m^3	180		
	2.02.03	3) Hand excavation where ordered by the Project Manager				
	2.02.03.01	a) Soft material	m^3	180		
	2.02.03.02	b) Intermediate material	m^3	180		
	2.02.03.03	c) Hard material	m^3	90		
PSDB 8.3.2	2.02.04	4) Backfill stabilized with 5% cement where directed by the Project Manager	m^3	350		
PSDB 8.3.2	2.02.05	5) Soilcrete backfill where directed by the Project Manager	m^3	350		
8.3.2	2.02.06	c) Excavate and dispose of unsuitable material from trench bottom (provisional)	m^3	100		
8.3.3	**2.03**	**Excavation Ancillaries**				
8.3.3.1	**2.03.01**	**Make up deficiency in backfill material**				
	2.03.01.01	a) from other necessary excavations on site	m^3	80		
	2.03.01.02	c) by importation from commercial or off-site sources	m^3	80		
PSDB 8.3.3.3	2.03.02	Compaction in roadways	m^3	1200		
PSDB 8.3.4	**2.04**	**Particular Items**				
PSDB 8.3.4 (a)	2.02.04	a) Shore trench opposite structure or service	m	300		
PSDB 8.3.4 (c)	2.04.02	Dealing with groundwater				
	2.04.02.01	(1) Crushed stone (14 mm or 20 mm)	m^3	40		
	2.04.02.02	(2) Nonwoven, needle punched, continuous filament,	m^2	360		
	Carried forward					

Part B - Section 2: DN 600 Steel Bypass Pipeline

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSDB 8.3.5	**2.05**	**Existing Services that Intersect or Adjoin a Pipe**				
PSDB 8.3.5	**2.05.01**	**a) Services that intersect a trench**				
	2.05.01.01	Water pipes up to DN 200	No.	5		
	2.05.01.02	Water mains DN 250 and larger	No.	3		
	2.05.01.03	Sewer pipes up to DN 160	No.	5		
	2.05.01.04	Sewer mains DN 200 and larger	No.	3		
	2.05.01.05	Stormwater pipes (any size)	No.	10		
	2.05.01.06	Cables (Electrical, data or telephone)	No.	20		
	2.05.01.07	Drainage furrows and channels	No.	5		
PSDB 8.3.5	**2.05.02**	**b) Services that adjoin a trench**				
	2.05.02.01	Water pipes up to DN 200	m	100		
	2.05.02.02	Water mains DN 250 and larger	m	50		
	2.05.02.03	Sewer pipes up to DN 160	m	100		
	2.05.02.04	Sewer mains DN 200 and larger	m	50		
	2.05.02.05	Stormwater pipes (any size)	m	100		
	2.05.02.06	Cables (Electrical, data or telephone)	m	100		
	2.05.02.07	Drainage furrows and channels	m	60		
PSDB 8.3.5 c	**2.06.03**	**c) Services that require special care**				
	2.06.03.01	Crossing underneath power lines up to 11 kV	No.	1		
	2.06.03.02	Crossing underneath power lines up to 300 kV	No.	1		
	2.06.03.03	Crossing underneath telephone lines	No.	4		
	2.06.02.04	Working alongside electricity poles	No.	15		
	2.06.02.05	Working alongside telephone poles	No.	5		
	2.06.02.06	Working alongside traffic signals	No.	4		
	2.06.02.07	Working alongside street lights	No.	40		
	Carried forward					

Part B - Section 2: DN 600 Steel Bypass Pipeline

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSDB 8.3.6	**2.07**	**Finishing**				
PSDB8.3.6.1	**2.07.01**	**Reinstate road surfaces complete with all courses**				
	2.07.01.01	a) Gravel on shoulders	m²	45		
	2.07.01.02	b) Asphalt of thickness 40 mm in parking area	m²	100		
	2.07.01.03	c) Asphalt of thickness 40 mm in roadway	m²	700		
	2.07.01.04	d) Re-instatement of unreinforced concrete	m²	60		
	2.07.01.05	e) Re-instatement of reinforced concrete	m³	60		
	2.07.01.06	f) Re-instatement of bricks, concrete pre-cast units and	m²	100		
	2.07.01.07	g) Re-instatement of grouted brick paving, complete	m²	50		
	2.07.01.08	h) Re-instatement of gardens, lawns and grassing	m²	50		
PSDB8.3.6.2	**2.07.02**	**Reinstatement of surfacing for walkways**				
	2.07.02.01	a) Re-instatement of walkways with unreinforced concrete	m²	60		
	2.07.02.02	b) Re-instatement of walkways with interlocking concrete	m²	360		
PSDB8.3.6.3	**2.07.03**	**Reinstatement of kerbs and channels**				
		a) Re-instatement of all types of precast kerbing,	m	200		
		b) Re-instatement of precast concrete gutter, complete	m	150		
		c) Re-instatement of all types of insitu cast concrete	m	100		
		d) Re-instatement of all types of insitu cast concrete	m	150		
PSDB 8.3.7	2.08	Accommodation of traffic	sum	1		
	Carried forward to summary (Part B - Section 2)					

Part B - Section 2: DN 600 Steel Bypass Pipeline

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**3**	**MEDIUM-PRESSURE PIPELINES** **Refer to Drawing: JW14358-16941-T-012-S11-00-TMS**				
PSL 8.2.16	**3.01**	**Supply, Lay and Bed Steel Pipes Complete with Welded Joints**				
	3.01.01	DN 600 welded steel; 6 mm wall thickness; convex heat sink steel ring joint; API 5L X42 steel pipe, with Rigid Polyurethane Coating (RPU) and Solvent Free Liquid Epoxy lining (SFE). Bedded and jointing as per Drawing: JW14358-16941-T-017-S05-00-TMS Drawing: JW14358-16941-T-017-S16-00-TMS	m	510		
PSL 8.2.19	**3.02**	**Extra over 3.01 for the Supplying, Laying, Welding or Jointing and Bedding of Steel specials**				
	3.02.01	DN 600 steel; 6 mm wall thickness; API 5LX42 steel, long radius bends, with Rigid Polyurethane Coating (RPU) and Solvent Free Liquid Epoxy lining (SFE):				
	3.02.01.01	Item 1: DN 600, 46° up to 90°, 5 segment bend to SANS 719; centre line radius R = 1220 mm, unflanged	No.	3		
	3.02.01.02	Item 2: DN 600, 23° up to 45°, 3 segment bend to SANS 719; centre line radius R = 1220 mm, unflanged	No.	2		
	3.02.01.03	Item 3: DN 600, 11.25 up to 22.5°, 2 segment bend to SANS 719; centre line radius R = 1220 mm, unflanged	No.	2		
	3.02.02	Mitres up to 11.25°	No.	4		
	3.02.03	DN 600 loose flanges to SANS 1123 table 1600/3 for welding on site	No.	6		
PSL 8.2.22	**3.03**	**Flushing and sterilising of pipelines**				
	3.03.01	DN 600 steel pipe	m	510		
PSL 8.2.23	**3.04**	**Hydraulic field-testing of pipelines**				
	3.04.01	DN 600 steel pipe	m	510		
PSL 8.2.24	**3.05**	**Pipeline and Valve Markers**				
	3.05.01	a) Precast Concrete Marker (Drawing: JW14358-16941-T-017-S07-00-TMS)	No.	10		
	3.05.02	b) Kerb Marking (Drawing: JW14358-16941-T-017-S07-00-TMS)	No.	10		
	Carried forward to summary (Part B - Section 2)					

Part B - Section 2: DN 600 Steel Bypass Pipeline

Bedding (pipes)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 LB	**4**	**BEDDING (PIPES)** **Refer to Drawing:** **JW14358-16941-T-012-S11-00-TMS**				
PSLB 8.2.1.1	**4.01**	**Provision of bedding from trench excavations without the need for screening or other treatments**				
	4.01.01	Selected granular material	m³	30		
	4.01.02	Selected fill material	m³	60		
PSLB 8.2.1.2	**4.02**	**Provision of bedding from trench excavations**				
	4.02.01	Selected granular material	m³	60		
	4.02.02	Selected fill material	m³	40		
8.2.2	**4.03**	**Supply only of bedding by importation**				
	4.03.01	**From other necessary excavations (Provisional)**				
	4.03.01.01	Selected granular material	m³	20		
	4.03.01.02	Selected fill material	m³	20		
	4.03.02	**From commercial sources (Provisional)**				
	4.03.02.01	Selected granular material	m³	370		
	4.03.02.02	Selected fill material	m³	40		
8.2.4	**4.04**	**Encasing of pipes in concrete**				
	4.04.01	**Encasing DN 600 steel pipe**				
	4.04.01.01	Class 15 MPa/19 mm	m³	10		
	4.04.01.02	Class 30 MPa/19 mm	m³	5		
PSLB 8.2.6	**4.05**	**Extra over items 4.01 and 4.02 for bedding stabilized with 5% cement**	m³	40		
PSLB 8.2.7	**4.06**	**Compaction Testing using a Nuclear Moisture Density Gauge**	No.	10		
	Carried forward to summary (Part B - Section 2)					

Part B - Section 2: DN 600 Steel Bypass Pipeline

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS (PIPE TRENCHES)				
SANS 1200 L		MEDIUM-PRESSURE PIPELINES				
SANS 1200 LB		BEDDING (PIPES)				
Total carried forward to summary						

Part B - Section 3: DN 800 Steel Pipeline

Site clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawing:** **JW14358-16941-T-012-S14-00-TMS**				
PSC 8.2.1	**1.01**	**Clear and Grub**				
	1.01.01	Strips, 3 m wide	m	120		
8.2.2	**1.02**	**Remove and grub large trees and tree stumps of girth**				
	1.02.01	Over 1 m and up to and including 2 m	No.	2		
	1.02.02	Over 2 m and up to and including 3 m	No.	2		
PSC 8.2.5	**1.03**	**Take down existing fences, guardrails and masonry walls**				
	1.03.01	a) Guardrails	m	30		
	1.03.02	b) Diamond mesh fencing	m	20		
	1.03.03	c) Steel palisade fencing	m	10		
	1.03.04	d) Clearview fencing	m	20		
	1.03.05	e) 110 mm masonry wall	m	10		
	1.03.06	f) 220 mm masonry wall	m	10		
8.2.10	1.04	Remove topsoil to nominal depth of 150 mm and stockpile	m³	54		
PSC 8.2.11	**1.05**	**Temporary fencing or hoarding**				
	1.05.01	a) 1.8 m High Diamond mesh fencing	m	100		
PSC 8.2.12	**1.06**	**Removal of man-made surfaces and kerbing**				
	1.06.01	a) Road materials with Asphalt ≤ 50mm thick	m²	20		
	1.06.02	b) Road materials with Asphalt > 50 ≤ 100mm thick	m²	40		
	1.06.03	c) Interlocking concrete segmental paving blocks, Class 2.6/40MPa (all colours)	m²	40		
	1.06.04	d) Concrete paving blocks, Class 2.6/40MPa (various sizes)	m²	20		
	1.06.05	e) Brick paving	m²	20		
	1.06.06	f) Unreinforced concrete ≤ 75mm thick	m²	20		
	1.06.07	g) Reinforced concrete ≤ 75mm thick	m²	20		
	1.06.08	h) Garden, lawns and grassing	m²	40		
	1.06.09	i) All types of Kerbing including channel	m	50		
	Carried forward					

Part B - Section 3: DN 800 Steel Pipeline

Site clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSC 8.2.13	**1.07**	**Backfilling and reinstatement of man-made surfaces**				
	1.07.01	a) Interlocking concrete segmental paving blocks, Class	m²	40		
	1.07.02	b) Concrete paving blocks, Class 2.6/40MPa (various	m²	20		
	1.07.03	c) Brick paving	m²	20		
	1.07.04	d) Kerbing (all types of kerbing)	m	50		
PSC 8.2.14	**1.08**	**Take down and re-erect existing fences and**				
	1.08.01	a) Guardrails	m	30		
	1.08.02	b) Diamond mesh fencing	m	10		
	1.08.03	c) Steel palisade fencing	m	10		
	1.08.04	d) Clearview fencing	m	10		
PSC 8.2.15	**1.09**	**Reinstatement of existing masonry walls and steel**				
PSC 8.2.15.1	**1.09.1**	**Face brick walls**				
	1.09.1.1	a) 110 mm wall	m²	10		
	1.09.1.2	b) 220 mm wall	m²	10		
PSC 8.2.15.2	**1.09.2**	**Plastered walls**				
	1.09.2.01	a) 110 mm wall	m²	10		
	1.09.2.02	b) 220 mm wall	m²	10		
PSC 8.2.15.3	**1.10.3**	**Steel fences**				
	1.10.3.01	a) Palisade fencing	m²	10		
	1.10.3.02	b) Clearview fencing	m²	10		
PSC 8.2.16	1.11	Protection of trees	No	6		
PSC 8.2.21	**1.11**	**Temporary removal and reinstatement of electrical**				
	1.11.01	a) Electrical Poles	No	1		
	1.11.02	b) Street Lights	No	1		
	Carried forward to summary (Part B - Section 3)					

Part B - Section 3: DN 800 Steel Pipeline

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS (PIPE TRENCHES)**				
		Refer to Drawing: JW14358-16941-T-012-S14-00-TMS				
PSDB 8.3.2	**2.01**	**a) Excavate in all materials, for trenches, backfill compact and dispose of surplus material**				
	2.01.01	**Pipes of diameter of DN 800 for depths:**				
	2.01.01.01	Up to 1,0 m	m	10		
	2.01.01.02	Over 1,0 m up to 2,0 m	m	10		
	2.01.01.03	Over 2,0 m up to 3,0 m	m	105		
	2.01.01.04	Over 3,0 m up to 4,0 m	m	10		
PSDB 8.3.2	**2.02**	**b) Extra over item 2.01 above for:**				
	2.02.01	1) Intermediate excavation	m^3	50		
	2.02.02	2) Hard rock excavation	m^3	50		
	2.02.03	3) Hand excavation where ordered by the Project Manager				
	2.02.03.01	a) Soft material	m^3	50		
	2.02.03.02	b) Intermediate material	m^3	50		
	2.02.03.03	c) Hard material	m^3	30		
PSDB 8.3.2	2.02.04	4) Backfill stabilized with 5% cement where directed by	m^3	100		
PSDB 8.3.2	2.02.05	5) Soilcrete backfill where directed by the Project Manager	m^3	100		
8.3.2	2.02.06	c) Excavate and dispose of unsuitable material from	m^3	80		
8.3.3	**2.03**	**Excavation Ancillaries**				
8.3.3.1	**2.03.01**	**Make up deficiency in backfill material**				
	2.03.01.01	a) from other necessary excavations on site	m^3	60		
	2.03.01.02	c) by importation from commercial or off-site sources	m^3	60		
PSDB 8.3.3.3	2.03.02	Compaction in roadways	m^3	105		
PSDB 8.3.4	**2.04**	**Particular Items**				
PSDB 8.3.4 (a)	2.04.01	a) Shore trench opposite structure or service	m	100		
PSDB 8.3.4 (c)	2.04.02	Dealing with groundwater				
	2.04.02.01	(1) Crushed stone (14 mm or 20 mm)	m^3	20		
	2.04.02.02	(2) Nonwoven, needle punched, continuous filament, polyester Geotextile	m^2	200		
	Carried forward					

Part B - Section 3: DN 800 Steel Pipeline

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSDB 8.3.5	**2.05**	**Existing Services that Intersect or Adjoin a Pipe Trench**				
PSDB 8.3.5	2.05.01	a) Services that intersect a trench				
	2.05.01.01	Water pipes up to DN 200	No.	2		
	2.05.01.02	Water mains DN 250 and larger	No.	1		
	2.05.01.03	Sewer pipes up to DN 160	No.	2		
	2.05.01.04	Sewer mains DN 200 and larger	No.	1		
	2.05.01.05	Stormwater pipes (any size)	No.	2		
	2.05.01.06	Cables (Electrical, data or telephone)	No.	5		
	2.05.01.07	Drainage furrows and channels	No.	1		
PSDB 8.3.5	**2.05.02**	**b) Services that adjoin a trench**				
	2.05.02.01	Water pipes up to DN 200	m	20		
	2.05.02.02	Water mains DN 250 and larger	m	10		
	2.05.02.03	Sewer pipes up to DN 160	m	20		
	2.05.02.04	Sewer mains DN 200 and larger	m	10		
	2.05.02.05	Stormwater pipes (any size)	m	30		
	2.05.02.06	Cables (Electrical, data or telephone)	m	50		
	2.05.02.07	Drainage furrows and channels	m	20		
PSDB 8.3.5 c	**2.06.03**	**c) Services that require special care**				
	2.06.03.01	Crossing underneath power lines up to 11 kV	No.	1		
	2.06.03.02	Crossing underneath power lines up to 300 kV	No.	1		
	2.06.03.03	Crossing underneath telephone lines	No.	2		
	2.06.02.04	Working alongside electricity poles	No.	4		
	2.06.02.05	Working alongside telephone poles	No.	2		
	2.06.02.06	Working alongside traffic signals	No.	2		
	2.06.02.07	Working alongside street lights	No.	20		
	Carried forward					

Part B - Section 3: DN 800 Steel Pipeline

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSDB 8.3.6	**2.07**	**Finishing**				
PSDB8.3.6.1	**2.07.01**	**Reinstate road surfaces complete with all courses**				
	2.07.01.01	a) Gravel on shoulders	m³	20		
	2.07.01.02	b) Asphalt of thickness 40 mm in parking area	m²	35		
	2.07.01.03	c) Asphalt of thickness 40 mm in roadway	m²	65		
	2.07.01.04	d) Re-instatement of unreinforced concrete	m²	10		
	2.07.01.05	e) Re-instatement of reinforced concrete	m³	5		
	2.07.01.06	f) Re-instatement of bricks, concrete pre-cast units and interlocking concrete segmental paving	m²	20		
	2.07.01.07	g) Re-instatement of grouted brick paving, complete	m²	10		
	2.07.01.08	h) Re-instatement of gardens, lawns and grassing	m²	10		
PSDB8.3.6.2	**2.07.02**	**Reinstatement of surfacing for walkways**				
	2.07.02.01	a) Re-instatement of walkways with unreinforced concrete	m²	10		
	2.07.02.02	b) Re-instatement of walkways with interlocking concrete segmental paving	m²	30		
PSDB8.3.6.3	**2.07.03**	**Reinstatement of kerbs and channels**				
		a) Re-instatement of all types of precast kerbing,	m	10		
		b) Re-instatement of precast concrete gutter, complete	m	10		
		c) Re-instatement of all types of insitu cast concrete kerbing, complete	m	5		
		d) Re-instatement of all types of insitu cast concrete gutter, complete	m	5		
PSDB 8.3.7	**2.08**	**Accommodation of traffic**	sum	1		
	Carried forward to summary (Part B - Section 3)					

Part B - Section 3: DN 800 Steel Pipeline

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**3**	**MEDIUM-PRESSURE PIPELINES** **Refer to Drawing:** **JW14358-16941-T-012-S14-00-TMS**				
PSL 8.2.16	**3.01**	**Supply, Lay and Bed Steel Pipes Complete with Welded Joints**				
	3.03.01	DN 800 steel; 8 mm wall thickness; API 5L X42 steel pipe; with Rigid Polyurethane Coating (RPU) and Solvent Free Liquid Epoxy lining (SFE); Bedded as per Drawing: JW14358-16941-T-017-S05-00-TMS	m	115		
PSL 8.2.19	**3.02**	**Extra over 3.01 for the Supplying, Laying, Welding or Jointing and Bedding of Steel specials**				
	3.02.01	DN 800 steel; 8 mm wall thickness; API 5L X42 steel long radius bends; with Rigid Polyurethane Coating (RPU) and Solvent Free Liquid Epoxy lining (SFE); Bedded as per Drawing: JW14358-16941-T-017-S05-00-TMS				
	3.02.01.01	Item 1: DN 800, 46° up to 90°, 5 segment bend to SANS 719; centre line radius R = 1630 mm, unflanged	No.	2		
	3.02.01.02	Item 2: DN 800, 23° up to 45°, 3 segment bend to SANS 719; centre line radius R = 1630 mm, unflanged	No.	2		
	3.02.01.03	Item 3: DN 800, 11.25 up to 22.5°, 2 segment bend to SANS 719; centre line radius R = 1630 mm, unflanged	No.	2		
	3.02.02	Mitres up to 11.25°	No.	4		
	3.02.03	DN 800 loose flanges to SANS 1123 Table 2500/3 for welding on site	No.	4		
PSL 8.2.22	**3.03**	**Flushing and sterilising of pipelines**				
	3.03.01	DN 800 steel pipe	m	115		
PSL 8.2.23	**3.04**	**Hydraulic field-testing of pipelines**				
	3.04.01	DN 800 steel pipe	m	115		
PSL 8.2.24	**3.05**	**Pipeline and Valve Markers**				
	3.05.01	a) Precast Concrete Marker (Drawing JW14358-16941-T-017-S07-00-TMS)	No.	5		
	3.05.02	b) Kerb Marking (Drawing JW14358-16941-T-017-S07-00-TMS)	No.	5		
	Carried forward to summary (Part B - Section 3)					

Part B - Section 3: DN 800 Steel Pipeline

Bedding (pipes)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 LB	**4**	**BEDDING (PIPES)** **Refer to Drawing:** **JW14358-16941-T-012-S14-00-TMS**				
PSLB 8.2.1.1	**4.01**	**Provision of bedding from trench excavations without the need for screening or other treatments**				
	4.01.01	Selected granular material	m³	10		
	4.01.02	Selected fill material	m³	15		
PSLB 8.2.1.2	**4.02**	**Provision of bedding from trench excavations including screening or other treatments**				
	4.02.01	Selected granular material	m³	10		
	4.02.02	Selected fill material	m³	15		
8.2.2	**4.03**	**Supply only of bedding by importation**				
	4.03.01	**From other necessary excavations (Provisional)**				
	4.03.01.01	Selected granular material	m³	10		
	4.03.01.02	Selected fill material	m³	10		
	4.03.01	**From commercial sources (Provisional)**				
	4.03.01.01	Selected granular material	m³	110		
	4.03.01.02	Selected fill material	m³	20		
8.2.4	**4.04**	**Encasing of pipes in concrete**				
	4.04.01	**Encasing DN 800 steel pipe**				
	4.04.01.01	Class 15 MPa/19 mm	m³	20		
	4.04.01.02	Class 30 MPa/19 mm	m³	10		
PSLB 8.2.6	4.05	Extra over items 4.01 and 4.02 for bedding stabilized with 5% cement	m³	30		
PSLB 8.2.7	4.06	Compaction Testing using a Nuclear Moisture Density Gauge	No.	6		
	Carried forward to summary (Part B - Section 3)					

Part B - Section 3: DN 800 Steel Pipeline

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS (PIPE TRENCHES)				
SANS 1200 L		MEDIUM-PRESSURE PIPELINES				
SANS 1200 LB		BEDDING (PIPES)				
Total carried forward to summary						

Part B - Section 4: DN 200 High Impact mPVC Pipeline

Site clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawing:** **JW14358-16941-T-012-S13-00-TMS**				
PSC 8.2.1	**1.01**	**Clear and Grub**				
	1.01.02	Strips, 2 m wide	m	830		
8.2.2	**1.02**	**Remove and grub large trees and tree stumps of girth**				
	1.02.01	Over 1 m and up to and including 2 m	No.	5		
	1.02.02	Over 2 m and up to and including 3 m	No.	8		
PSC 8.2.5	**1.03**	**Take down existing fences, guardrails and masonry walls**				
	1.03.01	a) Guardrails	m	120		
	1.03.02	b) Diamond mesh fencing	m	80		
	1.03.03	c) Steel palisade fencing	m	20		
	1.03.04	d) Clearview fencing	m	60		
	1.03.05	e) 110 mm masonry wall	m	40		
	1.03.06	f) 220 mm masonry wall	m	40		
8.2.10	1.04	Remove topsoil to nominal depth of 150 mm and stockpile	m³	250		
PSC 8.2.11	**1.05**	**Temporary fencing or hoarding**				
		a) 1.8 m High Diamond mesh fencing	m	400		
PSC 8.2.12	**1.06**	**Removal of man-made surfaces and kerbing**				
	1.06.01	a) Road materials with Asphalt ≤ 50mm thick	m²	100		
	1.06.02	b) Road materials with Asphalt > 50 ≤ 100mm thick	m²	200		
	1.06.03	c) Interlocking concrete segmental paving blocks, Class 2.6/40MPa (all colours)	m²	100		
	1.06.04	d) Concrete paving blocks, Class 2.6/40MPa (various sizes)	m²	50		
	1.06.05	e) Brick paving	m²	50		
	1.06.06	f) Unreinforced concrete ≤ 75mm thick	m²	50		
	1.06.07	g) Reinforced concrete ≤ 75mm thick	m²	50		
	1.06.08	h) Garden, lawns and grassing	m²	200		
	1.06.09	i) All types of Kerbing including channel	m	400		
	Carried forward					

Part B - Section 4: DN 200 High Impact mPVC Pipeline

Site clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSC 8.2.13	**1.07**	**Backfilling and reinstatement of man-made surfaces re-using removed materials**				
	1.07.01	a) Interlocking concrete segmental paving blocks, Class 2.6/40MPa (all colours)	m²	100		
	1.07.02	b) Concrete paving blocks, Class 2.6/40MPa (various sizes)	m²	50		
	1.07.03	c) Brick paving	m²	50		
	1.07.04	d) Kerbing (all types of kerbing)	m	200		
PSC 8.2.14	**1.08**	**Take down and re-erect existing fences and guardrails**				
	1.08.01	a) Guardrails	m	200		
	1.08.02	b) Diamond mesh fencing	m	100		
	1.08.03	c) Steel palisade fencing	m	50		
	1.08.04	d) Clearview fencing	m	50		
PSC 8.2.15	**1.09**	**Reinstatement of existing masonry walls and steel fences**				
PSC 8.2.15.1	**1.09.1**	**Face brick walls**				
	1.09.1.1	a) 110 mm wall	m²	20		
	1.09.1.2	b) 220 mm wall	m²	20		
PSC 8.2.15.2	**1.09.2**	**Plastered walls**				
	1.09.2.01	a) 110 mm wall	m²	20		
	1.09.2.02	b) 220 mm wall	m²	20		
PSC 8.2.15.3	**1.09.3**	**Steel fences**				
	1.09.3.01	a) Palisade fencing	m²	20		
	1.09.3.02	b) Clearview fencing	m²	20		
PSC 8.2.16	1.10	Protection of trees	No	8		
PSC 8.2.21	**1.11**	**Temporary removal and reinstatement of electrical infrastructure**				
	1.11.01	a) Electrical Poles	No	10		
	1.11.02	b) Street Lights	No	8		
	Carried forward to summary (Part - Section 4)					

Part B - Section 4: DN 200 High Impact mPVC Pipeline

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS (PIPE TRENCHES)** **Refer to Drawing:** **JW14358-16941-T-012-S13-00-TMS**				
PSDB 8.3.2	**2.01**	**a) Excavate in all materials, for trenches, backfill compact and dispose of surplus material**				
	2.01.02	Pipes of diameter of DN 200 for depths:				
	2.01.02.01	Up to 1,0 m	m	20		
	2.01.02.02	Over 1,0 m up to 2,0 m	m	680		
	2.01.02.03	Over 2,0 m up to 3,0 m	m	120		
PSDB 8.3.2	**2.02**	**b) Extra over item 2.01 above for:**				
	2.02.01	1) Intermediate excavation	m^3	120		
	2.02.02	2) Hard rock excavation	m^3	120		
	2.02.03	3) Hand excavation where ordered by the Project Manager				
	2.02.03.01	a) Soft material	m^3	120		
	2.02.03.02	b) Intermediate material	m^3	120		
	2.02.03.03	c) Hard material	m^3	120		
PSDB 8.3.2	2.02.04	4) Backfill stabilized with 5% cement where directed by the Project Manager	m^3	240		
PSDB 8.3.2	2.02.05	5) Soilcrete backfill where directed by the Project Manager	m^3	240		
8.3.2	2.02.06	c) Excavate and dispose of unsuitable material from trench bottom (provisional)	m^3	80		
8.3.3	**2.03**	**Excavation Ancillaries**				
8.3.3.1	2.03.01	Make up deficiency in backfill material				
	2.03.01.01	a) from other necessary excavations on site	m^3	60		
	2.03.01.02	c) by importation from commercial or off-site sources selected by the contractor	m^3	60		
PSDB 8.3.3.3	2.03.02	Compaction in roadways	m^3	200		
PSDB 8.3.4	**2.04**	**Particular Items**				
PSDB 8.3.4 (a)	2.04.01	a) Shore trench opposite structure or service	m	200		
PSDB 8.3.4 (c)	2.04.02	Dealing with groundwater				
	2.04.02.01	(1) Crushed stone (14 mm or 20 mm)	m^3	50		
	2.04.02.02	(2) Nonwoven, needle punched, continuous filament, polyester Geotextile	m^2	450		
	Carried forward					

Part B - Section 4: DN 200 High Impact mPVC Pipeline

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSDB 8.3.5	**2.05**	**Existing Services that Intersect or Adjoin a Pipe Trench**				
PSDB 8.3.5	2.05.01	a) Services that intersect a trench				
	2.05.01.01	Water pipes up to DN 200	No.	8		
	2.05.01.02	Water mains DN 250 and larger	No.	4		
	2.05.01.03	Sewer pipes up to DN 160	No.	8		
	2.05.01.04	Sewer mains DN 200 and larger	No.	4		
	2.05.01.05	Stormwater pipes (any size)	No.	10		
	2.05.01.06	Cables (Electrical, data or telephone)	No.	25		
	2.05.01.07	Drainage furrows and channels	No.	5		
PSDB 8.3.5	2.05.02	b) Services that adjoin a trench				
	2.05.02.01	Water pipes up to DN 200	m	120		
	2.05.02.02	Water mains DN 250 and larger	m	50		
	2.05.02.03	Sewer pipes up to DN 160	m	120		
	2.05.02.04	Sewer mains DN 200 and larger	m	50		
	2.05.02.05	Stormwater pipes (any size)	m	120		
	2.05.02.06	Cables (Electrical, data or telephone)	m	150		
	2.05.02.07	Drainage furrows and channels	m	60		
PSDB 8.3.5 c	2.06.03	c) Services that require special care				
	2.06.03.01	Crossing underneath power lines up to 11 kV	No.	1		
	2.06.03.02	Crossing underneath power lines up to 300 kV	No.	1		
	2.06.03.03	Crossing underneath telephone lines	No.	4		
	2.06.02.04	Working alongside electricity poles	No.	15		
	2.06.02.05	Working alongside telephone poles	No.	5		
	2.06.02.06	Working alongside traffic signals	No.	4		
	2.06.02.07	Working alongside street lights	No.	50		
	Carried forward					

Part B - Section 4: DN 200 High Impact mPVC Pipeline

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSDB 8.3.6	**2.07**	**Finishing**				
PSDB8.3.6.1	2.07.01	Reinstate road surfaces complete with all courses				
	2.07.01.01	a) Gravel on shoulders	m³	45		
	2.07.01.02	b) Asphalt of thickness 40 mm in parking area	m²	100		
	2.07.01.03	c) Asphalt of thickness 40 mm in roadway	m²	200		
	2.07.01.04	d) Re-instatement of unreinforced concrete	m²	60		
	2.07.01.05	e) Re-instatement of reinforced concrete	m³	60		
	2.07.01.06	f) Re-instatement of bricks, concrete pre-cast units and interlocking concrete segmental paving	m²	100		
	2.07.01.07	g) Re-instatement of grouted brick paving, complete	m²	50		
	2.07.01.08	h) Re-instatement of gardens, lawns and grassing	m²	400		
PSDB8.3.6.2	2.07.02	Reinstatement of surfacing for walkways				
	2.07.02.01	a) Re-instatement of walkways with unreinforced concrete	m²	60		
	2.07.02.02	b) Re-instatement of walkways with interlocking concrete segmental paving	m²	360		
PSDB8.3.6.3	2.07.03	Reinstatement of kerbs and channels				
		a) Re-instatement of all types of precast kerbing,	m	300		
		b) Re-instatement of precast concrete gutter, complete	m	200		
		c) Re-instatement of all types of insitu cast concrete kerbing, complete	m	200		
		d) Re-instatement of all types of insitu cast concrete gutter, complete	m	200		
PSDB 8.3.7	**2.08**	**Accommodation of traffic**	sum	1		
	Carried forward to summary (Part B - Section 4)					

Client:		**Contractor:**	
Witness:		**Witness:**	

Part B - Section 4: DN 200 High Impact mPVC Pipeline

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**3**	**MEDIUM-PRESSURE PIPELINES** **Refer to Drawing:** **JW14358-16941-T-012-S13-00-TMS**				
PSL 8.2.1	**3.01**	**Supply, Lay, and Bed Pipes Complete with Couplings**				
	3.01.01	High-Impact mPVC Class 16 complete with shouldered end coupling system				
	3.01.01.01	Class 16 DN 200	m	830		
PSL 8.2.20	**3.02**	**Supply, Lay and Bed HDPE Pipes Complete with Welded Joints**				
	3.02.01	PN16 PE100 HDPE				
	3.02.01.01	PN16 DN 250	m	100		
8.2.2	**3.03**	**Extra-over 3.0.1 for the Supplying, Laying, and**				
	3.03.01	High-Impact mPVC Class 16 bends complete with				
	3.03.01.01	DN 200, 11.25° bend	No.	8		
	3.03.01.02	DN 200, 22.5° bend	No.	8		
	3.03.01.03	DN 200, 45° bend	No.	3		
	3.03.01.04	DN 200, 90° bend	No.	3		
	3.03.02	High-Impact mPVC Class 16 shouldered end repair couplings				
	3.03.02.01	DN 200	No.	4		
	3.03.04	Flange adaptors for High-Impact mPVC Class 16				
	3.03.04.01	DN 200	No.	6		
PSL 8.2.21	**3.04**	**Extra over 3.02 for the Supplying, Laying, Butt Fusion Welding and Bedding of HDPE specials**				
	3.04.01	HDPE PN16 PE100 bends				
	3.04.01.01	DN 250 90° bend	No.	2		
	3.04.01.02	DN 250 45° bend	No.	2		
	3.04.01.03	DN 250 22.5° bend	No.	2		
	3.04.01.04	DN 250 11.25° bend	No.	2		
PSL 8.2.22	**3.05**	**Flushing and sterilising of pipelines**				
	3.05.01	Class 16 DN 200 High-Impact mPVC pipe	m	830		
	3.05.02	PN16 PE100 DN250 HDPE	m	100		
	Carried forward					

Part B - Section 4: DN 200 High Impact mPVC Pipeline

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSL 8.2.23	**3.06**	**Hydraulic field-testing of pipelines**				
	3.06.01	Class 16 DN 200 High-Impact mPVC pipe	m	830		
	3.06.02	PN16 PE100 DN 250 HDPE	m	100		
PSL 8.2.24	**3.07**	**Pipeline and Valve Markers**				
	3.07.01	a) Precast Concrete Marker (Drawing: JW14358-16941-T-017-S07-00-TMS)	No.	8		
	3.07.02	b) Kerb Marking (Drawing JW14358-16941-T-017-S07-00-TMS)	No.	8		
	Carried forward to summary (Part B - Section 4)					

Part B - Section 4: DN 200 High Impact mPVC Pipeline

Bedding (pipes)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 LB	**4**	**BEDDING (PIPES)** **Refer to Drawing:** **JW14358-16941-T-012-S13-00-TMS**				
PSLB 8.2.1.1	**4.01**	**Provision of bedding from trench excavations without the need for screening or other treatments**				
	4.01.01	Selected granular material	m³	20		
	4.01.02	Selected fill material	m³	120		
PSLB 8.2.1.2	**4.02**	**Provision of bedding from trench excavations including screening or other treatments**				
	4.02.01	Selected granular material	m³	20		
	4.02.02	Selected fill material	m³	40		
8.2.2	**4.03**	**Supply only of bedding by importation:**				
	4.03.01	From other necessary excavations (Provisional)				
	4.03.01.01	Selected granular material	m³	20		
	4.03.01.02	Selected fill material	m³	20		
	4.03.02	From commercial sources (Provisional)				
	4.03.02.01	Selected granular material	m³	270		
	4.03.02.02	Selected fill material	m³	40		
8.2.4	**4.04**	**Encasing of pipes in concrete**				
	4.04.01	Encasing DN 200 mPVC pipe				
	4.04.01.01	Class 15 MPa/19 mm	m³	10		
	4.04.01.02	Class 30 MPa/19 mm	m³	5		
PSLB 8.2.6	4.05	Extra over items 4.01 and 4.02 for bedding stabilized with 5% cement	m³	40		
PSLB 8.2.7	4.06	Compaction Testing using a Nuclear Moisture Density Gauge	No.	8		
	Carried forward to summary (Part B - Section 4)					

Part B - Section 4: DN 200 High Impact mPVC Pipeline

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS (PIPE TRENCHES)				
SANS 1200 L		MEDIUM-PRESSURE PIPELINES				
SANS 1200 LB		BEDDING (PIPES)				
Total carried forward to summary						

Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10

Site clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawings:** **JW14358-16941-T-012-S13-00-TMS**				
PSC 8.2.1	**1.01**	**Clear and grub**				
	1.01.01	Areas	m²	450		
8.2.10	1.02	Remove topsoil to nominal depth of 150 mm and stockpile	m³	70		
PSC 8.2.14	**1.03**	**Take down and re-erect existing fences and guardrails**				
	1.03.01	a) Guardrails	m	80		
	1.03.02	b) Diamond mesh fencing	m	75		
	Carried forward to summary (Part C - Section 1)					

Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS (PIPE TRENCHES)** **Refer to Drawings:** **JW14358-16941-T-013-S14-00-TMS** **JW14358-16941-T-013-S16-00-TMS**				
PSDB 8.3.2	**2.01**	**Excavation**				
	2.01.01	d) Excavate in all materials for stormwater inlet and outlet structures and for manholes, catchpits, valve chambers and the like, irrespective of depth, and backfill around structures	m³	850		
	2.01.02	e) Extra over 2.01.01 for excavating in				
	2.01.02.01	1) intermediate material	m³	100		
	2.01.02.02	2) hard material	m³	100		
	2.01.03	f) Hand excavation where ordered by the Project Manager				
	2.01.03.01	a) Soft material	m³	100		
	2.01.03.02	b) Intermediate material	m³	100		
	2.01.03.03	c) Hard material	m³	100		
	2.01.04	g) Backfill stabilized with 5% cement where directed by	m³	200		
	2.01.05	h) Soilcrete backfill where directed by the Project Manager	m³	200		
	Carried forward to summary (Part C - Section 1)					

Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10

Gabions and pitching

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DK	**3**	**GABIONS AND PITCHING** **Refer to Drawing:** **JW14358-16941-T-013-S14-00-TMS**				
8.2.2	**3.01**	**Gabions**				
	3.01.01	Gabion mattresses of galvanized wire, up to 0,3 m deep				
	3.01.01.01	60mm x 80mm mesh, 2.2mm diameter wire, 6 m x 2 m x 0.17 m mattress	m³	15		
8.2.4	**3.02**	**Geotextile**				
	3.02.01	Bidim A4 or approved equivalent	m²	150		
8.2.5	**3.03**	**Pitching**				
	3.03.01	Grouted pitching				
	3.03.01.01	a) Light pitching	m²	110		
	Carried forward to summary (Part C - Section 1)					

Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**4**	**MEDIUM-PRESSURE PIPELINES** **Refer to Drawings:** **JW14358-16941-T-013-S15-00-TMS** **JW14358-16941-T-013-S16-00-TMS**				
PSL 8.2.1	**4.01**	**Supply, Lay, and Bed Pipes Complete with Couplings**				
	4.01.01	High-Impact mPVC Class 16 complete with shouldered end coupling system				
	4.01.01.01	Class 16 DN 250	m	400		
8.2.2	**4.02**	**Extra-over 4.0.1 for the Supplying, Laying, and Bedding of Specials Complete with Couplings**				
	4.02.01	High-Impact mPVC Class 16 bends complete with shouldered end coupling system				
	4.02.01.01	DN 250, 11.25° bend	No.	8		
	4.02.01.02	DN 250, 22.5° bend	No.	4		
	4.02.01.03	DN 250, 45° bend	No.	3		
	4.02.01.04	DN 250, 90° bend	No.	3		
	4.02.02	High-Impact mPVC Class 16 shouldered end repair couplings				
	4.02.02.01	DN 250	No.	8		
	4.02.03	Flange adaptors for High-Impact mPVC Class 16 complete with shouldered end coupling system				
	4.02.03.01	DN 250	No.	8		
8.2.3	**4.03**	**Extra-over PSL 8.2.16 for Supplying, Fixing, and Bedding of Valves**				
	4.03.01	Scour Valve Chamber 1				
	4.03.01.01	Item 2: DN250 PN16 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	6		
	4.03.02	Scour Valve Chamber 2				
	4.03.02.01	Item 2: DN250 PN16 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	Carried forward					

Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSL 8.2.19	**4.04**	**Extra over 8.2.16 for the Supplying, Laying, Welding or Jointing and Bedding of Steel specials**				
	4.04.01	Specials for Scour Valve Chamber 1 as per Drawing: JW14358-16941-T-013-S15-00-TMS				
	4.04.01.01	Item 1: Spool piece DN 250; wall thickness t = 6 mm; flanged both ends to SANS 1123 Table 1600/3, with puddle flange	No.	5		
	4.04.01.02	Item 3: Spool piece DN 250; wall thickness t = 6 mm; flanged one end to SANS 1123 Table 1600/3, with puddle flange	No.	5		
	4.04.01.03	Item 4: Spool piece DN 250; wall thickness t = 6 mm; flanged both ends to SANS 1123 Table 1600/3	No.	5		
	4.04.01.04	Item 5: DN 250, 45 degree, 3 segment bend, wall thickness t = 6 mm, both ends flanged to SANS 1123 Table 1600/3	No.	5		
	4.04.01.05	Item 6: Reducing tee piece DN 600 x DN 250 mm; SANS 719 wall thickness t = 6 mm; Flanged all ends SANS 1123 Table 1600/3	No.	5		
	4.04.01.06	Item 7: Spool piece DN 600 wall thickness t = 6 mm; one end flanged to SANS 1123 Table 1600/3	No.	10		
	4.04.02	Specials for Scour Valve Chamber 2 as per Drawing JW14358-16941-T-013-S16-00-TMS				
	4.04.02.01	Item 1: Spool piece DN 250; wall thickness t = 6 mm; flanged both ends drilled to SANS 1123 Table 1600/3; with puddle flange	No.	4		
	4.04.02.02	Item 4a: Stub flange and backing flange for connecting DN 250 HDPE pipe; flange drilled to SANS 1123 Table 1600/3	No.	2		
	4.04.02.03	Item 4b: DN 250 Flange adaptor for High-Impact mPVC Class 16 complete with shouldered end coupling system; Flange drilled to SANS 1123 Table 1600/3	No.	2		
	4.04.02.04	Item 5: DN 250, 45 degree, 3 segment bend, wall thickness t = 6 mm, both ends flanged to SANS 1123 Table 1600/3	No.	2		
	4.04.02.05	Item 6: Reducing Tee-piece DN 600 x DN 250; wall thickness t = 6 mm; all ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	2		
	4.04.02.06	Item 7: Spool piece DN 600; wall thickness t = 6 mm; one end flanged to SANS 1123 Table 1600/3	No.	4		
	4.04.02.07	Item 6: Reducing tee piece DN 600 x DN 250 mm; SANS 719 wall thickness t = 6 mm; Flanged all ends to SANS 1123 Table 1600/3	No.	5		
	Carried forward					

Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	4.04.02.08	Item 7: Spool piece DN 600 wall thickness t = 6 mm; one end flanged to SANS 1123 Table 1600/3	No.	10		
	4.04.03	Specials for Scour Valve Chamber 2 as per Drawing: JW14358-16941-T-013-S16-00-TMS				
	4.04.03.01	Item 1: Spool piece DN 250; wall thickness t = 6 mm; flanged both ends drilled to SANS 1123 Table 1600/3; with puddle flange	No.	4		
	4.04.03.02	Item 4a: Stub flange and backing flange for connecting DN 250 HDPE pipe; flange drilled to SANS 1123 Table 1600/3	No.	2		
	4.04.03.03	Item 4b: DN 250 Flange adaptor for High-Impact mPVC Class 16 complete with shouldered end coupling system; Flange drilled to SANS 1123 Table 1600/3	No.	2		
	4.04.03.04	Item 5: DN 250, 45 degree, 3 segment bend, wall thickness t = 6 mm, both ends flanged to SANS 1123 Table 1600/3	No.	2		
	4.04.03.05	Item 6: Reducing Tee-piece DN 600 x DN 250; wall thickness t = 6 mm; all ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	2		
	4.04.03.06	Item 7: Spool piece DN 600; wall thickness t = 6 mm; one end flanged to SANS 1123 Table 1600/3	No.	4		
PSL 8.2.34	**4.05**	**Operation and Maintenance Manuals for Valves and**				
		DN250 Wedge Gate Valve (PN16)	Sum	1		
	Carried forward to summary (Part C - Section 1)					

Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10

Stormwater drainage

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 LE	**5**	**STORMWATER DRAINAGE** **Refer to Drawing:** **JW14358-16941-T-013-S38-TMS**				
8.2.1	**5.01**	**Supply and Lay Concrete Pipe Culverts on Class B Bedding**				
	5.01.01	Class 100 D Pipes				
	5.01.01.01	300 mm Diameter	m	20		
	5.01.01.02	450 mm Diameter	m	20		
	5.01.01.03	525 mm Diameter	m	20		
	5.01.01.04	600 mm Diameter	m	20		
	5.01.01.05	750 mm Diameter	m	20		
8.2.8	**5.02**	**Supply and Install Manholes, Catchpits, and the like**				
	5.02.01	Precast kerb inlet as per drawing JW14358-16941-T-013-S38-TMS	No.	5		
	Carried forward to summary (Part C - Section 1)					

Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 2001 PART CC1	**6**	**CONCRETE WORKS (STRUCTURAL)**				
		Refer to Drawing: JW14358-16941-T-013-S14-TMS				
		SCHEDULED FORMWORK ITEMS				
PSCC1.002	**6.01**	**Smooth**				
	6.01.01	Vertical formwork to				
	6.01.01.01	Foundations (Floor)	m²	30		
	6.01.01.02	Plinths	m²	7		
	6.01.01.03	Walls	m²	550		
	6.01.01.04	Sump	m²	21		
	6.01.02	Horizontal formwork to				
	6.01.02.01	Precast roof slabs	m²	85		
PSCC1.005	**6.02**	**Narrow widths (up to 300 mm wide)**				
	6.02.01	Vertical Smooth formwork to				
	6.02.01.01	Precast roof slabs	m	150		
PSCC1.006	**6.03**	**Box out holes/form voids**				
	6.03.01	a) Small, circular, of diameter up to 0,35 m				
	6.03.01.01	0 m up to and including 0,5 m	No.	50		
	6.03.02	d) Large, other than circular, areas over 0.1 m^2 up to 2,0				
	6.03.02.01	0 m up to and including 0,5 m	No.	14		
	6.03.02.02	Over 2,0 m deep	No.	14		
		SCHEDULED REINFORCEMENT ITEMS				
PSCC1.007	**6.04**	**Steel bars**				
	6.04.01	a) Steel bars irrespective of grade and diameter	t	30		
PSCC1.008	**6.05**	**High-tensile welded mesh**				
	6.05.01	Mesh Ref 245	m²	85		
	Carried forward					

Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
		SCHEDULED CONCRETE ITEMS				
PSCC1.011	**6.06**	**Blinding layer in Grade 15 MPa/19 mm concrete**				
	6.06.01	50 mm thickness	m²	140		
PSCC1.012	**6.07**	**Strength concrete**				
	6.07.01	Grade 30 MPa/19 mm concrete in				
	6.07.01.01	Foundations (Floor)	m³	24		
	6.07.01.02	Plinths	m³	4		
	6.07.01.03	Walls	m³	90		
	6.07.01.04	Roof Slabs	m³	18		
	6.07.01.05	Sump	m³	4		
PSCC1.013	**6.08**	**Unformed surface finishes**				
	6.08.01	a) Steel-floated finish				
	6.08.01.01	Foundations (Floor)	m²	82		
	6.08.01.02	Plinths	m²	9		
	6.08.01.03	Walls	m²	40		
	6.08.01.04	Roof Slab	m²	85		
	6.08.02	d) Broomed finish				
	6.08.02.01	Blinding layer	m²	140		
	6.08.03	e) Screed in 3:1 Sand and Cement Mix				
	6.08.03.01	Chamber floor screed	m³	8		
PSCC1.016	**6.09**	**Joints**				
	6.09.01	Polysulphide sealant between precast slabs	m	30		
PSCC1.018	**6.10**	**Grouting**				
	6.10.01	a) Under bases of pipe supports and straps	m³	5		
	6.10.01	c) Pipe box-outs	m³	5		
	Carried forward					

Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.019	**6.11**	**HD bolts and miscellaneous metal work**				
	6.11.01	Metal work for Scour Valve Chamber 1 as per Drawing: JW14358-16941-T-013-S14-00-TMS				
	6.11.01.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	10		
	6.11.01.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	5		
	6.11.01.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	5		
	6.11.01.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	10		
	6.11.01.05	Fabricate and cast in galvanised acour overflow frame	No.	5		
	6.11.01.06	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	40		
	6.11.02	Metal work for Scour Valve Chamber 2 as per Drawing: JW14358-16941-T-013-S16-00-TMS				
	6.11.02.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	2		
	6.11.02.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	2		
	6.11.02.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	2		
	6.11.02.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	2		
	6.11.02.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	16		
	6.11.03	Metal work for Welling Chamber Type 1 as per Drawing: JW14358-16941-T-013-S28-00-TMS				
	6.11.03.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	2		
	6.11.03.02	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	2		
	6.11.03.03	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	20		
	Carried forward					

Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.020	**6.12**	**Colour Mitigation**				
	6.12.01	Exposed Chambers along roadways	m²	70		
		MISCELLANEOUS ITEMS				
PSCC1.021	**6.13**	**Polythene sheeting under concrete**				
	6.13.01	250 micron green medium density polyethylene dampproof sheeting	m²	85		
PSCC1.023	**6.14**	**FRP items**				
	6.14.01	c) FRP Grating				
	6.14.01.01	450 mm x 450 mm x 38 mm deep FRP grating	No.	7		
PSCC1.024	**6.15**	**Casting pipes and specials in concrete**				
	6.15.01	DN 250 Steel pipe cast into chamber wall	No.	14		
PSCC1.025	**6.16**	**Installation of precast elements**				
	6.16.01	Precast roof slabs as per Drawing: JW14358-16941-T-013-S14-00-TMS	No.	12		
	6.16.02	Precast roof slabs as per Drawing: JW14358-16941-T-013-S16-00-TMS	No.	2		
PSCC1.026	**6.17**	**Drilling cores through concrete**				
	6.17.01	100 mm diameter core through 250 mm thick concrete slab	No.	7		
	Carried forward to summary (Part C - Section 1)					

Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS (PIPE TRENCHES)				
SANS 1200 DK		GABIONS AND PITCHING				
SANS 1200 L		MEDIUM-PRESSURE PIPELINES				
SANS 1200 LE		STORMWATER DRAINAGE				
SANS 2001 CC1		CONCRETE WORKS (STRUCTURAL)				
Total carried forward to summary						

Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11

Site clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawings:** **JW14358-16941-T-013-S03-00-TMS** **JW14358-16941-T-013-S05-00-TMS** **JW14358-16941-T-013-S07-00-TMS** **JW14358-16941-T-013-S09-00-TMS** **JW14358-16941-T-013-S12-00-TMS**				
PSC 8.2.1	**1.01**	**Clear and grub**				
	1.01.01	Areas	m²	225		
8.2.10	1.02	Remove topsoil to nominal depth of 150 mm and stockpile	m²	144		
PSC 8.2.14	**1.03**	**Take down and re-erect existing fences and**				
	1.03.01	a) Guardrails	m	45		
	1.03.02	b) Diamond mesh fencing	m	25		
	Carried forward to summary (Part C - Section 2)					

Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS (PIPE TRENCHES)** **Refer to Drawings:** **JW14358-16941-T-013-S03-00-TMS** **JW14358-16941-T-013-S05-00-TMS** **JW14358-16941-T-013-S07-00-TMS** **JW14358-16941-T-013-S09-00-TMS** **JW14358-16941-T-013-S12-00-TMS**				
PSDB 8.3.2	**2.01**	**Excavation**				
	2.01.01	d) Excavate in all materials for stormwater inlet and outlet structures and for manholes, catchpits, valve chambers and the like, irrespective of depth, and backfill around structures	m³	1320		
	2.01.02	e) Extra over 2.01.01 for excavating in				
	2.01.02.01	1) intermediate material	m³	135		
	2.01.02.02	2) hard material	m³	135		
	2.01.03	f) Hand excavation where ordered by the Project Manager				
	2.01.03.01	a) Soft material	m³	135		
	2.01.03.02	b) Intermediate material	m³	135		
	2.01.03.03	c) Hard material	m³	135		
	2.01.04	g) Backfill stabilized with 5% cement where directed by the Project Manager	m³	270		
	2.01.05	h) Soilcrete backfill where directed by the Project Manager	m³	270		
	Carried forward to summary (Part C - Section 2)					

Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**3**	**MEDIUM-PRESSURE PIPELINES** **Refer to Drawings:** **JW14358-16941-T-013-S04-00-TMS** **JW14358-16941-T-013-S06-00-TMS** **JW14358-16941-T-013-S08-00-TMS** **JW14358-16941-T-013-S10-00-TMS** **JW14358-16941-T-013-S13-00-TMS**				
8.2.3	**3.01**	**Extra-over PSL 8.2.1 or PSL 8.2.16 for Supplying,**				
	3.01.01	DN 600 Air Valve Chamber 1 as per Drawing: JW14358-16941-T-013-S04-00-TMS				
	3.01.01.01	Item 5: DN 100 PN16 Resilient Seal Gate Valve; Non rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.01.01.02	Item 6: DN 100 PN16 Double orifice with anti-shock orifice mechanism air release valve, Vent-O-Mat RBX or similar approved; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.01.02	DN 200 Air Valve Chamber 2 as per Drawing: JW14358-16941-T-013-S06-00-TMS				
	3.01.02.01	Item 5: DN 100 PN16 Resilient Seal Gate Valve; Non Non rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	2		
	3.01.02.02	Item 6: DN 100 PN16 Double orifice with anti-shock orifice mechanism air release valve, Vent-O-Mat RBX or similar approved; flanges drilled to SANS 1123 Table 1600/3	No.	2		
	3.01.02.03	Item 8: DN 200 PN16 Wedge Gate Valve; Non rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.01.03	DN 600 Air Valve Chamber 2 as per Drawing: JW14358-16941-T-013-S08-00-TMS				
	3.01.03.01	Item 5: DN 100 PN16 Resilient Seal Gate Valve; Non rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.01.03.02	Item 6: DN 100 PN16 Double orifice with anti-shock orifice mechanism air release valve, Vent-O-Mat RBX or similar approved; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.01.03.03	Item 7: DN 600 PN16 Wedge Gate Valve; Non rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	Carried forward					

Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.01.04	DN 600 Air Valve Chamber 3 as per Drawing: JW14358-16941-T-013-S10-00-TMS				
	3.01.04.01	Item 5: DN 100 PN16 Resilient Seal Gate Valve; Non rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.01.04.02	Item 6: DN 100 PN16 Double orifice with anti-shock orifice mechanism air release valve, Vent-O-Mat RBX or similar approved; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.01.04.03	Item 7: DN 600 PN16 Wedge Gate Valve; Non rising to spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled SANS 1123 Table 1600/3	No.	1		
	3.01.05	DN 600 Air Valve Chamber 4 as per Drawing: JW14358-16941-T-013-S13-00-TMS				
	3.01.05.01	Item 5: DN 100 PN16 Resilient Seal Gate Valve; Non to rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled SANS 1123 Table 1600/3	No.	1		
	3.01.05.02	Item 6: DN 100 PN16 Double orifice with anti-shock orifice mechanism air release valve, Vent-O-Mat RBX or similar approved; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.01.05.03	Item 7: DN 600 PN16 Wedge Gate Valve; Non rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	1		
PSL 8.2.19	**3.02**	**Extra over PSL 8.2.1 or 8.2.16 for the Supplying, Laying, Welding or Jointing and Bedding of Steel specials**				
	3.02.01	DN 600 Air Valve Chamber 1 as per Drawing: JW14358-16941-T-013-S04-00-TMS				
	3.02.01.01	Item 1: Spool piece DN 600; wall thickness t = 6 mm SANS 719; one end flanged to SANS 1123 Table 1600/3	No.	2		
	3.02.01.02	Item 2: Spool piece DN 600; wall thickness t = 6 mm SANS 719; flanged both ends and drilled to SANS 1123 Table 1600/3 with puddle flange	No.	2		
	3.02.01.03	Item 3: Unequal tee DN 600 x DN 400 mm SANS 719; flanged all ends to SANS 1123 Table 1600/3; With DN 600 pipe support	No.	1		
	3.02.01.04	Item 4: Spool piece DN 100 x 200 mm long; SANS 62 heavy class; one end flanged DN 600 drilled to SANS 1123 Table 1600/3; other end welded to DN 100 blank flange to SANS 1123 Table 1600/8 with holed drilled for DN 100 pipe	No.	1		
	Carried forward					

Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.02.02	DN 200 Air Valve Chamber 2 as per Drawing: JW14358-16941-T-013-S06-00-TMS				
	3.02.02.01	Item 1: Spool piece DN 200; SANS 719 wall thickness t = 6 mm; flanged both ends to SANS 1123 Table 1600/3 with puddle flange	No.	2		
	3.02.02.02	Item 2: Spool piece DN 200; wall thickness t = 6 mm SANS 719; flanged both ends to SANS 1123 Table 1600/3	No.	2		
	3.02.02.03	Item 03: Unequal tee DN 200 x DN 100 mm SANS 719 wall thickness t = 6 mm; Flanged all ends SANS 1123 Table 1600/3; With pipe support	No.	2		
	3.02.02.04	Item 4: Spool piece DN 100 x 250 mm long; SANS 62 heavy class; both ends flanged, drilled to SANS 1123 Table 1600/3	No.	2		
	3.02.02.05	Item 9: DN 250 Flange adaptor for High-Impact mPVC Class 16 complete with shouldered end coupling system; Flange drilled to SANS 1123 Table 1600/3	No.	2		
	3.02.03	DN 600 Air Valve Chamber 2 as per Drawing: JW14358-16941-T-013-S08-00-TMS				
	3.02.03.01	Item 1: Spool piece DN 600; wall thickness t = 6 mm SANS 719; one end flanged to SANS 1123 Table 1600/3	No.	2		
	3.02.03.02	Item 2: Spool piece DN 600; wall thickness t = 6 mm SANS 719; flanged both ends to SANS 1123 Table 1600/3 with puddle flange	No.	2		
	3.02.03.03	Item 3: Unequal tee DN 600 x DN 400 mm SANS 719; flanged all ends to SANS 1123 Table 1600/3; With DN pipe support	No.	1		
	3.02.03.04	Item 4: Spool piece DN 100, 200 mm long; SANS 62 medium class; one end flanged DN 600 to SANS 1123 Table 1600/3; other end welded to DN 100 blank flange to SANS 1123 Table 1600/8 with hole drilled for DN 100 pipe	No.	1		
	3.02.04	DN 600 Air Valve Chamber 3 as per Drawing: JW14358-16941-T-013-S10-00-TMS				
	3.02.04.01	Item 1: Spool piece DN 600; wall thickness t = 6 mm SANS 719; one end flanged to SANS 1123 Table 1600/3	No.	2		
	3.02.04.02	Item 2: Spool piece DN 600; wall thickness t = 6 mm with SANS 719; flanged both ends to SANS 1123 Table 1600/3 puddle flange	No.	2		
	3.02.04.03	Item 3: Unequal tee DN 600 x DN 400 mm SANS 719; flanged all ends to SANS 1123 Table 1600/3; With DN pipe support	No.	1		
	Carried forward					

Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.02.04.04	Item 4: Spool piece DN 100, 200 mm long; SANS 62 medium class; one end flanged DN 600 to SANS 1123 Table 1600/3; other end welded to DN 100 blank flange to SANS 1123 Table 1600/8 with hole drilled for DN 100 pipe	No.	1		
PSL 8.2.34	**3.03**	**Operation and Maintenance Manuals for Valves and Flow Meters**				
	3.03.01	DN 100 Resilient Seal Gate Valve (PN16)	No.	1		
	3.03.02	DN 600 Wedge Gate Valve (PN16)	No.	1		
	3.03.03	DN 100 Air Valve (PN16)	No.	1		
	Carried forward to summary (Part C - Section 2)					

Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11

Concrete (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 2001 PART CC1	**4**	**CONCRETE (STRUCTURAL)**				
		Refer to Drawing: JW14358-16941-T-013-S03-00-TMS				
		SCHEDULED FORMWORK ITEMS				
PSCC1.002	**4.01**	**Smooth:**				
	4.01.01	Vertical formwork to:				
	4.01.01.01	Foundations (Floor)	m²	60		
	4.01.01.02	Plinths	m²	12		
	4.01.01.03	Walls	m²	1060		
	4.01.01.04	Sump	m²	30		
	4.01.02	Horizontal formwork to:				
	4.01.02.01	Precast roof slabs	m²	135		
PSCC1.005	**4.02**	**Narrow widths (up to 300 mm wide):**				
	4.02.01	Vertical Smooth formwork to:				
	4.02.01.01	Precast roof slabs	m	300		
PSCC1.006	**4.03**	**Box out holes/form voids:**				
	4.03.01	a) Small, circular, of diameter up to 0,35 m				
	4.03.01.01	Over 0,5 m and up to and including 1,0 m	No.	120		
	4.03.02	d) Large, other than circular, areas over 0.1 m^2 up to 2,0 m^2				
	4.03.02.01	Over 0,5 m and up to and including 1,0 m	No.	15		
	4.03.02.02	Over 2,0 m deep	No.	24		
		SCHEDULED REINFORCEMENT ITEMS				
PSCC1.007	**4.04**	**Steel bars irrespective of grade and diameter**				
	4.04.01	a) Steel bars irrespective of grade and diameter	t	57		
	Carried forward					

Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11

Concrete (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
		SCHEDULED CONCRETE ITEMS				
PSCC1.011	**4.05**	**Blinding layer Grade 15 MPa/19 mm concrete**				
	4.05.01	50 mm thickness	m²	340		
PSCC1.012	**4.06**	**Strength concrete**				
	4.06.01	**Grade 30 MPa/19 mm concrete in**				
	4.06.01.01	Foundations (Floor)	m^3	38		
	4.06.01.02	Plinths	m^3	8		
	4.06.01.03	Walls	m^3	130		
	4.06.01.04	Roof	m^3	29		
	4.06.01.05	Sump	m^3	11		
PSCC1.013	**4.07**	**Unformed surface finishes**				
	4.07.01	**a) Steel-floated finish**				
	4.07.01.01	Foundations (Floor)	m²	73		
	4.07.01.02	Top of Plinths	m²	12		
	4.07.01.03	Top of Walls	m²	52		
	4.07.01.04	Roof Slabs	m²	114		
	4.07.02	**d) Broomed finish**				
	4.07.02.01	Blinding layer	m²	355		
	4.07.03	**e) Screed in 3:1 Sand and Cement Mix**				
	4.07.03.01	Chamber floor screed	m^3	20		
PSCC1.015	**4.08**	**Joints**				
	4.08.01	Polysulphide sealant between precast slabs	m	175		
	4.08.02	Extruded butyl sealant between manhole rings	m	35		
PSCC1.015	**4.08**	**Joints**				
	4.08.01	Polysulphide sealant between precast slabs	m	150		
PSCC1.017	**4.09**	**Manufacture (or supply) and erect precast units:**				
	4.09.01	DN 1000 concrete ring manholes, 250 mm high, complete with step irons	No.	10		
	Carried forward					

Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11

Concrete (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.018	**4.10**	**Grouting**				
	4.10.01	a) Under bases of pipe supports and straps	m³	12		
	4.10.02	c) Pipe box-outs	m³	12		
	4.10.03	d) Between precast sections and manhole rings	m³	2		
PSCC1.019	**4.11**	**HD bolts and miscellaneous metal work**				
	4.11.01	Metal work for DN 600 Air Valve Chamber 1 as per Drawing: JW14358-16941-T-013-S03-00-TMS				
	4.11.01.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	3		
	4.11.01.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	3		
	4.11.01.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	3		
	4.11.01.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	3		
	4.11.01.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	6		
	4.11.02	Metal work for DN 600 Air Valve Chamber 2 as per Drawing: JW14358-16941-T-013-S07-00-TMS				
	4.11.02.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	4		
	4.11.02.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	4		
	4.11.02.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	4		
	4.11.02.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	4		
	4.11.02.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	64		
	Carried forward					

Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11

Concrete (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	4.11.03	Metal work for DN 600 Air Valve Chamber 3 as per Drawing: JW14358-16941-T-013-S09-00-TMS				
	4.11.03.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.11.03.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.11.03.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.11.03.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.11.03.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	16		
	4.11.04	Metal work for DN 200 Air Valve Chamber as per Drawing: JW14358-16941-T-013-S05-00-TMS				
	4.11.04.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.11.04.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.11.04.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.11.04.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.11.04.05	Fabricate and cast in lifting hooks as per Drawing: JW14358-16941-T-017-S10-00-TMS	No.	12		
PSCC1.020	**4.12**	**Colour Mitigation to:**				
	4.12.01	Exposed Chambers along roadways	m²	144		
		MISCELLANEOUS ITEMS				
PSCC1.021	**4.13**	**Polythene sheeting under concrete**				
	4.13.01	250 micron green medium density polyethylene dampproof sheeting	m²	355		
PSCC1.023	**4.14**	**FRP items**				
	4.14.01	c) FRP Grating				
	4.14.01.01	450 mm x 450 mm x 38 mm deep FRP grating as per Drawing: JW14358-16941-T-013-S07-00-TMS	No.	12		
	Carried forward					

Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11

Concrete (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.024	**4.14**	**Casting pipes and specials in concrete**				
	4.14.01	DN 600 Steel pipe cast into chamber wall	No.	22		
	4.14.02	DN 200 Steel pipe cast into chamber wall	No.	2		
PSCC1.025	**4.15**	**Installation of precast elements**				
	4.15.01	Precast roof slabs as per Drawing: JW14358-16941-T-013-S03-00-TMS	No.	9		
	4.15.02	Precast roof slabs as per Drawing: JW14358-16941-T-013-S05-00-TMS	No.	12		
	4.15.03	Precast roof slabs as per Drawing: JW14358-16941-T-013-S07-00-TMS	No.	3		
	4.15.04	Precast roof slabs as per Drawing: JW14358-16941-T-013-S09-00-TMS	No.	3		
PSCC1.026	**4.16**	**Drilling cores through concrete**				
	4.16.01	100 mm diameter core through 300 mm thick concrete slab	No.	10		
	Carried forward to summary (Part C - Section 2)					

Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS (PIPE TRENCHES)				
SANS 1200 L		MEDIUM-PRESSURE PIPELINES				
SANS 2001 CC1		CONCRETE (STRUCTURAL)				
Total carried forward to summary						

Part C - Section 3 - DN 200 Flow Meter and scour Valve Chamber: Node NC3

Site Clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawing:** **JW14358-16941-T-013-S23-00-TMS**				
PSC 8.2.1	**1.01**	**Clear and grub**				
	1.01.01	Areas	m²	100		
8.2.10	1.02	Remove topsoil to nominal depth of 150 mm and stockpile	m³	15		
PSC 8.2.14	**1.03**	**Take down and re-erect existing fences and guardrails**				
	1.03.01	a) Guardrails	m	10		
	1.03.02	b) Diamond mesh fencing	m	10		
	Carried forward to summary (Part C - Section 3)					

Part C - Section 3 - DN 200 Flow Meter and scour Valve Chamber: Node NC3

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS (PIPE TRENCHES)** **Refer to Drawing:** **JW14358-16941-T-013-S23-00-TMS**				
PSDB 8.3.2	**2.01**	**Excavation**				
	2.01.01	d) Excavate in all materials for stormwater inlet and outlet	m³	200		
	2.01.02	**e) Extra over 2.01.01 for excavating in**				
	2.01.02.01	1) intermediate material	m³	20		
	2.01.02.02	2) hard material	m³	20		
	2.01.03	**f) Hand excavation where ordered by the Project**				
	2.01.03.01	a) Soft material	m³	20		
	2.01.03.02	b) Intermediate material	m³	20		
	2.01.03.03	c) Hard material	m³	20		
	2.01.04	g) Backfill stabilized with 5% cement where directed by	m³	40		
	2.01.05	h) Soilcrete backfill where directed by the Project Manager	m³	40		
	Carried forward to summary (Part C - Section 3)					

Part C - Section 3 - DN 200 Flow Meter and scour Valve Chamber: Node NC3

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**3**	**MEDIUM-PRESSURE PIPELINES** **Refer to Drawing:** **JW14358-16941-T-013-S24-00-TMS**				
8.2.3	**3.01**	**Extra-over PSL 8.2.1 for Supplying, Fixing, and Bedding of Valves**				
	3.01.01	Item 6: DN 150 PN16 Resilient Seal Gate valve; non rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	3		
	3.01.02	Item 13: DN 150 Single Door Swing Check Valve to SANS 1551; Vosa or similar approved; flanged both ends to SANS 1123 Table 1600/3	No.	1		
PSL 8.2.19	**3.02**	**Extra over 8.2.1 for the Supplying, Laying, Welding or Jointing and Bedding of Steel specials**				
	3.02.01	Item 1: DN200 Flange adaptor for High-Impact mPVC Class 16 complete with shouldered end coupling system; flange drilled to SANS 1123 Table 1600/3	No.	3		
	3.02.02	Item 2: Concentric reducer DN 200 to DN 150; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	3		
	3.02.03	Item 3: Spool piece DN 150 x 1300 mm long; SANS 62 Medium class; Flanged both ends; drilled to SANS 1123 Table 1600/3 with puddle flange	No.	2		
	3.02.04	Item 4: Equal Tee DN150 x DN150; SANS 62 Medium class; all ends flanged; drilled to SANS 1123 Table 1600/3	No.	1		
	3.02.05	Item 5: Spool piece DN 150 x 506 mm long; SANS 62 Medium class; Flanged both ends; drilled to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.02.06	Item 7: Spool piece DN 150 x 1300 mm long; SANS 62 Medium class; Flanged both ends; drilled to SANS 1123 Table 1600/3; with puddle flange	No.	1		
	3.02.07	Item 8: Spool piece DN 150 x 300 mm long; SANS 62 Medium class; Flanged both ends; drilled to SANS 1123 Table 1600/3	No.	2		
	3.02.08	Item 9a: DN150 Y-Strainer; Flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
	3.02.09	Item 9b: DN150 T-Strainer; Flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
	3.02.10	Item 10: Spool piece DN 150 x 750 mm long; SANS 62 Medium class; Flanged both ends; drilled to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.02.11	Item 12: Spool piece DN 150 x 450 mm long; SANS 62 Medium class; Flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
	Carried forward					

Part C - Section 3 - DN 200 Flow Meter and scour Valve Chamber: Node NC3

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.02.12	Item 14: Spool piece DN 150 x 300 mm long; SANS 62 Medium class; Flanged both ends; drilled to SANS 1123 Table 1600/3; with pipe support	No.	1		
PSL 8.2.30	**3.03**	**Extra over 8.2.1 for for the Supplying, Installing and Commissioning of Flow Meters**				
	3.02.01	Item 11: DN 150 PN16 Electromagnetic flow meter	No.	1		
PSL 8.2.34	**3.04**	**Operation and Maintenance Manuals for Valves and Flow Meters**				
		DN150 Resilient Seal Gate Valve (PN16)	Sum	1		
		DN150 Electromagnetic Flow Meter (PN16)	Sum	1		
		DN150 Non-return Valve (PN16)	Sum	1		
	Carried forward to summary (Part C - Section 3)					

Part C - Section 3 - DN 200 Flow Meter and scour Valve Chamber: Node NC3

Cable ducts

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 LC	**4**	**CABLE DUCTS** **Refer to Drawings:** **JW14358-16941-T-013-S23-00-TMS** **JW14358-16941-T-013-S24-00-TMS**				
8.2.2	**4.01**	**Excavation**				
	4.01.01	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material				
	4.01.01.01	i) Single duct trench (300 mm wide), up to 1 m deep	m^3	5		
PSLC 8.2.5	**4.02**	**Supply, lay, bed and prove duct, including draw wire screening wire**				
		a) 110mm flexible conduit	m	10		
8.2.6	**4.03**	**Imported bedding material, where ordered**				
	4.03.01	a) Selected granular material	m^3	3		
	Carried forward to summary (Part C - Section 3)					

Part C - Section 3 - DN 200 Flow Meter and scour Valve Chamber: Node NC3

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 2001 PART CC1	**5**	**CONCRETE WORKS (STRUCTURAL)**				
		Refer to Drawing: JW14358-16941-T-013-S23-00-TMS				
		SCHEDULED FORMWORK ITEMS				
PSCC1.002	**5.01**	**Smooth**				
	5.01.01	Vertical formwork to				
	5.01.01.01	Foundations (Floor)	m²	10		
	5.01.01.02	Plinths	m²	2		
	5.01.01.03	Walls	m²	150		
	5.01.01.04	Sump	m²	2		
	5.01.02	Horizontal formwork to				
	5.01.02.01	Precast roof slabs	m²	20		
PSCC1.005	**5.02**	**Narrow widths (up to 300 mm wide)**				
	5.02.01	Vertical Smooth formwork to				
	5.02.01.01	Precast roof slabs	m	50		
	5.02.01.02	Concrete Bunker Apron Slab	m	10		
PSCC1.006	**5.03**	**Box out holes/form voids**				
	5.03.01	a) Small, circular, of diameter up to 0,35 m				
	5.03.01.01	0 m up to and including 0,5 m	No.	20		
	5.03.02	d) Large, other than circular, areas over 0.1 m^2 up to 2,0 m2				
	5.03.02.01	0 m up to and including 0,5 m	No.	1		
	5.03.02.02	Over 2,0 m deep	No.	3		
		SCHEDULED REINFORCEMENT ITEMS				
PSCC1.007	**5.04**	**Steel bars**				
	5.04.01	(a) Steel bars irrespective of grade and diameter	t	7		
	Carried forward					

Part C - Section 3 - DN 200 Flow Meter and scour Valve Chamber: Node NC3

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
		SCHEDULED CONCRETE ITEMS				
PSCC1.011	**5.05**	**Blinding layer in Grade 15 MPa/19 mm concrete**				
	5.05.01	50 mm thickness	m²	45		
PSCC1.012	**5.06**	**Strength concrete**				
	5.06.01	Class 30 MPa/19 mm concrete in				
	5.06.01.01	Foundations (Floor)	m^3	6		
	5.06.01.02	Plinths	m^3	1		
	5.06.01.03	Walls	m^3	17		
	5.06.01.04	Roof Slabs	m^3	4		
	5.06.01.05	Sump	m^3	1		
	5.06.01.06	Concrete Bunker Apron Slab	m^3	1		
PSCC1.013	**5.07**	**Unformed surface finishes**				
	5.07.01	a) Steel-floated finish				
	5.07.01.01	Foundations (Floor)	m²	15		
	5.07.01.02	Top of Plinths	m²	2		
	5.07.01.03	Top of Walls	m²	10		
	5.07.01.04	Roof Slabs	m²	16		
	5.07.01.05	Concrete Bunker Apron Slab	m²	10		
	5.08.02	d) Broomed finish				
	5.08.02.01	Blinding layer	m²	45		
	5.08.03	e) Screed in 3:1 Sand and Cement Mix				
	5.08.03.01	Chamber floor screed	m³	2		
PSCC1.016	**5.08**	**Joints**				
	5.08.01	Polysulphide sealant between precast slabs	m	35		
PSCC1.017	**5.09**	**Manufacture (or supply) and erect precast units**				
	5.09.01	Concrete Bunker (Minimum Internal Dimesions: 680 H x 500 W x 375 D)	No.	1		
	Carried forward					

Part C - Section 3 - DN 200 Flow Meter and scour Valve Chamber: Node NC3

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.018	**5.10**	**Grouting**				
	5.10.01	a) Under bases of pipe supports and straps	m³	1		
	5.10.02	c) Pipe box-outs	m³	1		
PSCC1.019	**5.11**	**HD bolts and miscellaneous metal work**				
	5.11.01	Metal work for DN 200 Flow Meter and Scour Valve Chamber as per Drawing: JW14358-16941-T-013-S23-00-TMS				
	5.11.01.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.01.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.01.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.01.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.01.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	20		
	5.11.01.06	Fabricate and install DN 160 galvanised medium duty pipe clamps as per Drawing: JW14358-16941-T-017-S10-00-TMS	No.	3		
PSCC1.020	**5.12**	**Colour Mitigation to**				
	5.12.01	Exposed Chambers along roadways	m²	15		
		MISCELLANEOUS ITEMS				
PSCC1.021	**5.13**	**Polythene sheeting under concrete**				
	5.13.01	250 micron green medium density polyethylene dampproof sheeting	m²	45		
PSCC1.023	**5.14**	**FRP items**				
	5.14.01	c) FRP Grating				
	5.14.01.01	450 mm x 450 mm x 38 mm deep FRP grating as per Drawing: JW14358-16941-T-013-S23-00-TMS	No.	1		
PSCC1.024	**5.15**	**Casting pipes and specials in concrete**				
	5.15.01	DN 150 Steel pipe cast into chamber wall	No.	3		
	Carried forward					

Part C - Section 3 - DN 200 Flow Meter and scour Valve Chamber: Node NC3

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.025	**5.16**	**Installation of precast elements**				
	5.16.01	Precast roof slabs as per Drawing: JW14358-16941-T-013-S23-00-TMS	No.	5		
PSCC1.026	**5.17**	**Drilling cores through concrete**				
	5.17.01	100 mm diameter core through 250 mm thick concrete slab	No.	3		
	Carried forward to summary (Part C - Section 3)					

Part C - Section 3 - DN 200 Flow Meter and scour Valve Chamber: Node NC3

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS (PIPE TRENCHES)				
SANS 1200 L		MEDIUM-PRESSURE PIPELINES				
SANS 1200 LC		CABLE DUCTS				
SANS 2001 CC1		CONCRETE WORKS (STRUCTURAL)				
Total carried forward to summary						

Part C - Section 4 - DN 800 isolation, scour and future tie-in chamber: Node ND2

Site Clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawing:** **JW14358-16941-T-013-S53-00-TMS**				
PSC 8.2.1	**1.01**	**Clear and grub**				
	1.01.01	Areas	m²	140		
8.2.2	**1.02**	**Remove and grub large trees and tree stumps of girth**				
	1.02.01	Over 1 m and up to and including 2 m	No.	1		
8.2.10	1.03	Remove topsoil to nominal depth of 150 mm and stockpile	m³	21		
PSC 8.2.14	**1.04**	**Take down and re-erect existing fences and guardrails**				
	1.04.01	a) Guardrails	m	10		
	1.04.02	b) Diamond mesh fencing	m	10		
	Carried forward to summary (Part C - Section 4)					

Part C - Section 4 - DN 800 isolation, scour and future tie-in chamber: Node ND2

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS (PIPE TRENCHES)** **Refer to Drawing:** **JW14358-16941-T-013-S53-00-TMS**				
PSDB 8.3.2	**2.01**	**Excavation**				
	2.01.01	d) Excavate in all materials for stormwater inlet and outlet structures and for manholes, catchpits, valve chambers and the like, irrespective of depth, and backfill around structures	m³	360		
	2.01.02	e) Extra over 2.01.01 for excavating in				
	2.01.02.01	1) intermediate material	m³	40		
	2.01.02.02	2) hard material	m³	40		
	2.01.03	f) Hand excavation where ordered by the Project Manager				
	2.01.03.01	a) Soft material	m³	40		
	2.01.03.02	b) Intermediate material	m³	40		
	2.01.03.03	c) Hard material	m³	40		
	2.01.04	g) Backfill stabilized with 5% cement where directed by the Project Manager	m³	80		
	2.01.05	h) Soilcrete backfill where directed by the Project Manager	m³	80		
	Carried forward to summary (Part C - Section 4)					

Part C - Section 4 - DN 800 isolation, scour and future tie-in chamber: Node ND2

Gabions and pitching

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DK	**3**	**GABIONS AND PITCHING** **Refer to Drawing:** **JW14358-16941-T-013-S53-00-TMS**				
8.2.2	**3.01**	**Gabions**				
	3.01.01	**Gabion mattresses of galvanized wire, up to 0,3 m deep**				
	3.01.01.01	60 mm x 80 mm mesh, 2.2 mm dia wire, 6 m x 2 m x 0.17 m mattress	m³	5		
8.2.4	**3.02**	**Geotextile**				
	3.02.01	Bidim A4 or approved equivalent	m²	50		
8.2.5	**3.03**	**Pitching**				
	3.03.01	**Grouted pitching**				
	3.03.01.01	a) Light pitching	m³	15		
	Carried forward to summary (Part C - Section 4)					

Part C - Section 4 - DN 800 isolation, scour and future tie-in chamber: Node ND2

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**4**	**MEDIUM-PRESSURE PIPELINES** **Refer to Drawing:** **JW14358-16941-T-13-S54-0-TMS**				
8.2.3	**4.01**	**Extra-over PSL 8.2.16 for Supplying, Fixing, and Bedding of Valves**				
	4.01.01	Item 2: DN 800 PN25 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; drilled to SANS 1123 Table 2500/3	No.	2		
	4.01.02	Item 10: DN 250 PN25 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; drilled to SANS 1123 Table 2500/3	No.	3		
PSL 8.2.19	**4.02**	**Extra over 8.2.16 for the Supplying, Laying, Welding or Jointing and Bedding of Steel specials**				
	4.02.01	Item 1: Spool piece DN 800 x 1400 mm long SANS 719; Wall thickness t = 8 mm; flanged both ends; drilled to SANS 1123 Table 2500/3; with puddle flange	No.	3		
	4.02.02	Item 3: Unequal Tee DN 800 x 8 mm x DN 250 x 6 mm; SANS719; flanged both ends; drilled to SANS 1123 Table 2500/3	No.	5		
	4.02.03	Item 4: Equal tee; DN 800 x DN 800; SANS 719; Wall thickness t = 8 mm; all ends flanged; drilled to SANS 1123 Table 2500/3	No.	1		
	4.02.04	Item 5: Spool piece DN 800 SANS 719; 1500 mm long; Wall thickness t = 8 mm; flanged both ends to; drilled SANS 1123 Table 2500/3; with puddle flange	No.	1		
	4.02.05	Item 6: Blank flange DN 800; drilled to SANS 1123 Table 2500/8	No.	1		
	4.02.06	Item 7: Spool piece DN 800 SANS 719; 500 mm long; Wall thickness t = 8 mm; one end flanged; drilled to SANS 1123 Table 2500/3	No.	2		
	4.02.07	Item 8: 90 Degree 3 segment short radius bend; DN 250; SANS 719; Wall thickness t = 6 mm wall; flanged both ends; drilled toSANS 1123 Table 2500/3	No.	4		
	4.02.08	Item 9: Spool piece DN 250 457 mm long; SANS 719; to Wall thickness t= 6 mm; flanged both ends; drilled to SANS 1123 Table 2500/3	No.	4		
	4.02.09	Item 11: Spool piece DN 250 x 1000 mm long; Wall thickness t = 6 mm; one end flanged; drilled to SANS 1123 Table 2500/3	No.	1		
	Carried forward					

Part C - Section 4 - DN 800 isolation, scour and future tie-in chamber: Node ND2

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSL 8.2.34	**4.03**	**Operation and Maintenance Manuals for Valves and Flow Meters**				
		DN250 Wedge Gate Valve (PN25)	Sum	1		
		DN800 Wedge Gate Valve (PN25)	Sum	1		
	Carried forward to summary (Part C - Section 4)					

Part C - Section 4 - DN 800 isolation, scour and future tie-in chamber: Node ND2

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 2001 PART CC1	**5**	**CONCRETE WORKS (STRUCTURAL)**				
		Refer to Drawing: JW14358-16941-T-013-S53-00-TMS				
		SCHEDULED FORMWORK ITEMS				
PSCC1.002	**5.01**	**Smooth**				
	5.01.01	Vertical formwork to				
	5.01.01.01	Foundations (Floor)	m²	8		
	5.01.01.02	Plinths	m²	2		
	5.01.01.03	Walls	m²	220		
	5.01.01.04	Sump	m²	2		
	5.01.02	**Horizontal formwork to**				
	5.01.02.01	Slabs	m²	45		
PSCC1.005	**5.02**	**Narrow widths (up to 300 mm wide)**				
	5.02.01	Vertical Smooth formwork to				
	5.02.01.01	Precast roof slabs	m	120		
PSCC1.006	**5.03**	**Box out holes/form voids**				
	5.03.01	a) Small, circular, of diameter up to 0,35 m				
	5.03.01.01	0 m up to and including 0,5 m	No.	40		
	5.03.02	d) Large, other than circular, areas over 0.1 m^2 up to 2,0 m^2				
	5.03.02.01	0 m up to and including 0,5 m	No.	2		
	5.03.02.02	Over 2,0 m deep	No.	4		
		SCHEDULED REINFORCEMENT ITEMS				
PSCC1.007	**5.04**	**Steel bars**				
	5.04.01	a) Steel bars irrespective of grade and diameter	t	21		
	Carried forward					

Part C - Section 4 - DN 800 isolation, scour and future tie-in chamber: Node ND2

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
		SCHEDULED CONCRETE ITEMS				
PSCC1.011	**5.05**	**Blinding layer in Grade 15 MPa/19 mm concrete**				
	5.05.01	50 mm thickness	m²	85		
PSCC1.012	**5.06**	**Strength concrete**				
	5.06.01	Class 30 MPa/19 mm concrete in				
	5.06.01.01	Foundations (Floor)	m^3	20		
	5.06.01.02	Plinths	m^3	2		
	5.06.01.03	Walls	m^3	58		
	5.06.01.04	Roof slab	m^3	12		
	5.06.01.05	Sump	m^3	2		
PSCC1.013	**5.07**	**Unformed surface finishes**				
	5.07.01	a) Steel-floated finish				
	5.07.01.01	Foundations (Floor)	m²	30		
	5.07.01.02	Top of Plinths	m²	2		
	5.07.01.03	Top of Walls	m²	30		
	5.07.01.04	Roof Slabs	m²	48		
	5.07.02	d) Broomed finish				
	5.07.02.01	Blinding layer	m²	85		
	5.08.03	e) Screed in 3:1 Sand and Cement Mix				
	5.08.03.01	Chamber floor screed	m³	5		
PSCC1.016	**5.08**	**Joints**				
	5.08.01	Polysulphide sealant between precast slabs	m	65		
PSCC1.018	**5.09**	**Grouting**				
	5.09.01	a) Under bases of pipe supports and straps	m³	1		
	5.09.02	c) Pipe box-outs	m³	2		
	Carried forward					

Part C - Section 4 - DN 800 isolation, scour and future tie-in chamber: Node ND2

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.019	**5.10**	**HD bolts and miscellaneous metal work**				
	5.10.01	Metal work for DN 800 Isolation, scour and future tie-in Chamber as per Drawing: JW14358-16941-T-013-S53-00-TMS				
	5.10.01.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	2		
	5.10.01.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	2		
	5.10.01.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	2		
	5.10.01.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	2		
	5.10.01.05	Fabricate and cast in galvanised overflow frame a nd grating as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.10.01.06	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	40		
	5.10.01.07	Fabricate and install galvanised steel grating platform, including frame and supports	t	0.5		
	5.10.01.08	Fabricate and install galvanised steel handrails	t	0.2		
PSCC1.020	**5.11**	**Colour Mitigation to**				
	5.11.01	Exposed Chambers along roadways	m²	30		
		MISCELLANEOUS ITEMS				
PSCC1.021	**5.12**	**Polythene sheeting under concrete**				
	5.12.01	250 micron green medium density polyethylene d ampproof sheeting	m²	85		
PSCC1.023	**5.13**	**FRP items**				
	5.13.01	b) FRP Handrails				
	5.13.01.01	Round hand railing system	m	18		
	5.13.02	c) FRP Grating				
	5.13.02.01	450 mm x 450 mm x 38 mm deep FRP grating	No.	3		
	5.13.03	e) FRP platforms including frames and supports				
	5.13.03.01	38 mm deep FRP grating platform	m²	15		
	Carried forward					

Part C - Section 4 - DN 800 isolation, scour and future tie-in chamber: Node ND2

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.024	**5.14**	**Casting pipes and specials in concrete**				
	5.14.01	DN 250 Steel pipe cast into chamber wall	No.	1		
	5.14.02	DN 800 Steel pipe cast into chamber wall	No.	3		
PSCC1.025	**5.15**	**Installation of precast elements**				
	5.15.01	Precast roof slabs as per Drawing: JW14358-16941-T-013-S53-00-TMS	No.	10		
PSCC1.026	**5.16**	**Drilling cores through concrete**				
	5.16.01	100 mm diameter core through 250 mm thick concrete slab	No.	3		
	Carried forward to summary (Part C - Section 4)					

Part C - Section 4 - DN 800 isolation, scour and future tie-in chamber: Node ND2

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS (PIPE TRENCHES)				
SANS 1200 DK		GABIONS AND PITCHING				
SANS 1200 L		MEDIUM-PRESSURE PIPELINES				
SANS 2001 CC1		CONCRETE WORKS (STRUCTURAL)				
Total carried forward to summary						

Part C - Section 5 - Hot-Tapping chambers: Node NA1, ND1, ND5

Site Clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawings:** **JW14358-16941-T-013-S30-00-TMS** **JW13038-16941-T-013-S32-00-TMS** **JW14358-16941-T-013-S51-00-TMS**				
PSC 8.2.1	**1.01**	**Clear and grub**				
	1.01.01	Areas	m²	300		
8.2.2	**1.02**	**Remove and grub large trees and tree stumps of girth**				
	1.02.01	Over 1 m and up to and including 2 m	No.	4		
8.2.10	1.03	Remove topsoil to nominal depth of 150 mm and stockpile	m³	45		
PSC 8.2.14	**1.04**	**Take down and re-erect existing fences and guardrails**				
	1.04.01	a) Guardrails	m	15		
	1.04.02	b) Diamond mesh fencing	m	15		
	Carried forward to summary (Part C - Section 5)					

Part C - Section 5 - Hot-Tapping chambers: Node NA1, ND1, ND5

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS (PIPE TRENCHES)** **Refer to Drawings:** **JW14358-16941-T-013-S30-00-TMS** **JW13038-16941-T-013-S32-00-TMS** **JW14358-16941-T-013-S51-00-TMS**				
PSDB 8.3.2	**2.01**	**Excavation**				
	2.01.01	d) Excavate in all materials for stormwater inlet and outlet structures and for manholes, catchpits, valve chambers and the like, irrespective of depth, and backfill around structures	m³	750		
	2.01.02	e) Extra over 2.01.01 for excavating in				
	2.01.02.01	1) intermediate material	m³	75		
	2.01.02.02	2) hard material	m³	75		
	2.01.03	f) Hand excavation where ordered by the Project Manager				
	2.01.03.01	a) Soft material	m³	75		
	2.01.03.02	b) Intermediate material	m³	75		
	2.01.03.03	c) Hard material	m³	75		
	2.01.04	g) Backfill stabilized with 5% cement where directed by the Project Manager	m³	150		
	2.01.05	h) Soilcrete backfill where directed by the Project Manager	m³	150		
	Carried forward to summary (Part C - Section 5)					

Part C - Section 5 - Hot-Tapping chambers: Node NA1, ND1, ND5

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**3**	**MEDIUM-PRESSURE PIPELINES**				
8.2.3	**3.01**	**Extra-over PSL 8.2.16 for Supplying, Fixing, and Bedding of Valves**				
	3.01.01	DN 525 Tie-in Chamber as per Drawing: JW14358-16941-T-013-S31-00-TMS				
	3.01.01.01	Item 3: DN 500 PN25 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 2500/3	No.	1		
	3.01.01.02	Item 7: DN 250 PN25 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 2500/3	No.	1		
	3.01.02	DN 600 to DN 1500 Tie-in Chamber as per Drawing: JW14358-16941-T-013-S33-00-TMS				
	3.01.02.01	Item 3: DN 600 PN25 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 2500/3	No.	1		
	3.01.02.02	Item 7: DN 250 PN25 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 2500/3	No.	1		
	3.01.03	DN 800 Tie-in Chamber as per Drawing: JW14358-16941-T-013-S52-00-TMS				
	3.01.03.01	Item 3: DN 800 PN25 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 2500/3	No.	1		
	3.01.03.02	Item 7: DN 250 PN25 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 2500/3	No.	1		
PSL 8.2.19	**3.02**	**Extra over 8.2.16 for the Supplying, Laying, Welding or Jointing and Bedding of Steel specials**				
	3.02.01	DN 525 Tie-in Chamber as per Drawing: JW14358-16941-T-013-S31-00-TMS				
	3.02.01.01	Item 1: Spool piece DN 800 x 500 mm long; SANS 719; wall thickness t = 8 mm; flanged one end; drilled to SANS 1123 Table 2500/3	No.	1		
	Carried forward					

Part C - Section 5 - Hot-Tapping chambers: Node NA1, ND1, ND5

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.02.01.02	Item 2: Spool piece DN 800 x 1290 mm long; SANS 719; wall thickness t = 8 mm; flanged both ends; drilled to SANS 1123 Table 2500/3; with puddle flange	No.	1		
	3.02.01.03	Item 5: Unequal Tee DN 500 x DN 250; SANS 719; wall thickness t = 6 mm; all ends flanged; drilled to SANS 1123 Table 2500/3	No.	2		
	3.02.01.04	Item 6: Spool piece DN 250 x 307 mm long; SANS 719; wall thickess t = 6 mm; flanged both ends; drilled to SANS 1123 Table 2500/3	No.	2		
	3.02.01.05	Item 8: 3 Segment Short Radius Bend 90˚, DN 250 wall thickness t = 6 mm SANS 719; R=280, Both ends flanged; drilled to SANS 1123 Table 2500/3	No.	2		
	3.02.01.06	Item 9: Concentric reducer DN 800 x DN 500 x 600 mm long; SANS 719; wall thickness t = 8 mm; flanged both ends; drilled to SANS 1123 Table 2500/3	No.	1		
	3.02.02	DN 600 to DN 1500 Tie-in Chamber as per Drawing: JW14358-16941-T-013-S33-00-TMS				
	3.02.02.01	Item 1: Spool piece DN 600 x 500 mm long; SANS 719; wall thickess t = 6 mm; flanged one end; drilled to SANS 1123 Table 2500/3	No.	1		
	3.02.02.02	Item 2: Spool piece DN 600 x 964 mm long; SANS 719; wall thickness t = 6 mm; flanged both ends; drilled to SANS 1123 Table 2500/3; with puddle flange	No.	1		
	3.02.02.03	Item 5: Unequal Tee DN 600 x DN 250; SANS 719; wall thickness t = 6 mm; all ends flanged; drilled to SANS 1123 Table 2500/3	No.	2		
	3.02.02.04	Item 6: Spool piece DN 600 x 452 mm long; SANS 719; wall thickness t = 6 mm; flanged both ends; drilled to SANS 1123 Table 2500/3	No.	2		
	3.02.02.05	Item 8: 90 Degree 3 segment short radius bend; DN 250; SANS 719; wall thickness t = 6 mm; flanged both ends; drilled to SANS 1123 Table 2500/3	No.	2		
	3.02.03	DN 800 Tie-in Chamber as per Drawing: JW14358-16941-T-013-S52-00-TMS				
	3.02.03.01	Item 1: Spool piece DN 800 x 500 mm long; SANS 719; wall thickess t = 8 mm; flanged one end; drilled to SANS 1123 Table 2500/3	No.	1		
	3.02.03.02	Item 2: Spool piece DN 800 x 1464 mm long; SANS 719; wall thickness t = 8 mm; flanged both ends; drilled to SANS 1123 Table 2500/3; with puddle flange	No.	1		
	3.02.03.03	Item 5: Unequal Tee DN 800 wall thickess t = 8 mm x all DN 250 wall thickness t = 6 mm; SANS 719; all ends flanged; drilled to SANS 1123 Table 2500/3	No.	2		
	Carried forward					

Part C - Section 5 - Hot-Tapping chambers: Node NA1, ND1, ND5

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.02.03.04	Item 6: Spool piece DN 250 x 730 mm long; SANS 719; wall thickess t = 6 mm; flanged both ends; drilled to SANS 1123 Table 2500/3	No.	2		
	3.02.03.05	Item 8: 90 Degree 3 segment short radius bend; DN 250; SANS 719; wall thickness t = 6 mm; flanged both ends; drilled to SANS 1123 Table 2500/3	No.	2		
PSL 8.2.28	**3.03**	**Connect to Existing Mains using Hot Tapping**				
	3.03.01	a) Connect DN 600 (PN25) stub to existing DN 1500 pipeline	No.	1		
	3.03.02	b) Connect DN 800 (PN25) stub to existing DN 1200 pipeline	No.	1		
	3.03.03	c) Connect DN 500 (PN25) stub to existing DN 525 pipeline	No.	1		
PSL 8.2.34	**3.04**	**Operation and Maintenance Manuals for Valves and**				
	3.05.01	DN 500 Wedge Gate Valve (PN25)	Sum	1		
	3.05.02	DN 600 Wedge Gate Valve (PN25)	Sum	1		
	3.05.03	DN 800 Wedge Gate Valve (PN25)	Sum	1		
	Carried forward to summary (Part C - Section 5)					

Part C - Section 5 - Hot-Tapping chambers: Node NA1, ND1, ND5

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 2001 PART CC1	**4**	**CONCRETE WORKS (STRUCTURAL)** **Refer to Drawings:** **JW14358-16941-T-013-S30-00-TMS** **JW13038-16941-T-013-S32-00-TMS** **JW14358-16941-T-013-S51-00-TMS** **SCHEDULED FORMWORK ITEMS**				
PSCC1.002	**4.01**	**Smooth**				
	4.01.01	Vertical formwork to				
	4.01.01.01	Foundations (Floor)	m²	20		
	4.01.01.02	Plinths	m²	10		
	4.01.01.03	Walls	m²	500		
	4.01.01.04	Sump	m²	3		
	4.01.01.05	Stairs	m²	32		
	4.01.02	Horizontal formwork to				
	4.01.02.01	Slabs	m²	75		
PSCC1.005	**4.02**	**Narrow widths (up to 300 mm wide)**				
	4.02.01	Vertical Smooth formwork to				
	4.02.01.01	Precast slabs	m	200		
PSCC1.006	**4.03**	**Box out holes/form voids**				
	4.03.01	a) Small, circular, of diameter up to 0,35 m				
	4.03.01.01	0 m up to and including 0,5 m	No.	52		
	4.03.02	d) Large, other than circular, areas over 0.1 m^2 up to 2,0 m^2				
	4.03.02.01	0 m up to and including 0,5 m	No.	3		
	4.03.02.02	Over 2,0 m deep	No.	9		
		SCHEDULED REINFORCEMENT ITEMS				
PSCC1.007	**4.04**	**Steel bars**				
	4.04.01	a) Steel bars irrespective of grade and diameter	t	30		
		SCHEDULED CONCRETE ITEMS				
PSCC1.011	**4.05**	**Blinding layer in Grade 15 MPa/19 mm concrete**				
	4.05.01	50 mm thickness	m²	165		
	Carried forward					

Part C - Section 5 - Hot-Tapping chambers: Node NA1, ND1, ND5

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.012	**4.06**	**Strength concrete**				
	4.06.01	Class 30 MPa/19 mm concrete in:				
	4.06.01.01	Foundations (Floor)	m^3	20		
	4.06.01.02	Plinths	m^3	6		
	4.06.01.03	Walls	m^3	70		
	4.06.01.04	Roof slab	m^3	20		
	4.06.01.05	Sump	m^3	4		
	4.06.01.06	Stairs	m^3	8		
PSCC1.013	**4.07**	**Unformed surface finishes**				
	4.07.01	a) Steel-floated finish				
	4.07.01.01	Foundations (Floor)	m²	80		
	4.07.01.02	Top of Plinths	m²	4		
	4.07.01.03	Top of Walls	m²	30		
	4.07.02	d) Broomed finish				
	4.07.02.01	Blinding layer	m²	165		
	4.07.03	e) Screed in 3:1 Sand and Cement Mix				
	4.07.03.01	Chamber floor screed	m³	8		
PSCC1.015	**4.08**	**Joints**				
	4.08.01	Polysulphide sealant between precast slab	m	80		
PSCC1.018	**4.09**	**Grouting**				
	4.09.01	a) Under bases of pipe supports and straps	m³	4		
	4.09.02	b) Pipe box-outs	m³	4		
PSCC1.019	**4.10**	**HD bolts and miscellaneous metal work**				
	4.10.01	DN 525 Tie-in Chamber as per Drawings: JW14358-16941-T-013-S30-00-TMS JW14358-16941-T-013-S31-00-TMS				
	4.10.01.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.01.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	Carried forward					

Part C - Section 5 - Hot-Tapping chambers: Node NA1, ND1, ND5

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	4.10.01.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.01.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.01.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing:JW14358-16941-T-017-S10-00-TMS	No.	16		
	4.10.01.06	Fabricate and install galvanised steel grating platform, including frame and supports	t	0.5		
	4.10.01.07	Fabricate and install galvanised steel handrails	t	0.2		
	4.10.02	DN 600 to DN 1500 Tie-in Chamber as per Drawings: JW14358-16941-T-013-S32-00-TMS JW14358-16941-T-013-S33-00-TMS				
	4.10.02.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.02.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.02.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.02.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.02.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	16		
	4.10.02.06	Fabricate and install galvanised steel grating platform, including frame and supports	t	0.5		
	4.10.02.07	Fabricate and install galvanised steel handrails	t	0.2		
	4.10.03	DN 800 Tie-in Chamber as per Drawing: JW14358-16941-T-013-S51-00-TMS JW14358-16941-T-013-S52-00-TMS				
	4.10.03.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.03.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.03.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.03.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.03.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	20		
	Carried forward					

Part C - Section 5 - Hot-Tapping chambers: Node NA1, ND1, ND5

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	4.10.03.06	Fabricate and install galvanised steel grating platform, including frame and supports	t	0.5		
	4.10.03.07	Fabricate and install galvanised steel handrails	t	0.2		
PSCC1.020	**4.11**	**Colour Mitigation to**				
	4.11.01	Exposed Chambers along roadways	m²	190		
		MISCELLANEOUS ITEMS				
PSCC1.021	**4.12**	**Polythene sheeting under concrete**				
	4.12.01	250 micron green medium density polyethylene dampproof sheeting	m²	165		
PSCC1.023	**4.13**	**FRP items**				
	4.13.01	**b) FRP Handrails**				
	4.13.01.01	Round hand railing system	m	18		
	4.13.02	**c) FRP Grating**				
	4.13.02.01	450 mm x 450 mm x 38 mm deep FRP grating	No.	3		
	4.13.03	**e) FRP platforms including frames and supports**				
	4.13.03.01	38 mm deep FRP grating platform	m²	15		
PSCC1.024	**4.14**	**Casting pipes and specials in concrete**				
	4.14.01	DN 600 Steel pipe cast into chamber wall	No.	1		
	4.14.02	DN 800 Steel pipe cast into chamber wall	No.	2		
PSCC1.025	**4.15**	**Installation of precast elements**				
	4.15.01	Precast roof slabs as per Drawing: JW14358-16941-T-013-S30-00-TMS	No.	4		
	4.15.02	Precast roof slabs as per Drawing: JW14358-16941-T-013-S32-00-TMS	No.	4		
	4.15.03	Precast roof slabs as per Drawing: JW14358-16941-T-013-S51-00-TMS	No.	5		
	Carried forward to summary (Part C - Section 5)					

Part C - Section 5 - Hot-Tapping chambers: Node NA1, ND1, ND5

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS (PIPE TRENCHES)				
SANS 1200 L		MEDIUM-PRESSURE PIPELINES				
SANS 2001 CC1		CONCRETE WORKS (STRUCTURAL)				
Total carried forward to summary						

Part C - Section 6 - Upgrades to Existing Butterfly Valve Chambers

Site Clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawings:** **JW14358-16941-T-013-S45-00-TMS** **JW13038-16941-T-014-S46-00-TMS** **JW14358-16941-T-013-S47-00-TMS**				
PSC 8.2.1	**1.01**	**Clear and grub**				
	1.01.01	Areas	m²	40		
8.2.10	1.02	Remove topsoil to nominal depth of 150 mm and stockpile	m³	6		
PSC 8.2.12	**1.03**	**Removal of man-made surfaces and kerbing**				
	1.03.01	c) Interlocking concrete segmental paving blocks,	m²	30		
PSC 8.2.14	**1.03**	**Take down and re-erect existing fences and guardrails**				
	1.03.01	a) Guardrails	m	15		
	1.03.02	b) Diamond mesh fencing	m	15		
PSC 8.2.17	**1.04**	**Demolishing existing valve chambers**				
	1.04.01	a) Unreinforced concrete	m³	2		
	1.04.02	b) Reinforced concrete	m³	8		
	1.04.03	c) 220 mm Brick wall	m²	40		
PSC 8.2.18	1.05	Temporary removal and reinstatement of precast concrete slabs	No.	5		
PSC 8.2.19	1.06	Temporary removal and reinstatement of precast concrete bunkers	No.	1		
PSC 8.2.20	1.07	Temporary disconnection and reconnection of cathodic protection cabling inside precast concrete bunkers	No.	1		
	Carried forward to summary (Part C - Section 6)					

Part C - Section 6 - Upgrades to Existing Butterfly Valve Chambers

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS (PIPE TRENCHES)** **Refer to Drawings:** **JW14358-16941-T-013-S45-00-TMS** **JW13038-16941-T-014-S46-00-TMS** **JW14358-16941-T-013-S47-00-TMS**				
PSDB 8.3.2	**2.01**	**Excavation**				
	2.01.01	d) Excavate in all materials for stormwater inlet and outlet structures and for manholes, catchpits, valve chambers and the like, irrespective of depth, and backfill around structures	m³	30		
	2.01.02	e) Extra over 2.01.01 for excavating in				
	2.01.02.01	1) intermediate material	m³	5		
	2.01.02.02	2) hard material	m³	5		
	2.01.03	f) Hand excavation where ordered by the Project Manager				
	2.01.03.01	a) Soft material	m³	5		
	2.01.03.02	b) Intermediate material	m³	5		
	2.01.03.03	c) Hard material	m³	5		
	2.01.04	g) Backfill stabilized with 5% cement where directed by the Project Manager	m³	5		
	2.01.05	h) Soilcrete backfill where directed by the Project Manager	m³	5		
	Carried forward to summary (Part C - Section 6)					

Part C - Section 6 - Upgrades to Existing Butterfly Valve Chambers

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**3**	**MEDIUM-PRESSURE PIPELINES** **Refer to Drawings:** **JW14358-16941-T-013-S45-00-TMS** **JW13038-16941-T-014-S46-00-TMS** **JW14358-16941-T-013-S47-00-TMS**				
8.2.5	**3.01**	**Supply and Place Pipes, Valves, and Specials (Short pipe runs)**				
	3.01.01	Butterfly Valve Chamber 1				
	3.01.01.01	Item 1: DN 1200 PN25 Butterfly Valve to BS5155 (Short Body) / EN593 (Series 13); Boving or similar approved; with loose EPDM liner approved for drinking water; supplied with gearbox; flanged both ends; drilled to SANS1123 Table 2500/3	No.	1		
	3.01.01.02	Item 2: Spool piece DN 1200 x 300 mm long; SANS 719; wall thickness t = 10 mm; both ends flanged; drilled to SANS 1123 Table 2500/3	No.	1		
	3.01.02	Butterfly Valve Chamber 2				
	3.01.02.01	Item 1: DN 1200 PN25 Butterfly Valve to BS5155 (Short Body) / EN593 (Series 13); Boving or similar approved; supplied with gearbox; flanged both ends; drilled to SANS 1123 Table 2500/3	No.	1		
	3.01.02.02	Item 2: DN 300 PN25 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 2500/3	No.	1		
	3.01.02.03	Item 3: Spool piece DN 1200 x 300 mm long; SANS 719; wall thickness t = 10 mm; both ends flanged; drilled to SANS 1123 Table 2500/3	No.	1		
	3.01.02.04	Item 4: DN1200 x DN300 Scour Tee; wall thickness t = 10 mm (DN1200) / t = 6 mm (DN300); length of DN1200 section = 760 mm; all ends flanged; drilled to SANS 1123 Table 2500/3	No.	2		
PSL 8.2.31	**3.03**	**Insitu repair of epoxy coated and lined pipe specials**				
	3.03.01	**a) Flanges**				
	3.03.01.01	DN 300 flange	No.	4		
	3.03.01.02	DN 1200 flange	No.	1		
	3.03.02	**b) Pipes**				
	3.03.02.01	DN 300 steel pipe	m²	8		
	3.03.02.02	DN 1200 steel pipe	m²	15		
	Carried forward					

Part C - Section 6 - Upgrades to Existing Butterfly Valve Chambers

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSL 8.2.32	**3.04**	**Replacement of Existing Valves and Specials under Shutdown Conditions**				
	3.04.01	a) Butterfly Valve Chamber 1; Drawings: JW14358-16941-T-013-S45-00-TMS JW14358-16941-T-013-S46-00-TMS	Sum	1		
	3.04.02	b) Butterfly Valve Chamber 1; Drawing: JW14358-16941-T-013-S47-00-TMS	Sum	1		
PSL 8.2.34	**3.05**	**Operation and Maintenance Manuals for Valves and Flow Meters**				
	3.05.01	DN 1200 Butterfly Valve (PN25)	Sum	1		
	Carried forward to summary (Part C - Section 6)					

Part C - Section 6 - Upgrades to Existing Butterfly Valve Chambers

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 2001 PART CC1	**4**	**CONCRETE WORKS (STRUCTURAL)**				
		Refer to Drawings: **JW14358-16941-T-013-S45-00-TMS** **JW13038-16941-T-014-S46-00-TMS** **JW14358-16941-T-013-S47-00-TMS**				
		SCHEDULED FORMWORK ITEMS				
PSCC1.002	**4.01**	**Smooth**				
	4.01.01	Vertical formwork to				
	4.01.01.01	Walls	m²	40		
	4.01.02	Horizontal formwork to				
	4.01.02.01	Slabs	m²	40		
PSCC1.005	**4.02**	**Narrow widths (up to 300 mm wide)**				
	4.02.01	Vertical Smooth formwork to				
	4.02.01.01	Slabs	m	50		
PSCC1.006	**4.03**	**Box out holes/form voids:**				
	4.03.01	a) Small, circular, of diameter up to 0,35 m				
	4.03.01.01	0 m up to and including 0,5 m	No.	20		
	4.03.02	d) Large, other than circular, areas over 0.1 m^2 up to 2,0 m^2				
	4.03.02.01	0 m up to and including 0,5 m	No.	3		
		SCHEDULED REINFORCEMENT ITEMS				
PSCC1.007	**4.04**	**Steel bars**				
	4.04.01	a) Steel bars irrespective of grade and diameter	t	4		
		SCHEDULED CONCRETE ITEMS				
PSCC1.012	**4.05**	**Strength concrete**				
	4.05.01	Class 30 MPa/19 mm concrete in				
	4.05.01.01	Walls	m^3	10		
	4.05.01.02	Roof slabs	m^3	10		
	Carried forward					

Part C - Section 6 - Upgrades to Existing Butterfly Valve Chambers

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.013	**4.06**	**Unformed surface finishes**				
	4.06.01	a) Steel-floated finish				
	4.06.01.01	Top of Walls	m²	10		
	4.06.01.02	Roof slabs	m²	40		
	4.06.02	e) Screed in 3:1 Sand and Cement Mix				
	4.06.02.01	Chamber floor screed	m³	3		
PSCC1.015	**4.07**	**Joints**				
	4.07.01	Polysulphide sealant between precast slabs	m	60		
PSCC1.018	**4.08**	**Grouting**				
	4.08.01	a) Under bases of pipe supports and straps	m³	2		
PSCC1.019	**4.09**	**HD bolts and miscellaneous metal work as per Drawing: JW14358-16941-T-013-S45-00-TMS**				
	4.09.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.09.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.09.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.09.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.09.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	8		
	Carried forward					

Part C - Section 6 - Upgrades to Existing Butterfly Valve Chambers

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.019	**4.10**	**HD bolts and miscellaneous metal work as per Drawing: JW14358-16941-T-013-S45-00-TMS**				
	4.10.01	Fabricate and install galvanised mild steel ladders as per Drawing:JW14358-16941-T-017-S09-00-TMS	No.	2		
	4.10.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	4.10.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	2		
	4.10.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	8		
PSCC1.020	**4.11**	**Colour Mitigation to**				
	4.11.01	Exposed Chambers along roadways	m²	40		
		MISCELLANEOUS ITEMS				
PSCC1.021	**4.12**	**Polythene sheeting under concrete**				
	4.12.01	250 micron green medium density polyethylene dampproof sheeting	m²	40		
PSCC1.023	**4.13**	**FRP items**				
	4.13.01	**a) FRP Grating**				
	4.13.01.01	450 mm x 450 mm x 38 mm deep FRP grating	m²	3		
PSCC1.025	**4.14**	**Installation of precast elements**				
	4.14.01	Precast roof slabs	No.	3		
PSCC1.027	**4.15**	**Masonry**				
	4.15.01	110 mm brick wall	m²	10		
	4.15.02	220 mm brick wall	m²	20		
	Carried forward to summary (Part C - Section 6)					

Part C - Section 6 - Upgrades to Existing Butterfly Valve Chambers

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS (PIPE TRENCHES)				
SANS 1200 L		MEDIUM-PRESSURE PIPELINES				
SANS 2001 CC1		CONCRETE WORKS (STRUCTURAL)				
Total carried forward to summary						

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Site Clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawings:** **JW14358-16941-T-013-S17-00-TMS** **JW14358-16941-T-013-S20-00-TMS** **JW14358-16941-T-013-S42-00-TMS** **JW14358-16941-T-013-S49-00-TMS**				
PSC 8.2.1	**1.01**	**Clear and grub**				
	1.01.01	Areas	m²	500		
8.2.2	**1.02**	**Remove and grub large trees and tree stumps of girth**				
	1.02.01	Over 1 m and up to and including 2 m	No.	10		
8.2.10	1.03	Remove topsoil to nominal depth of 150 mm and stockpile	m³	75		
PSC 8.2.12	**1.04**	**Removal of man-made surfaces and kerbing**				
	1.04.01	a) Road materials with Asphalt ≤ 50mm thick	m²	36		
	1.04.02	c) Interlocking concrete segmental paving blocks	m²	24		
	1.04.03	h) Garden, lawns and grassing	m²	550		
PSC 8.2.14	**1.05**	**Take down and re-erect existing fences and guardrails**				
	1.05.01	a) Guardrails	m	20		
	1.05.02	b) Diamond mesh fencing	m	20		
PSC 8.2.17	**1.06**	**Demolishing existing valve chambers**				
	1.06.01	b) Reinforced concrete	m³	15		
	1.06.02	c) 220 mm Brick wall	m²	36		
	Carried forward to summary (Part C - Section 7)					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Eathworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS (PIPE TRENCHES)** **Refer to Drawings:** **JW14358-16941-T-013-S17-00-TMS** **JW14358-16941-T-013-S20-00-TMS** **JW14358-16941-T-013-S42-00-TMS** **JW14358-16941-T-013-S49-00-TMS**				
PSDB 8.3.2	**2.01**	**Excavation**				
	2.01.01	d) Excavate in all materials for stormwater inlet and outlet structures and for manholes, catchpits, valve chambers and the like, irrespective of depth, and backfill around structures	m³	1000		
	2.01.02	e) Extra over 2.01.01 for excavating in				
	2.01.02.01	1) intermediate material	m³	100		
	2.01.02.02	2) hard material	m³	100		
	2.01.03	f) Hand excavation where ordered by the Project Manager				
	2.01.03.01	a) Soft material	m³	100		
	2.01.03.02	b) Intermediate material	m³	100		
	2.01.03.03	c) Hard material	m³	100		
	2.01.04	g) Backfill stabilized with 5% cement where directed by the Project Manager	m³	200		
	2.01.05	h) Soilcrete backfill where directed by the Project Manager	m³	200		
	Carried forward to summary (Part C - Section 7)					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**4**	**MEDIUM-PRESSURE PIPELINES** **Refer to Drawings:** **JW14358-16941-T-013-S18-00-TMS** **JW14358-16941-T-013-S21-00-TMS** **JW14358-16941-T-013-S43-00-TMS** **JW14358-16941-T-013-S50-00-TMS**				
PSL 8.2.1	**3.01**	**Supply, Lay, and Bed Pipes Complete with Couplings**				
	3.01.01	High-Impact mPVC Class 16 complete with shouldered end coupling system				
	3.01.01.01	Class 16 DN 160	m	30		
8.2.2	**3.02**	**Extra-over 3.0.1 for the Supplying, Laying, and Bedding of Specials Complete with Couplings**				
	3.02.01	High-Impact mPVC Class 16 bends complete with shouldered end coupling system				
	3.02.01.01	DN 160 11.25° bend	No.	1		
	3.02.01.02	DN 160 22.5° bend	No.	1		
	3.02.01.03	DN 160 45° bend	No.	1		
	3.02.01.04	DN 160 90° bend	No.	1		
	3.02.02	High-Impact mPVC Class 16 shouldered end repair couplings				
	3.02.02.01	DN 160	No.	2		
	3.02.03	Flange adaptors for High-Impact mPVC Class 16 complete with shouldered end coupling system				
	3.02.03.01	DN 160	No.	2		
8.2.3	**3.03**	**Extra-over PSL 8.2.16 for Supplying, Fixing, and Bedding of Valves**				
	3.03.01	DN 600 Pressure Reducing Valve Chamber 1 (Drawing: JW14358-16941-T-013-S21-00-TMS)				
	3.03.01.01	Item 8: DN 300 PN25 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 2500/3	No.	4		
	3.03.01.02	Item 10: DN 300 PN25 Pressure Reducing Valve, flanged both ends; drilled to SANS 1123 Table 2500/3	No.	2		
	3.03.01.03	Item 16: DN 100 PN25 Resilient Seal Gate valve; rising spindle; anti-clockwise closing to SANS 664 non; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 2500/3	No.	1		
	Carried forward					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.03.01.04	Item 17: DN 100 PN25 Double orifice with anti-shock orifice mechanism air release valve, Vent-O-Mat RBX or similar approved; flanges drilled to SANS 1123 Table 2500/3	No.	1		
	3.03.01.05	Item 17: DN 100 PN25 Double orifice with anti-shock orifice mechanism air release valve, Vent-O-Mat RBX or similar approved; flanges drilled to SANS 1123 Table 2500/3	No.	1		
	3.03.02	DN 600 Bypass Pressure Reducing Valve Chamber (Drawing JW14358-16941-T-013-S43-00-TMS)				
	3.03.02.01	Item 5: DN 100 PN16 Double orifice with anti-shock orifice mechanism air release valve, Vent-O-Mat RBX or similar approved; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.03.02.02	Item 7: DN 300 PN16 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	2		
	3.03.02.03	Item 12: DN 300 PN16 Pressure Reducing Valve, flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
	3.03.02.04	Item 15: DN 150 PN16 Pressure Reducing Valve, flanged both ends to SANS 1123 Table 1600/3	No.	1		
	3.03.02.05	Item 16: DN 150 PN16 Resilient Seal Gate Valve; non rising spindle; anti-clockwise closing to SANS 664; non manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.03.02.06	Item 17: DN 150 PN16 Resilient Seal Gate Valve; non rising spindle; anti-clockwise closing to SANS 664; non manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	2		
	3.03.03	Existing DN 150 PRV Chamber Upgrade (Drawing JW14358-16941-T-013-S50-00-TMS)				
	3.03.03.01	Item 3: DN 100 PN 16 Resilient Seal Gate Valve; rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.03.03.02	Item 8: DN 150 PN 16 Resilient Seal Gate Valve; non rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.03.03.03	Item 10: DN 150 PN16 Pressure Reducing Valve, flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
	Carried forward					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.03.04	DN 200 Non-return Valve Chamber (Drawing JW14358-16941-T-013-S18-00-TMS)				
	3.03.04.01	Item 5: DN 100 PN16 Double orifice with anti-shock orifice mechanism air release valve, Vent-O-Mat RBX or similar approved; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.03.04.02	Item 7: DN 150 PN 16 Resilient Seal Gate Valve; non rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	4		
	3.03.04.03	Item 13: DN 150 Single Door Swing Check Valve to SANS 1551; Vosa or similar approved; flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
PSL 8.2.19	**3.04**	**Extra over 8.2.16 for the Supplying, Laying, Welding or Jointing and Bedding of Steel specials**				
	3.04.01	DN 600 Pressure Reducing Valve Chamber 1 (Drawing JW14358-16941-T-013-S21-00-TMS)				
	3.04.01.01	Item 1: Concentric reducer DN 600 to DN 300; SANS 719; Wall Thickness t = 6 mm; 610 mm long; both ends flanged; drilled to SANS 1123 Table 2500/3	No.	2		
	3.04.01.02	Item 2: Spool piece DN 300; 1450 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged; drilled to SANS 1123 Table 2500/3; with puddle flange	No.	1		
	3.04.01.03	Item 3a: DN 300 Y-Strainer; Flanged both ends; drilled to SANS 1123 Table 2500/3	No.	2		
	3.04.01.04	Item 3b: DN 300 T-Strainer; Flanged both ends; drilled to SANS 1123 Table 2500/3	No.	2		
	3.04.01.05	Item 4: Dismantling joint DN 300; Flanged and drilled to SANS 1123 Table 2500/3	No.	2		
	3.04.01.06	Item 5: Equal tee; DN 300 x DN 300; SANS 719; wall thickness = 6 mm; flanged all ends; drilled to SANS 1123 Table 2500/3	No.	3		
	3.04.01.07	Item 7: Medium Radius 90 degree DN300 bend; SANS 719; wall thickness t = 6 mm; Flanged both ends; drilled to SANS 1123 Table 2500/3	No.	4		
	3.04.01.08	Item 9: Spool piece DN 300; 725 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged; drilled to SANS 1123 Table 2500/3; with pipe support	No.	4		
	3.04.01.09	Item 11: Spool piece DN 300; 1475 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged; drilled to SANS 1123 Table 2500/3; with pipe support	No.	1		
	Carried forward					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.04.01.10	Item 13: Spool piece DN 300; 1426 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged; drilled to SANS 1123 Table 2500/3; with puddle flange	No.	1		
	3.04.01.11	Item 14: Spool piece DN 100 x 200 mm long; SANS 62 heavy class; one end flanged to SANS 1123 Table 2500/3; other end welded to DN200 blank flange SANS 1123 Table 2500/8 with hole drilled for DN100 pipe	No.	1		
	3.04.01.12	Item 15: Spool piece DN 100 x 200 mm long; SANS 62 heavy Class; both ends flanged; drilled to SANS 1123 Table 2500/3	No.	1		
	3.04.01.13	Item 19: Spool piece DN 300 x 900 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged; drilled to SANS 1123 Table 2500/3; with pipe support	No.	1		
	3.04.01.14	Item 20: Spool piece DN 600 x 500 mm long; SANS 719; Wall Thickness t = 6 mm; one end flanged; drilled to SANS 1123 Table 2500/3	No.	2		
	3.04.02	DN 600 Bypass Pressure Reducing Valve Chamber (Drawing JW14358-16941-T-013-S43-00-TMS)				
	3.04.02.01	Item 1: Spool piece DN 600 x 500 mm long; SANS 719; Wall Thickness t = 6 mm; one end flanged; drilled to SANS 1123 Table 1600/3	No.	2		
	3.04.02.02	Item 2: Concentric Reducer DN 600 to DN 300 ; SANS 719; Wall Thickness t = 6 mm; 600 mm long; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	2		
	3.04.02.03	Item 3: Spool piece DN 300 x 1155 mm long SANS 719; Wall Thickness t = 6 mm; both ends flanged; drilled to SANS 1123 Table 1600/3; with puddle flange	No.	2		
	3.04.02.04	Item 4: Spool piece DN 100 x 200 mm long; SANS 62 heavy class; one end flanged; drilled to SANS 1123 Table 1600/3; other end welded to DN 150 blank flange; drilled to SANS 1123 Table 1600/8 with hole drilled for DN 100 pipe	No.	1		
	3.04.02.05	Item 6: Unequal tee; DN 300 x DN 150; SANS 719; wall thickness = 6 mm; flanged all ends; drilled to SANS 1123 Table 1600/3	No.	2		
	3.04.02.06	Item 8: Spool piece DN 300 x 596 mm long SANS 719; Wall Thickness t = 6 mm; both ends flanged; drilled to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.02.07	Item 9a: DN 300 Y-Strainer; Flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.02.08	Item 9b: DN 300 T-Strainer; Flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
	Carried forward					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.04.02.09	Item 10: Spool piece DN 300; 1060 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged; drilled to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.02.10	Item 11: Spool piece DN 300; 500 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged; drilled to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.02.11	Item 13: Unequal tee; DN 300 x DN 150; SANS 719 wall thickness = 6 mm (DN 300) / SANS 62 heavy class (DN 150); flanged all ends; drilled to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.02.12	Item 14: Bend DN 150; SANS 62 Heavy Class; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	2		
	3.04.02.13	Item 18: Spool piece DN 150; 552 mm long; SANS 62 heavy class; both ends flanged; drilled to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.02.14	Item 19a: DN 150 Y-Strainer; Flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.02.15	Item 19b: DN 150 T-Strainer; Flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.02.16	Item 20: Spool piece DN 150; 552 mm long; SANS 62 heavy class; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.02.17	Item 21: Spool piece DN 150; 610 mm long; SANS 62 heavy class; both ends flanged; drilled to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.02.18	Item 22: Spool piece DN 150; 538 mm long; SANS 62 eavy class; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.02.19	Item 23: Dismantling joint DN 150; Flanged; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.02.20	Item 24: Dismantling joint DN 300; Flanged; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.03	Existing DN 150 PRV Chamber Upgrade (Drawing JW14358-16941-T-013-S50-00-TMS)				
	3.04.03.01	Item 1: Spool piece DN 200; 1220 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged; drilled to SANS 1123 Table 1600/3; with puddle flange	No.	2		
	3.04.03.02	Item 2: Unequal tee; DN 200 x DN 100; SANS 719 wall thickness = 6 mm (DN 200) / SANS 62 medium class (DN 100); flanged all ends; drilled to SANS 1123 Table 1600/3	No.	1		
	Carried forward					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.04.03.03	Item 4: Spool piece DN 100; 1450 mm long; SANS 62 medium class; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.03.04	Item 5: Equal tee; DN 200 x DN 200; SANS 719; wall thickness t = 6 mm; flanged all ends; drilled to SANS 1123 Table 1600/3	No.	2		
	3.04.03.05	Item 6: Spool piece DN 200; 1540 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged; drilled to SANS 1123 Table 1600/3; with puddle flange	No.	3		
	3.04.03.06	Item 7: Concentric reducer DN 200 to DN 150; SANS 719; Wall Thickness t = 6 mm; 300 mm long; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	4		
	3.04.03.07	Item 9: Spool piece DN 150; 320 mm long; SANS 62 medium class; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	2		
	3.04.03.08	Item 11: Spool piece DN 150; 170 mm long; SANS 62 medium class; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.03.09	Item 12: Dismantling joint DN 150; Flanged; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.03.10	Item 13: Spool piece DN 150; 200 mm long; SANS 62 medium class; both ends flanged; drilled to SANS 1123 Table 1600/3; with pressure socket	No.	1		
	3.04.03.11	Item 14: Spool piece DN 150; 1420 mm long; SANS 62 medium class; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.03.12	Item 15: DN 200 Flange adaptor for High-Impact mPVC Class 16 complete with shouldered end coupling system flange drilled to SANS 1123 Table 1600/3	No.	2		
	3.04.03.13	Item 16: DN 150 Flange adaptor for High-Impact mPVC Class 16 complete with shouldered end coupling system flange drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.03.14	Item 17: DN 100 Flange adaptor for High-Impact mPVC Class 16 complete with shouldered end coupling system flange drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.04	DN 200 Non-return Valve Chamber (Drawing JW14358-16941-T-013-S18-00-TMS)				
	3.04.04.01	Item 1: DN 200 Flange adaptor for High-Impact mPVC Class 16 complete with shouldered end coupling system flange drilled to SANS 1123 Table 1600/3	No.	2		
	3.04.04.02	Item 2: Spool piece DN 150; 1250 mm long; SANS 62 medium class; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	1		
	Carried forward					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.04.04.03	Item 3: Concentric reducer DN 200 to DN 150; SANS 719; Wall Thickness t = 6 mm; 180 mm long; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	2		
	3.04.04.04	Item 4: Spool piece DN 100 x 200 mm long; SANS 62 heavy class; one end flanged; drilled to SANS 1123 Table 1600/3; other end welded to DN 200 blank flange; drilled to SANS 1123 Table 1600/8 with hole drilled for DN 100 pipe	No.	1		
	3.04.04.05	Item 6: Spool piece DN 150; 454 mm long; SANS 62 medium class; both ends flanged; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.04.06	Item 8: Spool piece DN 150; 773 mm long; SANS 62 medium class; both ends flanged; drilled to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.04.07	Item 9a: DN 150 Y-Strainer; Flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.04.08	Item 9b: DN 150 T-Strainer; Flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.04.09	Item 12: Spool piece DN 150; 830 mm long; SANS 62 medium class; both ends flanged; drilled to SANS 1123 Table 1600/3; with pipe support	No.	2		
	3.04.04.10	Item 15: Spool piece DN 150; 1038 mm long; SANS 62 medium class; both ends flanged; drilled to SANS 1123 Table 1600/3; with puddle flange	No.	1		
	3.04.04.11	Item 17: Spool piece DN 150; 1256 mm long; SANS 62 medium class; both ends flanged; drilled to SANS 1123 Table 1600/3; with puddle flange	No.	1		
	3.04.04.12	Item 18a: DN 160 PE100 PN16 HDPE stub flange with backing ring	No.	1		
	3.04.04.13	Item 18b: DN 150 Flange adaptor for High-Impact mPVC Class 16 complete with shouldered end coupling system; Flange drilled to SANS 1123 Table 1600/3	No.	1		
	3.04.04.14	Item 19: Equal tee; DN 150 x DN 150; SANS 62 medium class; flanged all ends; drilled to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.04.15	Item 20: Equal tee; DN 150 x DN 150; SANS 62 medium class; flanged all ends; drilled to SANS 1123 Table 1600/3	No.	1		
	Carried forward					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSL 8.2.30	**3.05**	**Extra over 8.2.16 for for the Supplying, Installing and Commissioning of Flow Meters**				
	3.05.01	DN 600 Pressure Reducing Valve Chamber 1 (Drawing JW14358-16941-T-013-S21-00-TMS)				
	3.05.01.01	Item 12: DN 300 PN25 Electromagnetic flow meter complete with sensor and remotely mounted transmitter; flanges drilled to SANS 1123 Table 2500/3; supplied with 15 m of cable	No.	1		
PSL 8.2.33	3.06	Supplying, Installing and Commissioning Pressure transmitters with GSM Battery operated data loggers	No.	10		
PSL 8.2.34	**3.07**	**Operation and Maintenance Manuals for Valves and Flow Meters**				
	3.07.01	DN 100 Resilient Seal Gate Valve (PN25)	Sum	1		
	3.07.02	DN 150 Resilient Seal Gate Valve (PN16)	Sum	1		
	3.07.03	DN 300 Wedge Gate Valve (PN16)	Sum	1		
	3.07.04	DN 300 Wedge Gate Valve (PN25)	Sum	1		
	3.07.05	DN 100 Air Valve (PN25)	Sum	1		
	3.07.06	DN 150 Pressure Reducing Valve (PN16)	Sum	1		
	3.07.07	DN 300 Pressure Reducing Valve (PN16)	Sum	1		
	3.07.08	DN 300 Pressure Reducing Valve (PN25)	Sum	1		
	3.07.09	DN 150 Y-type Strainer (PN16)	Sum	1		
	3.07.10	DN 150 T-type Strainer (PN16)	Sum	1		
	3.07.11	DN 300 Y-type Strainer (PN16)	Sum	1		
	3.07.12	DN 300 T-type Strainer (PN16)	Sum	1		
	3.07.13	DN 300 Y-type Strainer (PN25)	Sum	1		
	3.07.14	DN 300 T-type Strainer (PN25)	Sum	1		
	3.07.15	DN 150 Resilient Seal Gate Valve (PN16)	Sum	1		
	Carried forward to summary (Part C - Section 7)					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Cable Ducts

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 LC	**4**	**CABLE DUCTS** **Refer to Drawing:** **JW14358-16941-T-013-S17-00-TMS** **JW14358-16941-T-013-S20-00-TMS** **JW14358-16941-T-013-S42-00-TMS** **JW14358-16941-T-013-S49-00-TMS**				
8.2.2	**4.01**	**Excavation**				
	4.01.01	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material				
	4.01.01.01	i) Single duct trench (300 mm wide), up to 1 m deep	m^3	5		
PSLC 8.2.5	**4.02**	**Supply, lay, bed and prove duct, including draw wire and screening wire**				
	4.02.01	a) 110mm flexible conduit	m	10		
8.2.6	**4.03**	**Imported bedding material, where ordered**				
	4.03.01	a) Selected granular material	m^3	3		
	Carried forward to summary (Part C - Section 7)					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 2001 PART CC1	**5**	**CONCRETE WORKS (STRUCTURAL)**				
		Refer to Drawings: **JW14358-16941-T-013-S17-00-TMS** **JW14358-16941-T-013-S20-00-TMS** **JW14358-16941-T-013-S42-00-TMS** **JW14358-16941-T-013-S49-00-TMS**				
		SCHEDULED FORMWORK ITEMS				
PSCC1.002	**5.01**	**Smooth**				
	5.01.01	Vertical formwork to				
	5.01.01.01	Foundations (Floor)	m²	30		
	5.01.01.02	Plinths	m²	10		
	5.01.01.03	Walls	m²	620		
	5.01.01.04	Sump	m²	5		
	5.01.01.05	Stairs	m²	44		
	5.02.01	**Horizontal formwork to**				
	5.02.01.01	Precast roof slabs	m²	120		
PSCC1.005	**5.02**	**Narrow widths (up to 300 mm wide)**				
	5.02.01	**Vertical Smooth formwork to**				
	5.02.01.01	Precast slabs	m	265		
	5.02.01.02	Concrete Bunker Apron Slab	m	10		
PSCC1.006	**5.03**	**Box out holes/form voids**				
	5.03.01	**a) Small, circular, of diameter up to 0,35 m**				
	5.03.01.01	0 m up to and including 0,5 m	No.	60		
	5.03.02	**d) Large, other than circular, areas over 0.1 m² up to 2,0 m²**				
	5.03.02.01	0 m up to and including 0,5 m	No.	6		
	5.03.02.02	Over 2,0 m deep	No.	12		
		SCHEDULED REINFORCEMENT ITEMS				
PSCC1.007	**5.04**	**Steel bars**				
	5.04.01	a) Steel bars irrespective of grade and diameter	t	45		
	Carried forward					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
		SCHEDULED CONCRETE ITEMS				
PSCC1.011	**5.05**	**Blinding layer in Grade 15 MPa/19 mm concrete**				
	5.05.01	50 mm thickness	m²	265		
PSCC1.012	**5.06**	**Strength concrete**				
	5.06.01	Class 30 MPa/19 mm concrete in				
	5.06.01.01	Foundations (Floor)	m^3	40		
	5.06.01.02	Plinths	m^3	8		
	5.06.01.03	Walls	m^3	100		
	5.06.01.04	Roof slabs	m^3	36		
	5.06.01.05	Sump	m^3	4		
	5.06.01.06	Stairs	m^3	17		
	5.06.01.07	Concrete Bunker Apron Slab	m^3	1		
PSCC1.013	**5.07**	**Unformed surface finishes**				
	5.07.01	a) Steel-floated finish				
	5.07.01.01	Foundations (Floor)	m²	150		
	5.07.01.02	Top of Plinths	m²	11		
	5.07.01.03	Top of Walls	m²	25		
	5.07.01.04	Roof slabs	m²	120		
	5.07.01.05	Concrete Bunker Apron Slab	m²	10		
	5.07.02	d) Broomed finish				
	5.07.02.01	Blinding layer	m²	265		
	5.07.03	e) Screed in 3:1 Sand and Cement Mix				
	5.07.03.01	Chamber floor screed	m³	15		
PSCC1.015	**5.08**	**Manufacture (or supply) and erect precast units**				
	5.08.01	Concrete Bunker (Minimum Internal Dimensions: 680 H x 500 W x 375 D)	No.	1		
PSCC1.017	**5.09**	**Joints**				
	5.09.01	Polysulphide sealant between precast slabs	m	105		
	Carried forward					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.018	**5.10**	**Grouting**				
	5.10.01	a) Under bases of pipe supports and straps	m³	5		
	5.10.02	c) Pipe box-outs	m³	5		
PSCC1.019	**5.11**	**HD bolts and miscellaneous metal work**				
	5.11.01	Metal work for DN 600 Pressure Reducing Valve Chamber 1 (Drawing JW14358-16941-T-013-S21-00-TMS)				
	5.11.01.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	2		
	5.11.01.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.01.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.01.04	Fabricate and cast in galvanised access manholes as per Drawing:JW14358-16941-T-017-S09-00-TMS	No.	2		
	5.11.01.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	32		
	5.11.02	Metal work for DN 600 Bypass Pressure Reducing Valve Chamber (Drawing JW14358-16941-T-013-S43-00-TMS)				
	5.11.02.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.02.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.02.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.02.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.02.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	20		
	5.11.02.06	Fabricate and install DN 160 galvanised medium duty pipe clamps as per Drawing: JW14358-16941-T-017-S10-00-TMS	No.	3		
	5.11.03	Metal work for Existing DN 150 PRV Chamber Upgrade (Drawing JW14358-16941-T-013-S50-00-TMS)				
	5.11.03.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	Carried forward					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	5.11.03.02	Fabricate and install DN 160 galvanised medium duty pipe clamps as per Drawing: JW14358-16941-T-017-S10-00-TMS	No.	3		
	5.11.03.03	Fabricate and install DN 200 galvanised medium duty pipe clamps as per Drawing: JW14358-16941-T-017-S10-00-TMS	No.	3		
	5.11.04	Metal work for DN 200 Non-return Valve Chamber (Drawing JW14358-16941-T-013-S18-00-TMS)				
	5.11.04.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.04.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.04.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.04.04	Fabricate and cast in galvanised access manholes as per Drawing:JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.04.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing:JW14358-16941-T-017-S10-00-TMS	No.	20		
	5.11.04.06	Fabricate and install DN 160 galvanised medium duty pipe clamps as per Drawing:JW14358-16941-T-017-S10-00-TMS	No.	3		
PSCC1.020	**5.12**	**Colour Mitigation to**				
	5.12.01	Exposed Chambers along roadways	m²	300		
		MISCELLANEOUS ITEMS				
PSCC1.021	**5.13**	**Polythene sheeting under concrete**				
	5.13.01	250 micron green medium density polyethylene dampproof sheeting	m²	265		
PSCC1.023	**5.14**	**FRP items**				
	5.14.01	a) FRP Grating				
	5.14.01.01	450 mm x 450 mm x 38 mm deep FRP grating	No.	5		
PSCC1.024	**5.15**	**Casting pipes and specials in concrete**				
	5.15.01	DN 100 Steel pipe cast into chamber wall	No.	2		
	5.15.02	DN 150 Steel pipe cast into chamber wall	No.	6		
	5.15.03	DN 200 Steel pipe cast into chamber wall	No.	6		
	5.15.04	DN 300 Steel pipe cast into chamber wall	No.	6		
	Carried forward					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.025	**5.16**	**Installation of precast elements**				
	5.16.01	Precast roof slabs as per Drawing: JW14358-16941-T-013-S17-00-TMS	No.	6		
	5.16.02	Precast roof slabs as per Drawing: JW14358-16941-T-013-S20-00-TMS	No.	9		
	5.16.03	Precast roof slabs as per drawing Drawing: JW14358-16941-T-013-S42-00-TMS	No.	6		
PSCC1.026	**5.17**	**Drilling cores through concrete**				
	5.17.02	100 mm diameter core through 250 mm thick concrete	No.	10		
PSCC1.027	**5.18**	**Masonry**				
	5.18.01	110 mm brick wall	m²	10		
	5.18.02	220 mm brick wall	m²	30		
	Carried forward to summary (Part C - Section 7)					

Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS (PIPE TRENCHES)				
SANS 1200 L		MEDIUM-PRESSURE PIPELINES				
SANS 1200 LC		CABLE DUCTS				
SANS 2001 CC1		CONCRETE WORKS (STRUCTURAL)				
Total carried forward to summary						

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

Site Clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawings:** **JW14358-16941-T-013-S26-00-TMS** **JW14358-16941-T-013-S35-00-TMS**				
PSC 8.2.1	**1.01**	**Clear and grub**				
	1.01.01	Areas	m²	270		
8.2.2	**1.02**	**Remove and grub large trees and tree stumps of girth**				
	1.02.01	Over 1 m and up to and including 2 m	No.	2		
8.2.10	1.03	Remove topsoil to nominal depth of 150 mm and stockpile	m³	40		
PSC 8.2.14	**1.04**	**Take down and re-erect existing fences and**				
	1.04.01	a) Guardrails	m	15		
	1.04.02	b) Diamond mesh fencing	m	15		
	Carried forward to summary (Part C - Section 8)					

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

Earthworks (pipe trenches)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS (PIPE TRENCHES)** **Refer to Drawings:** **JW14358-16941-T-013-S26-00-TMS** **JW14358-16941-T-013-S35-00-TMS**				
PSDB 8.3.2	**2.01**	**Excavation**				
	2.01.01	d) Excavate in all materials for stormwater inlet and outlet structures and for manholes, catchpits, valve chambers and the like, irrespective of depth, and backfill around structures	m³	600		
	2.01.02	e) Extra over 2.01.01 for excavating in				
	2.01.02.01	1) intermediate material	m³	60		
	2.01.02.02	2) hard material	m³	60		
	2.01.03	f) Hand excavation where ordered by the Project Manager				
	2.01.03.01	a) Soft material	m³	60		
	2.01.03.02	b) Intermediate material	m³	60		
	2.01.03.03	c) Hard material	m³	60		
	2.01.04	g) Backfill stabilized with 5% cement where directed by the Project Manager	m³	120		
	2.01.05	h) Soilcrete backfill where directed by the Project Manager	m³	120		
	Carried forward to summary (Part C - Section 8)					

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**3**	**MEDIUM-PRESSURE PIPELINES** **Refer to Drawings:** **JW14358-16941-T-013-S27-00-TMS** **JW14358-16941-T-013-S36-00-TMS**				
PSL 8.2.1	**3.01**	**Supply, Lay, and Bed Pipes Complete with Couplings**				
	3.01.01	High-Impact mPVC Class 16 complete with shouldered end coupling system				
	3.01.01.01	Class 16 DN 200	m	100		
8.2.2	**3.02**	**Extra-over 3.0.1 for the Supplying, Laying, and Bedding of Specials Complete with Couplings**				
	3.02.01	High-Impact mPVC Class 16 bends complete with shouldered end coupling system				
	3.02.01.01	DN 200, 11.25° bend	No.	2		
	3.02.01.02	DN 200, 22.5° bend	No.	2		
	3.02.01.03	DN 200, 45° bend	No.	2		
	3.02.01.04	DN 200, 90° bend	No.	2		
	3.02.02	High-Impact mPVC Class 16 shouldered end repair couplings				
	3.02.02.01	DN 200	No.	2		
	3.02.03	Flange adaptors for High-Impact mPVC Class 16 complete with shouldered end coupling system				
	3.02.03.01	DN 200	No.	2		
8.2.3	**3.03**	**Extra-over PSL 8.2.16 for Supplying, Fixing, and Bedding of Valves**				
	3.03.01	DN 600 Tie-in Chamber 2 (Drawing JW14358-16941-T-013-S27-00-TMS)				
	3.03.01.01	Item 5: DN 100 PN16 Resilient Seal Gate valve; non rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	2		
	3.03.01.02	Item 7: DN 100 PN16 Double orifice with anti-shock orifice mechanism air release valve, Vent-O-Mat RBX or similar; flanges drilled to SANS 1123 Table 1600/3	No.	2		
	3.03.01.03	Item 9: DN 600 PN16 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	2		
	Carried forward					

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.03.02	DN 400 Tie-in Chamber				
	3.03.02.01	Item 3: DN 400 PN16 wedge gate valve for vertical to operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled SANS 1123 Table 1600/3	No.	2		
	3.03.02.02	Item 6: DN 400 PN16 Single Door Swing Check Valve to SANS 1551; flanged both ends; drilled to SANS 1123 Table 1600/3	No.	1		
	3.03.02.03	Item 16: DN 100 PN16 Resilient Seal Gate valve; non rising spindle; anti-clockwise closing to SANS 664; manually operated; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.03.02.04	Item 17: DN 100 PN16 Double orifice with anti-shock orifice mechanism air release valve, Vent-O-Mat RBX or similar approved; flanges drilled to SANS 1123 Table 1600/3	No.	1		
	3.03.02.05	Item 19: DN 200 PN16 wedge gate valve for vertical operation; non rising spindle; anti-clockwise closing to SANS 664; manually operated; Vosa or similar approved; both ends flanged; flanges drilled to SANS 1123 Table 1600/3	No.	1		
PSL 8.2.19	**3.04**	**Extra over 8.2.16 for the Supplying, Laying, Welding or Jointing and Bedding of Steel specials**				
	3.04.01	Specials for DN 600 Tie-in Chamber 2 as per Drawing: JW14358-16941-T-013-S27-00-TMS				
	3.04.01.01	Item 1: Concentric reducer DN 600 to DN 400; SANS 719; Wall Thickness t = 6 mm; 610 mm long; both ends flanged to SANS 1123 Table 1600/3	No.	2		
	3.04.01.02	Item 2: Spool piece DN 400; 1260 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3; with puddle flange	No.	1		
	3.04.01.03	Item 4: Spool piece DN 100 x 200 mm long; SANS 62 medium class; one end flanged to SANS 1123 Table 1600/3; other end welded to DN200 blank flange to SANS 1123 Table 1600/8 with hole drilled for DN100 pipe	No.	2		
	3.04.01.04	Item 6: Spool piece DN 100 x 200 mm long; SANS 62 medium class; both ends flanged to SANS 1123 Table 1600/3	No.	2		
	3.04.01.05	Item 8: Dismantling joint DN 400; flanged to SANS 1123 Table 1600/3	No.	1		
	Carried forward					

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.04.01.06	Item 10: Spool piece DN 400 x 1200 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3; with pressure testing socket	No.	1		
	3.04.01.07	Item 12: Spool piece DN 400; 2000 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.01.08	Item 13a: DN 400 Y-Strainer; Flanged both ends to SANS 1123 Table 1600/3	No.	1		
	3.04.01.09	Item 13b: DN 400 T-Strainer; Flanged both ends to SANS 1123 Table 1600/3	No.	1		
	3.04.01.10	Item 14: Spool piece DN 400; 1278 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3; with puddle flange	No.	1		
	3.04.01.11	Item 15: DN 600 90 degree 4 segment medium radius bend; SANS 719; Wall Thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3	No.	1		
	3.04.01.12	Item 16: Equal tee; DN 400 x DN 400 SANS 719; wall thickness = 6 mm; flanged all ends to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.01.13	Item 17: Spool piece DN 400; 1052 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.01.14	Item 18: Unequal tee; DN 400 x DN 300 SANS 719; wall thickness = 6 mm; flanged all ends to SANS 1123 Table 1600/3; with pipe support	No.	2		
	3.04.01.15	Item 19: Spool piece DN 400; 1317 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3; with puddle flange	No.	1		
	3.04.01.16	Item 20: DN 400 90 degree 4 segment medium radius bend; SANS 719; Wall Thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3	No.	1		
	3.04.01.17	Item 21: Concentric reducer DN 500 to DN 400; SANS 719; Wall Thickness t = 6 mm; 510 mm long; both ends flanged to SANS 1123 Table 1600/3	No.	1		
	3.04.02	Specials for DN 400 Tie-in Chamber as per Drawing:JW14358-16941-T-013-S36-00-TMS				
	3.04.02.01	Item 1: Unequal tee; DN 400 x DN 300; SANS 719; Wall Thickness = 6 mm; flanged all ends to SANS 1123 Table 1600/3	No.	2		
	3.04.02.02	Item 2: Spool piece DN 400; 1260 mm long; SANS 719; Wall Thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3; with puddle flange	No.	1		
	Carried forward					

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	3.04.02.03	Item 4: Unequal tee; DN 400 x DN 200; SANS 719; wall thickness = 6 mm; flanged all ends to SANS 1123 Table 1600/3	No.	1		
	3.04.02.04	Item 5: Spool piece DN 400; 1070 mm long; SANS 719; wall thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.02.05	Item 7: Spool piece DN 400; 846 mm long; SANS 719; wall thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.02.06	Item 8: Equal tee; DN 400 x DN 400; SANS 719; wall thickness = 6 mm; flanged all ends to SANS 1123 Table 1600/3	No.	1		
	3.04.02.07	Item 9: Spool piece DN 400; 1052 mm long; SANS 719; wall thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.02.08	Item 10: Spool piece DN 400; 1317 mm long; SANS 719; wall thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3; with puddle flange	No.	1		
	3.04.02.09	Item 11: Spool piece DN 400; 1889 mm long; SANS 719; wall thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3; with puddle flange	No.	1		
	3.04.02.10	Item 12: Concentric reducer DN 600 to DN 400; SANS 719; Wall Thickness t = 6 mm; 610 mm long; both ends flanged to SANS 1123 Table 1600/3	No.	1		
	3.04.02.11	Item 13: Spool piece DN 600; 500 mm long; SANS 719; wall thickness t = 6 mm; one end flanged to SANS 1123 Table 1600/3	No.	1		
	3.04.02.12	Item 14: Unequal tee; DN 200 x DN 100; SANS 719; wall thickness = 6 mm (DN 200) / SANS 62 medium class (DN 100); flanged all ends to SANS 1123 Table 1600/3; with pipe support	No.	1		
	3.04.02.13	Item 15: Spool piece; DN100 x 200 mm long; SANS 62 medium class; flanged both ends to SANS 1123 Table 1600/3	No.	1		
	3.04.02.14	Item 18: Spool piece DN 200; 1284 mm long; SANS 719; wall thickness t = 6 mm; both ends flanged to SANS 1123 Table 1600/3	No.	1		
	3.04.02.15	Item 20: DN 300 Blank flange to SANS 1123 Table 1600/8	No.	2		
	3.04.02.15	Item 21: DN 400 Loose flange drilled to SANS 1123 Table 1600/3	No.	2		
	Carried forward					

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSL 8.2.20	**3.05**	**Supply, Lay and Bed HDPE Pipes Complete with Welded Joints**				
	3.05.01	PN16 PE100 HDPE pipe				
	3.05.01.01	PN16 DN 315 mm	m	40		
PSL 8.2.21	**3.06**	**Extra over 4.05 for the Supplying, Laying, Butt Fusion Welding and Bedding of HDPE specials**				
	3.06.01	PN16 PE100 HDPE bends				
	3.06.01.01	DN 315mm, 11.25° bend	No.	2		
	3.06.01.02	DN 315 mm, 22.5° bend	No.	2		
	3.06.01.03	DN 315 mm, 45° bend	No.	2		
	3.06.02	PN16 HDPE stub flange and backing ring				
	3.06.02.01	DN 315 mm	No.	2		
PSL 8.2.27	**3.07**	**Connect to Existing Mains**				
	3.07.01	a) Tie-in of new DN 400 chamber on existing DN 400 (drawing JW14358-16941-T-013-S35-00-TMS)	sum	1		
PSL 8.2.30	**3.08**	**Extra over 8.2.16 for for the Supplying, Installing and Commissioning of Flow Meters**				
	3.08.01	Item 11: DN 400 PN16 Electromagnetic flow meter complete with sensor and remotely mounted transmitter; flanges drilled to SANS 1123 Table 1600/3; supplied with 15 m of cable	No.	1		
PSL 8.2.34	**3.09**	**Operation and Maintenance Manuals for Valves and Flow Meters**				
	3.09.01	a) DN 200 Wedge Gate Valve (PN16)	Sum	1		
	3.09.02	b) DN 400 Wedge Gate Valve (PN16)	Sum	1		
	3.09.03	c) DN 400 Swing type Check Valve (PN16)	Sum	1		
	3.09.04	d) DN 400 Electromagnetic Flow Meter (PN16)	Sum	1		
	Carried forward to summary (Part C - Section 8)					

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

Cable ducts

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 LC	**4**	**CABLE DUCTS** **Refer to Drawing:** **JW14358-16941-T-013-S35-00-TMS**				
8.2.2	**4.01**	**Excavation**				
	4.01.01	**a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material**				
	4.01.01.01	i) Single duct trench (300 mm wide), up to 1 m deep	m^3	5		
PSLC 8.2.5	**4.02**	**Supply, lay, bed and prove duct, including draw wire and screening wire**				
	4.02.01	a) 110mm flexible conduit	m	10		
8.2.6	**4.03**	**Imported bedding material, where ordered**				
	4.03.01	a) Selected granular material	m^3	3		
	Carried forward to summary (Part C - Section 8)					

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 2001 PART CC1	**5.00**	**CONCRETE WORKS (STRUCTURAL)**				
		SCHEDULED FORMWORK ITEMS				
PSCC1.002	**5.01**	**Smooth**				
	5.01.01	Vertical formwork to				
	5.01.01.01	Foundations (Floor)	m²	16		
	5.01.01.02	Plinths	m²	9		
	5.01.01.03	Walls	m²	375		
	5.01.01.04	Sump	m²	4		
	5.01.01.05	Stairs	m²	32		
	5.01.02	Horizontal formwork to				
	5.01.02.01	Slabs	m²	80		
PSCC1.005	**5.02**	**Narrow widths (up to 300 mm wide)**				
	5.02.01	Vertical Smooth formwork to				
	5.02.01.01	Precast slabs	m	105		
	5.02.01.02	Concrete Bunker Apron Slab	m	10		
PSCC1.006	**5.03**	**Box out holes/form voids**				
	5.03.01	a) Small, circular, of diameter up to 0,35 m				
	5.03.01.01	0 m up to and including 0,5 m	No.	32		
	5.03.02	d) Large, other than circular, areas over 0.1 m^2 up to 2,0 m^2				
	5.03.02.01	0 m up to and including 0,5 m	No.	2		
	5.03.02.02	Over 2,0 m deep	No.	7		
		SCHEDULED REINFORCEMENT ITEMS				
	5.04	**Steel bars**				
	5.04.01	a) Steel bars irrespective of grade and diameter	t	24		
		SCHEDULED CONCRETE ITEMS				
PSCC1.011	**5.05**	**Blinding layer in Grade 15 MPa/19 mm concrete**				
	5.05.01	50 mm thickness	m²	170		
	Carried forward					

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.012	**5.06**	**Strength concrete**				
	5.06.01	Class 30 MPa/19 mm concrete in				
	5.06.01.01	Foundations (Floor)	m^3	24		
	5.06.01.02	Plinths	m^3	6		
	5.06.01.03	Walls	m^3	47		
	5.06.01.04	Roof slab	m^3	22		
	5.06.01.05	Sump	m^3	2		
	5.06.01.06	Stairs	m^3	4		
	5.06.01.07	Concrete Bunker Apron Slab	m^3	1		
PSCC1.013	**5.07**	**Unformed surface finishes**				
	5.07.01	a) Steel-floated finish				
	5.07.01.01	Foundations (Floor)	m^2	90		
	5.07.01.02	Top of Plinths	m^2	5		
	5.07.01.03	Top of Walls	m^2	30		
	5.07.01.04	Roof slabs	m^2	90		
	5.07.01.05	Concrete Bunker Apron Slab	m^2	10		
	5.07.02	d) Broomed finish				
	5.07.02.01	Blinding layer	m^2	170		
	5.07.03	e) Screed in 3:1 Sand and Cement Mix				
	5.07.03.01	Chamber floor screed	m^3	6		
PSCC1.015	**5.08**	**Manufacture (or supply) and erect precast units**				
	5.08.01	Concrete Bunker (Minimum Internal Dimesions: 680 H x 500 W x 375 D)	No.	1		
PSCC1.015	**5.09**	**Joints**				
	5.09.01	Polysulphide sealant between precast slab	m	50		
PSCC1.018	**5.10**	**Grouting**				
	5.10.01	a) Under bases of pipe supports and straps	m^3	4		
	5.10.02	c) Pipe box-outs	m^3	4		
	Carried forward					

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.019	**5.11**	**HD bolts and miscellaneous metal work**				
	5.11.01	Metal work for DN 600 Tie-in Chamber 2 as per Drawing: JW14358-16941-T-013-S26-00-TMS				
	5.11.01.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.01.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.01.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.01.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.01.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	16		
	5.11.02	Metal work for DN 400 Tie-in Chamber as per Drawing: JW14358-16941-T-013-S35-00-TMS				
	5.11.02.01	Fabricate and install galvanised mild steel ladders as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.02.02	Fabricate and cast in long inlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.02.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.02.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	1		
	5.11.02.05	Fabricate and cast in lifting hooks as per bolt detail on Drawing: JW14358-16941-T-017-S10-00-TMS	No.	16		
PSCC1.020	**5.12**	**Colour Mitigation to:**				
	5.12.01	Exposed Chambers along roadways	m²	60		
		MISCELLANEOUS ITEMS				
PSCC1.021	**5.13**	**Polythene sheeting under concrete**				
	5.13.01	250 micron green medium density polyethylene dampproof sheeting	m²	170		
PSCC1.023	**5.14**	**FRP items**				
	5.14.01	**a) FRP Grating**				
	5.14.01.01	450 mm x 450 mm x 38 mm deep FRP grating	m²	2		
	Carried forward					

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.024	**5.15**	**Casting pipes and specials in concrete**				
	5.15.01.01	DN 200 Steel pipe cast into chamber wall	No.	1		
	5.15.01.02	DN 400 Steel pipe cast into chamber wall	No.	6		
PSCC1.025	**5.16**	**Installation of precast elements**				
	5.16.01	Precast roof slabs as per Drawing: JW14358-16941-T-013-S26-00-TMS	No.	4		
	5.16.02	Precast roof slabs as per Drawing: JW14358-16941-T-013-S35-00-TMS	No.	4		
PSCC1.026	**5.17**	**Drilling cores through concrete**				
	5.17.01	100 mm diameter core through 250 mm thick concrete slab	No.	5		
	Carried forward to summary (Part C - Section 8)					

Part C - Section 8 - Tie-in chambers: Node NA103, NB12

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS (PIPE TRENCHES)				
SANS 1200 L		MEDIUM-PRESSURE PIPELINES				
SANS 1200 LC		CABLE DUCTS				
SANS 2001 CC1		CONCRETE (STRUCTURAL)				
Total carried forward to summary						

Part D - Portion 1 - Cathodic Protection

Transformer rectifier infrastructure installations

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION A	A	**Transformer Rectifier Infrastructure Installations**				
	A1	**Preliminary & General**				
	A1.01	For one Transformer Rectifier Infrastructure Installation - to include for all plant, equipment, personnel, site establishment, travelling, concrete testing by SANAS accredited laboratory for all concrete mixes, barricading of trenches dewatering, security for the protection of Cables left exposed overnight and removal of all excess and waste materials on completion	Each	1		
	A2	**Supply and Installation of Negative and Monitoring Cables**				
	A2.01	**Negative Cable Trench**				
	A2.01.01	From the connection point on the pipeline, excavate a 300mm wide, 1m deep trench to the TRU installation position. Top soil is to be removed and stored separately.				
	A2.01.01.01	a) Excavation of top soil and separate storage	m	5		
	A2.01.01.02	b) Excavation of main trench	m	5		
	A2.01.01.03	c) Extra over for un-pickable material	m³	1		
	A2.01.01.04	d) Extra over for rock	m³	1		
	A2.02	**Cable Connections to Pipeline**				
	A2.02.01	Remove existing coating to expose an area of sufficient size to make the necessary cable connections. Cable connections are to be by thermit welding or pin brazing as directed by the Project Manager.				
	A2.02.01.01	a) Coating Removal for 3 cable connections	Each	1		
	A2.02.01.02	b) 35mm² negative cable connections	Each	2		
	A2.02.01.03	c) 10mm² monitoring cable connection	Each	1		
	A2.03	**Permanent Reference Electrode and Coupon**				
	A2.03.01	The coupon is to be attached to the pipeline anywhere between the 10 o'clock and 2 o'clock positions. The permanent reference electrode is to be installed at a position 200mm perpendicularly away from the pipe and coupon.				
	A2.03.01.01	a) Supply Permanent Reference electrode, coupon	Each	1		
	A2.03.01.02	b) Install reference electrode and coupon	Each	1		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Transformer rectifier infrastructure installations

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	A2.03	**Permanent Reference Electrode and Coupon**				
	A2.03.01	The coupon is to be attached to the pipeline anywhere between the 10 o'clock and 2 o'clock positions. The permanent reference electrode is to be installed at a position 200mm perpendicularly away from the pipe and coupon.				
	A2.03.01.01	a) Supply Permanent Reference electrode, coupon	Each	1		
	A2.03.01.02	b) Install reference electrode and coupon	Each	1		
	A2.04	**Cables**				
	A2.04.01	From the pipeline, negative, reference, coupon and				
	A2.04.01.01	a) Supply coating material for 3 cable connections	Each	1		
	A2.04.01.02	b) Supply 110mm PVC Conduit	m	5		
	A2.04.01.03	c) Supply 35mm² black PVC/PVC negative cable	m	15		
	A2.04.01.04	d) Supply 10mm² black PVC/PVC monitoring cable	m	10		
	A2.04.01.05	e) Supply 10mm² black PVC/PVC coupon cable	m	10		
	A2.04.01.06	f) Supply 10mm² red PVC/PVC reference cable	m	10		
	A2.04.01.07	g) Install coating material, conduit and cables	Each	1		
	A2.05	**Concrete Encasement**				
	A2.05.01	Cable conduits are to sealed at the pipeline end with				
	A2.05.01.01	a) Concrete Encasement	m	5		
	A2.06	**Backfilling to Natural Ground Level**				
	A2.06.01	Once the concrete has set sufficiently in the trench,				
	A2.06.01.01	a) Backfilling	m	5		
	A3	**Supply and Installation of Power Supply Cable**				
	A3.01	**Power Supply Cable Trench**				
	A3.01.01	From the power supply metering box, excavate a 450mm wide, 1m deep trench to the TRU installation position. Top soil is to be removed and stored separately.				
	A3.01.01.01	a) Excavation of top soil and separate storage	m	50		
	A3.01.01.02	b) Excavation of main trench	m	50		
	A3.01.01.03	c) Shoring of Trench	m	50		
	A3.01.01.04	d) Extra over for un-pickable material	m³	1		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Transformer rectifier infrastructure installations

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	A3.01.01.05	e) Extra over for rock	m³	1		
	A3.02	**Cable**				
	A3.02.01	From the power supply metering box the AC supply cable is to be installed inside a 110mm PVC conduit with long radius bends.				
	A3.02.01.01	a) Supply 110mm PVC Conduit	m	50		
	A3.02.01.02	b) Supply 2 core 16mm² ECC SWA power cable	m	55		
	A3.02.01.03	c) Install PVC conduit and power cable	Each	1		
	A3.03	**Concrete Encasement**				
	A3.03.01	The entire cable trench is to be filled with 40 MPa concrete up to a level 400mm from the trench floor. Where the conduits come up to ground level the vertical portions of the conduits are to be encased in 40 MPa concrete such that the minimum coverage at any point is 400 mm				
	A3.02.01.01	a) Concrete Encasement	m	50		
	A3.04	**Backfilling to Natural Ground Level**				
	A3.04.01	Once the concrete has set sufficiently in the trench, backfilling is to be carried out in 200mm layers with compaction of each layer being carried out to 90% 90% of modified AASHTO density. The separately stored topsoil is to be installed at the surface.				
	A3.02.01.01	a) Backfilling	m	50		
	A3.05	**Isolator Box**				
	A3.05.01	A suitable isolator box, complete with suitably rated isolator, is to be installed in the secure underground enclosure. The AC Supply cable is to be terminated inside this box.				
	A3.05.01.01	a) Supply and Install Isolator	Each	1		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Transformer rectifier infrastructure installations

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	A4	**Supply and Installation of Secure Enclosure**				
	A4.01	**TRU Earthing**				
	A4.01.01	Trenches for earthing cables are to be excavated to a depth of 0.5m. Earthing cables are to be laid as specified and 1.2m long earth spikes are to be driven in to the earth at each corner or conductor intersection. At each of these corners or intersections the conductors and earth rods are to be thermit welded together. The earthing trenches are then to be filled with 40 MPa concrete and backfilled.				
	A4.01.01.01	a) Excavation of top soil and separate storage	m	16		
	A4.01.01.02	b) Excavation of main trench	m	16		
	A4.01.01.03	c) Extra over for un-pickable material	m³	1		
	A4.01.01.04	d) Extra over for rock	m³	1		
	A4.01.01.05	e)Earthing Material Supply	Sum	1		
	A4.01.01.06	f) Earthing Material Installation	Sum	1		
	A4.02	**Backfilling of TRU Earthing**				
	A4.02.01	Once the concrete has set sufficiently in the trenches, backfilling is to be carried out in 200 mm layers with compaction of each layer being carried out to 90% of modified AASHTO density.				
	A4.02.01.01	a) Backfilling	Sum	1		
	A4.03	**TRU Secure Enclosure**				
	A4.03.01	Secure underground enclosure to be installed as per manufacturers specifications.				
	A4.03.01.01	a) Supply	Each	1		
	A4.03.01.02	b) Install	Each	1		
	Carried forward to summary (Section A)					

Part D - Portion 1 - Cathodic Protection

Supply and installation of transformer rectifier units

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION B	**B**	**Supply and Installation of Transformer Rectifier Units**				
	B1	**Preliminary & General**				
	B1.01	Rate for one Transformer Rectifier Installation (to include for all plant, equipment, personnel, site establishment, travelling and security and removal of all excess and waste materials on completion	Each	1		
	B2	**3kW SMCPR**				
	B2.01	Manufacture and test Unit, carry out FAT in presence of the Engineer, deliver to site Install and issue COC. Installation to include the termination of the point of supply inside the bunker enclosure with a Schneider PM5000 series power meter and CT's (free issue from JW). Remote monitoring to be via GSM-GDSP. 40 hours of development costs to be allowed to ensure the unit is interfaced with the 24/7/365 SCADA system in the control room with the appropriate, connectivity, alarming and data storage in the MS SQL database which is hosted at Johannesburg Water Head Quarters.				
	B2.01.01	Supply SMCPR	Each	1		
	B2.01.02	Factory Acceptance Testing of TRU in the presence of the Supervisor	Each	1		
	B2.01.03	Install SMCPR	Each	1		
	B2.01.04	Development costs for SCADA interface	Hours	40		
	Carried forward to summary (Section B)					

Part D - Portion 1 - Cathodic Protection

Supply and installation of horizontal anode groundbed

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION C	**C**	**Supply and Installation of Horizontal Anode**				
	C1	**Preliminary & General**				
	C1.01	For one horizontal anode groundbed Installation - to include for all plant, equipment, personnel, site establishment, travelling, concrete testing by SANAS accredited laboratory for all concrete mixes, barricading of trenches, dewatering, security for the protection of cables left exposed overnight and removal of all excess and waste materials on completion	Each	1		
	C2	**Supply and Installation of Positive Cables**				
	C2.01	**Positive Cable Trench**				
	C2.01.01	From the transformer rectifier enclosure, excavate a 300 mm wide, 1m deep trench to the groundbed installation position. Top soil is to be removed and stored separately.				
	C2.01.01.01	a) Excavation of top soil and separate storage	m	320		
	C2.01.01.02	b) Excavation of main trench	m	320		
	C2.01.01.03	c) Extra over for un-pickable material	m^3	1		
	C2.01.01.04	d) Extra over for rock	m^3	1		
	C2.02	**Supply and Installation of Positive Cable**				
	C2.02.01	From the furthest end of the anode groundbed cables are to be installed inside partly the groundbed trench and partly the positive cable trench. Cables are to be brought into the TRU enclosure via the cable duct.				
	C2.02.01.01	a) Supply 35mm^2 red PVC/PVC positive cable	m	410		
	C2.02.01.02	b) Install 35mm^2 red PVC/PVC positive cable	m	410		
	C2.03	**Concrete Encasement**				
	C2.03.01	The entire positive cable trench is to be filled with 40 MPa concrete up to a level 400mm from the trench floor.				
	C2.03.01.01	a) Concrete Encasement	m	320		
	C2.04	**Backfilling to Natural Ground Level**				
	C2.04.01	Once the concrete has set sufficiently in the trench, backfilling is to be carried out in 200 mm layers with compaction of each layer being carried out to 90% of modified AASHTO density. The separately stored topsoil is to be installed at the surface.				
	C2.04.01.01	a) Backfilling	m	320		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Supply and installation of horizontal anode groundbed

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	C2.05	**Installation of Cable Route Markers**				
	C2.02.01	Cable route markers are to be installed at 50 m intervals and at all direction changes along the cable route.				
	C2.02.01.01	a) Cable route markers	Each	9		
	C3	**Supply and Installation of Anode Groundbed**				
	C3.01	**Anode Groundbed Trench**				
	C3.01.01	At the location indicated by the engineer, excavate a 300 mm wide, 2.5 m deep trench. Top soil is to be removed and stored separately.				
	C3.01.01.01	a) Excavation of top soil and separate storage	m	80		
	C3.01.01.02	b) Excavation of main trench	m	80		
	C3.01.01.03	c) Shoring of Trench	m	80		
	C3.01.01.04	d) Extra over for un-pickable material	m^3	1		
	C3.01.01.05	e) Extra over for rock	m^3	1		
	C3.02	**Anodes and Canisters**				
	C3.02.01	The anode canisters are to be laid next to the trench alternately with the spacer canisters. Anode tails are to be spliced to the ring main cable by means of line taps and y-type epoxy filled splicing kits. Once the epoxy has cured sufficiently anode and spacer canisters are to be lowered carefully into the trench using appropriate slings.				
	C3.02.01.01	a) Supply canisterised anodes	Each	20		
	C3.02.01.02	b) Supply spacer canisters	Each	20		
	C3.02.01.03	c) Supply Splicing kits and line taps	Each	20		
	C3.02.01.04	d) Install anode groundbed	Each	1		
	C3.03	**Backfilling to Natural Ground Level**				
	C3.03.01	Backfilling is to be carried out in 200 mm layers with compaction of each layer being carried out to 90% of modified AASHTO density. The separately stored topsoil is to be installed at the surface.				
	C3.03.01.01	Backfilling	m	80		
	Carried forward to summary (Section C)					

Part D - Portion 1 - Cathodic Protection

Supply and installation of cross bonds

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION D	D	**Supply and Installation of Cross Bonds**				
	D1	**Preliminary & General**				
	D2.01	For one cross bond Installation - to include for all plant, equipment, personnel, site establishment, travelling, concrete testing by SANAS accredited laboratory for all concrete mixes, barricading of trenches dewatering, security for the protection of cables left exposed overnight and removal of all excess and waste materials on completion.	Each	1		
	D2	**Supply and Installation of Cross Bond**				
	D2.01	**Excavation**				
	D2.01.01	At each cross bonding location, excavate a 300mm wide trench to a depth of 1m or depth of pipeline invert (if greater than 1m). Top soil is to be removed and stored separately.				
	D2.01.01.01	a) Excavation of top soil and separate storage	m	1		
	D2.01.01.02	b) Excavation of main trench	m	1		
	D2.01.01.03	c) Shoring of Trench	m	1		
	D2.01.01.04	d) Extra over for un-pickable material	m^3	1		
	D2.01.01.05	e) Extra over for rock	m^3	1		
	D2.02	**Cable Connections to Pipeline**				
	D2.02.01	Remove existing coating to expose an area of sufficient size to make the necessary cable connections. Cable connections are to be by thermit welding.				
	D2.02.01.02	a) Coating Removal for 4 cable connections	Each	1		
	D2.03	**Cables**				
	D2.03.01	Cross bonding cables are to be laid between the pipelines Coating of the cable to pipe connection points is to be carried out. Cable terminations are to be made at a 4-way link panel housed in a below ground monitoring enclosure.				
	D2.03.01.01	a) Supply coating material for 4 cable connections	Each	1		
	D2.03.01.02	b) Supply 35mm² black PVC/PVC negative cable	m	1210		
	D2.03.01.03	c) Install coating material and cables	Each	1		
	D2.03.01.04	d) Supply 4 way link panel	Each	1		
	D2.03.01.05	e) Install 4 way link panel	Each	1		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Supply and installation of cross bonds

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	D2.04	**Concrete Encasement**				
	D2.04.01	Trenches are to be filled with 400 mm of 40 MPa concrete and the cable completely encased.				
	D2.04.01.01	a) Concrete Encasement	m	600		
	D2.05	**Backfilling to Natural Ground Level**				
	D2.05.01	In each trench, backfilling is to be carried out in 200 mm layers with compaction of each layer being carried out to 90% of modified AASHTO density. The separately stored topsoil is to be reinstated at the surface.				
	D2.05.01.01	a) Backfilling	m	600		
	Carried forward to summary (Section D)					

Part D - Portion 1 - Cathodic Protection

Supply and installation of continuity bonds at chambers

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION E	E	**Supply and Installation of Continuity Bonds at Chambers**				
	E1	**Preliminary & General**				
	E1.01	For one chamber continuity bond Installation - to include for all plant, equipment, personnel, site establishment, travelling, concrete testing by SANAS accredited laboratory for all concrete mixes, barricading of trenches dewatering, security for the protection of cables left exposed overnight and removal of all excess and waste materials on completion	Each	23		
	E2	**Supply and Installation of Chamber Continuity Bond**				
	E2.01	**Excavation**				
	E2.01.01	At each chamber requiring bonding, excavate a 300 mm wide trench to a depth of 1 m or depth of pipeline invert (if greater than 1 m) around the chamber immediately adjacent to the chamber wall. Top soil is to be removed and stored separately.				
	E2.01.01.01	a) Excavation of top soil and separate storage	m	115		
	E2.01.01.02	b) Excavation of main trench	m	115		
	E2.01.01.03	c) Shoring of Trench	m	115		
	E2.01.01.04	d) Extra over for un-pickable material	m^3	1		
	E2.01.01.05	e) Extra over for rock	m^3	1		
	E2.02	**Cable Connections to Pipeline**				
	E2.02.01	Remove existing coating to expose an area of sufficient size to make the necessary cable connections. Cable connections are to be by thermit welding.				
	E2.02.01.01	a) Coating Removal for 4 cable connections	Each	184		
	E2.02.01.02	b) 35mm² bonding cable connections	Each	92		
	E2.03	**Cables**				
	E2.03.01	Continuity bonding cables are to be laid around each chamber. Coating of the cable to pipe connection points is to be carried out.				
	E2.03.01.01	a) Supply coating material for cable connections	Each	92		
	E2.03.01.02	b) Supply 35mm² black PVC/PVC negative cable	Each	276		
	E2.03.01.03	c) Install coating material and cables	Each	23		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Supply and installation of continuity bonds at chambers

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	E2.04	**Concrete Encasement**				
	E2.04.01	Trenches are to be filled with 400 mm of 40M Pa concrete and the cable completely encased.				
	E2.04.01.01	a) Concrete Encasement	m	115		
	E2.05	**Backfilling to Natural Ground Level**				
	E2.05.01	In each trench, backfilling is to be carried out in 200 mm layers with compaction of each layer being carried out to 90% of modified AASHTO density. The separately stored topsoil is to be reinstated at the surface.				
	E2.05.01.01	a) Backfilling	m	115		
	Carried forward to summary (Section E)					

Part D - Portion 1 - Cathodic Protection

Supply and installation of monitoring facilities

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION F	**F**	**Supply and Installation of Monitoring Facilities**				
	F1	**Preliminary & General**				
	F1.01	For one Monitoring Facility Installation - to include for all plant, equipment, personnel, site establishment, travelling, concrete mixes, barricading of trenches dewatering, concrete testing by SANAS accredited laboratory for all security for the protection of cables left exposed overnight and removal of all excess and waste materials on completion.	Each	9		
	F2	**Supply and Installation of Monitoring Facility - Below Ground Type**				
	F2.01	**Monitoring Cable Trench**				
	F2.01.01	At the designated point on each of the pipelines, excavate to the pipe overt and then excavate a 300 mm wide, 1 m deep trench to the monitoring enclosure installation position. Top soil is to be removed and stored separately.				
	F2.01.01.01	a) Excavation of top soil and separate storage	m	21		
	F2.01.01.02	b) Excavation of main trench	m	21		
	F2.01.01.03	c) Shoring of Trench	m	21		
	F2.01.01.04	d) Extra over for un-pickable material	m³	1		
	F2.01.01.05	e) Extra over for rock	m³	1		
	F2.02	**Cable Connections to Pipeline**				
	F2.02.01	Remove existing coating to expose an area of sufficient size to make the necessary cable connections. Cable connections are to be by thermit welding.				
	F2.02.01.01	a) Coating Removal for 1 cable connections	Each	7		
	F2.02.01.02	b) 10mm² monitoring cable connection	Each	7		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Supply and installation of monitoring facilities

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	F2.03	**Permanent Reference Electrode and Coupon**				
	F2.03.01	The coupon is to be attached to the pipeline anywhere between the 10 o'clock and 2 o'clock positions. The permanent reference electrode is to be installed at a position 200 mm perpendicularly away from the pipe and coupon.				
	F2.03.01.01	a) Supply Permanent Reference electrode, coupon.	Each	7		
	F2.03.01.02	b) Install reference electrode and coupon	Each	7		
	F2.04	**Cables**				
	F2.04.01	From the pipeline, the reference, coupon and monitor cables are to be installed inside 110 mm PVC conduits long radius bends. Coating of the cable to pipe connection with points is to be carried out.				
	F2.04.01.01	a) Supply coating material for cable connections	Each	7		
	F2.04.01.02	b) Supply 10mm² black PVC/PVC monitoring cable	m	35		
	F2.04.01.03	c) Supply 10mm² black PVC/PVC coupon cable	m	35		
	F2.04.01.04	d) Supply 10mm² red PVC/PVC reference cable	m	35		
	F2.04.01.05	e) Install coating material, permanent reference electrodes and cables	Each	7		
	F2.05	**Concrete Encasement**				
	F2.05.01	The entire cable trench is to be filled with 40 MPa concrete up to a level 400mm from the trench floor.				
	F2.05.01.01	a) Concrete Encasement	m	21		
	F2.06	**Backfilling to Natural Ground Level**				
	F2.06.01	Once the concrete has set sufficiently in the trench, backfilling is to be carried out in 200 mm layers with compaction of each layer being carried out to 90% of modified AASHTO density. The separately stored topsoil is to be installed at the surface.				
	F2.06.01.01	a) Backfilling	m	21		
	F2.07	**Monitoring Enclosure**				
	F2.07.01	Supply and Install Monitoring Enclosure (Including concrete encasement)				
	F2.07.01.01	a) Supply Monitoring Enclosure	Each	7		
	F2.07.01.02	a) Install Monitoring Enclosure	Each	7		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Supply and installation of monitoring facilities

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	F3	**Supply and Installation of Monitoring Facility - Big Head Test Post Type**				
	F3.01	**Monitoring Cable Trench**				
	F3.01.01	At the designated point on each of the pipelines, excavate to the pipe overt and then excavate a 300 mm wide, 1 m deep trench to the monitoring enclosure installation position. Top soil is to be removed and stored separately.				
	F3.01.01.01	a) Excavation of top soil and separate storage	m	6		
	F3.01.01.02	b) Excavation of main trench	m	6		
	F3.01.01.03	c) Shoring of Trench	m	6		
	F3.01.01.04	d) Extra over for un-pickable material	m³	1		
	F3.01.01.05	e) Extra over for rock	m³	1		
	F3.02	**Cable Connections to Pipeline**				
	F3.02.01	Remove existing coating to expose an area of sufficient size to make the necessary cable connections. Cable connections are to be by thermit welding.				
	F3.02.01.01	a) Coating Removal for 1 cable connections	m	6		
	F3.02.01.02	b) 10mm² monitoring cable connection	m	6		
	F3.03	**Permanent Reference Electrode and Coupon**				
	F3.03.01	The coupon is to be attached to the pipeline anywhere between the 10 o'clock and 2 o'clock positions. The permanent reference electrode is to be installed at a position 200 mm perpendicularly away from the pipe and coupon.				
	F3.03.01.01	a) Supply Permanent Reference electrode, coupon	Each	2		
	F3.03.01.02	b) Install reference electrode and coupon	Each	2		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Supply and installation of monitoring facilities

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	F3.04	**Cables**				
	F3.04.01	From the pipeline, the reference, coupon and monitor cables are to be installed inside 110mm PVC conduits with long radius bends. Coating of the cable to pipe connection points is to be carried out.				
	F3.04.01.01	a) Supply coating material for cable connections	Each	2		
	F3.04.01.02	b) Supply 10mm² black PVC/PVC monitoring cable	m	10		
	F3.04.01.03	c) Supply 10mm² black PVC/PVC coupon cable	m	10		
	F3.04.01.04	d) Supply 10mm² red PVC/PVC reference cable	m	10		
	F3.04.01.05	e) Install coating material, permanent reference electrodes and cables	Each	2		
	F3.05	**Concrete Encasement**				
	F3.05.01	The entire cable trench is to be filled with 40 MPa concrete up to a level 400 mm from the trench floor.				
	F3.05.01.01	a) Concrete Encasement	m	6		
	F3.06	**Backfilling to Natural Ground Level**				
	F3.06.01	Once the concrete has set sufficiently in the trench, backfilling is to be carried out in 200 mm layers with compaction of each layer being carried out to 90% of modified AASHTO density. The separately stored topsoil is to be installed at the surface.				
	F3.06.01.01	a) Backfilling	m	6		
	F3.07	**Monitoring Enclosure**				
	F3.07.01	Supply and Install Monitoring Enclosure (Including concrete foundation and surround)				
	F3.07.01.01	a) Supply Monitoring Enclosure	Each	2		
	F3.07.01.02	b) Install Monitoring Enclosure	Each	2		
	Carried forward to summary (Section F)					

Part D - Portion 1 - Cathodic Protection

Supply and installation of gradient control mats (large chambers)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION G	**G**	**Supply and Installation of Gradient Control Mats (Large Chambers)**				
	G1	**Preliminary & General**				
	G1.01	For one gradient control mat Installation - to include for all plant, equipment, personnel, site establishment, travelling, concrete testing by SANAS accredited laboratory for all concrete mixes, barricading of trenches dewatering, security for the protection of cables left exposed overnight and removal of all excess and waste materials on completion.	Each	2		
	G2	**Supply and Installation of Gradient Control Mat**				
	G2.01	**Excavation for GCM Installation**				
	G2.01.01	At the designated valve chamber, excavate to the pipe at a point immediately adjacent to the chamber wall to make the cable connection to the pipe, excavate further to the level of the chamber floor to receive the GCM cables from the internal mat. Once the cables have been brought up to ground level, backfill and compact the excavation to a depth of 0.5 m below natural ground level. Excavate an area 1.2m wide around the chamber to a depth of 0.5m.Top soil is to be removed and stored separately.				
	G2.01.01.01	a) Excavation of top soil and separate storage	Sum	2		
	G2.01.01.02	b) Excavation of main trench	Sum	2		
	G2.01.01.03	c) Extra over for un-pickable material	m³	1		
	G2.01.01.04	d) Extra over for rock	m³	1		
	G2.02	**Cable Connections to Pipeline**				
	G2.01.01	Remove existing coating to expose an area of sufficient size to make the necessary cable connections. Cable connections are to be by thermit welding.				
	G2.01.01.01	a) Coating Removal for 2 cable connections	Each	2		
	G2.01.01.02	b) 70mm² GCM pipe cable connection	Each	2		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Supply and installation of gradient control mats (large chambers)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	G2.03	**Cables** From the pipeline, the internal GCM and the external GCM the pipe connection and GCM connection cables are to be brought to a point 100 mm below the level of the external GCM. At this position the GCM cables are to be connected to two M10 stainless steel rods which are inserted through the wall c/w insulating sleeves and washers. Connection of the cables to the threaded rods is to be by means of lugs, nuts and washers. Coating of the cable to pipe connection as well as the cable to M10 rod connection is to be carried out. The latter is to be carried out using Stopaq or equivalent.				
	G2.03.01.01	a) Supply coating material for cable connections	Each	2		
	G2.03.01.02	b) 70mm² GCM pipe cable connection	Each	4		
	G2.03.01.03	c) Supply 70mm² black PVC/PVC pipe cable	m	8		
	G2.03.01.04	d) Supply 70mm² green PVC/PVC GCM cables	m	16		
	G2.03.01.05	e) Install coating material, insulated rods and cables	Each	2		
	G2.04	**Internal Gradient Control Mat**				
	G2.04.01	The chamber floor is to be cleaned manually and then washed with a high pressure washer. The 100x100x4 mm hot dip galvanized weld mesh is to be laid flat on the chamber floor such that the entire floor is covered with the exception of any drainage holes pipe support bases etc. The weld mesh is to be cut at least 50 mm clear of any steel work attached to the chamber floor. Any joints between segments of weld mesh are to be made using thermit welds as are the two 70 mm² cable connections. These joints are to be wrapped with Stopaq or equivalent. The two 70 mm² cables are to exit through the chamber wall no more than 25 mm above floor level. The entire weld mesh as well as the cables is to be covered with 75 mm of 40 MPa concrete. Should the chamber have any drains, the concrete should be floated to fall toward the drains at the same angle as the original floor.				
	G2.04.01.01	a) Supply galvanised weld mesh	Sum	2		
	G2.04.01.02	b) Supply coating material for cable and mesh connections	Sum	2		
	G2.04.01.03	c) Supply thermit weld connections for GCM cables and mesh joints	Sum	2		
	G2.04.01.04	d) Install GCM, thermit weld connections and cables	Each	2		
	G2.04.01.05	e) Supply and Install 75mm concrete cover of mesh and cables	Sum	2		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Supply and installation of gradient control mats (large chambers)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	G2.05	**External Gradient Control Mat**				
	G2.05.01	The floor of the GCM excavation is to be even, level and compacted. The 100x100x4 mm hot dip galvanized weld mesh is to be laid flat on the excavation floor such that the entire floor is covered and a 1.2 m wide border of mesh is formed around the chamber wall. Any joints between segments of weld mesh are to be made using thermit welds as are the two 70 mm² cable connections. These joints are to be wrapped with Stopaq or equivalent. The entire weld mesh as well as the cables is to be covered with 200 mm of 40 MPa concrete.				
	G2.05.01.01	a) Supply galvanised weld mesh including sacrificial	Sum	2		
	G2.05.01.02	b) Supply coating material for cable and mesh connections	Sum	2		
	G2.05.01.03	c) Supply thermit weld connections for GCM cables and mesh joints	Sum	2		
	G2.05.01.04	d) Install GCM, thermit weld connections and cables	Each	2		
	G2.05.01.05	e) Supply and Install 200mm concrete cover of mesh	Sum	2		
	G2.06	**Backfilling to Natural Ground Level**				
	G2.06.01	Once the concrete has set sufficiently in the trench, h is backfilling is to be carried out in 200 mm layers wit compaction of each layer being carried out to 90% of modified AASHTO density. The separately stored topsoil to be installed at the surface.				
	G2.06.01.01	a) Backfilling	Sum	2		
	G2.07	**Solid State Decoupler**				
	G2.07.01	Solid state decoupler to be installed inside the valve chamber immediately adjacent to the connection studs				
	G2.07.01.01	a) Supply SSD	Each	2		
	G2.07.01.02	b) Install SSD	Each	2		
	Carried forward to summary (Section G)					

Part D - Portion 1 - Cathodic Protection

Supply and installation of gradient control mats (medium chambers)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION H	**H**	**Supply and Installation of Gradient Control Mats (Medium Chambers)**				
	H1	**Preliminary & General**				
	H1.01	For one gradient control mat Installation - to include for all plant, equipment, personnel, site establishment, travelling, concrete testing by SANAS accredited laboratory for all concrete mixes, barricading of trenches dewatering, security for the protection of cables left exposed overnight and removal of all excess and waste materials on completion.	Each	6		
	H2	**Supply and Installation of Gradient Control Mat**				
	H2.01	**Excavation for GCM Installation**				
	H2.01.01	At the designated valve chamber, excavate to the pipe at a point immediately adjacent to the chamber wall to make the cable connection to the pipe, excavate further to the level of the chamber floor to receive the GCM cables from the internal mat. Once the cables have been brought up to ground level, backfill and compact the excavation to a depth of 0.5 m below natural ground level. Excavate an area 1.2 m wide around the chamber to a depth of 0.5 m.Top soil is to be removed and stored separately.				
	H2.01.01.01	a) Excavation of top soil and separate storage	Sum	6		
	H2.01.01.02	b) Excavation of main trench	Sum	6		
	H2.01.01.03	c) Extra over for un-pickable material	m³	6		
	H2.01.01.04	d) Extra over for rock	m³	6		
	H2.02	**Cable Connections to Pipeline**				
	H2.02.01	Remove existing coating to expose an area of sufficient size to make the necessary cable connections. Cable connections are to be by thermit welding.				
	H2.02.01.01	a) Coating Removal for 2 cable connections	Each	6		
	H2.02.01.02	b) 70mm² GCM pipe cable connection	Each	12		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Supply and installation of gradient control mats (medium chambers)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	H2.03	**Cables**				
	H2.03.01	From the pipeline, the internal GCM and the external GCM the pipe connection and GCM connection cables are to be brought to a point 100 mm below the level of the external GCM. At this position the GCM cables are to be connected to two M10 stainless steel rods which are inserted through the wall c/w insulating sleeves and washers. Connection of the cables to the threaded rods is to be by means of lugs, nuts and washers. Coating of the cable to pipe connection as well as the cable to M10 rod connection is to be carried out. The latter is to be carried out using Stopaq or equivalent.				
	H2.03.01.01	a) Supply coating material for cable connections	Each	6		
	H2.03.01.02	b) Supply insulated stainless steel threaded rods	Each	12		
	H2.03.01.03	c) Supply 70mm² black PVC/PVC pipe cable	m	24		
	H2.03.01.04	d) Supply 70mm² green PVC/PVC GCM cables	m	48		
	H2.03.01.05	e) 70mm² GCM pipe cable connection	Each	6		
	H2.04	**Internal Gradient Control Mat**				
	H2.04.01	The chamber floor is to be cleaned manually and then washed with a high pressure washer. The 100x100x4 mm hot-dip galvanized weld mesh is to be laid flat on the chamber floor such that the entire floor is covered with the exception of any drainage holes pipe support bases etc. The weld mesh is to be cut at least 50 mm clear of any steel work attached to the chamber floor. Any joints between segments of weld mesh are to be made using thermit welds as are the two 70 mm² cable connections. These joints are to be wrapped with Stopaq or equivalent. The two 70 mm² cables are to exit through the chamber wall no more than 25 mm above floor level. The entire weld mesh as well as the cables is to be covered with 75 mm of 40 MPa concrete. Should the chamber have any drains, the concrete should be floated to fall toward the drains at the same angle as the original floor.				
	H2.04.01.01	a) Supply galvanised weld mesh	Sum	6		
	H2.04.01.02	b) Supply coating material for cable and mesh connections	Sum	6		
	H2.04.01.03	c) Supply thermit weld connections for GCM cables and mesh joints	Sum	6		
	H2.04.01.04	d) Install GCM, thermit weld connections and cables	Each	6		
	H2.04.01.05	e) Supply and Install 75mm concrete cover of mesh and	Sum	6		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Supply and installation of gradient control mats (medium chambers)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	H2.05	**External Gradient Control Mat**				
	H2.05.01	The floor of the GCM excavation is to be even, level and compacted. The 100x100x4 mm hot dip galvanized weld mesh is to be laid flat on the excavation floor such that the entire floor is covered and a 1.2 m wide border of mesh is formed around the chamber wall. Any joints between segments of weld mesh are to be made using thermit welds as are the two 70 mm² cable connections. These joints are to be wrapped with Stopaq or equivalent. The entire weld mesh as well as the cables is to be covered with 200 mm of 40 MPa concrete.				
	H2.05.01.01	a) Supply galvanised weld mesh including sacrificial anodes	Sum	6		
	H2.05.01.02	b) Supply coating material for cable and mesh connections	Sum	6		
	H2.05.01.03	c) Supply thermit weld connections for GCM cables and mesh joints	Sum	6		
	H2.05.01.04	d) Install GCM, thermit weld connections and cables	Each	6		
	H2.05.01.05	e) Supply and Install 75 mm concrete cover of mesh and cables	Sum	6		
	H2.06	**Backfilling to Natural Ground Level**				
	H2.06.01	Once the concrete has set sufficiently in the trench, backfilling is to be carried out in 200 mm layers with compaction of each layer being carried out to 90% of modified AASHTO density. The separately stored topsoil is to be reinstated at the surface.				
	H2.06.01.01	a) Backfilling	Sum	6		
	H2.07	**Solid State Decoupler**				
	H2.07.01	Solid state decoupler to be installed inside the valve chamber immediately adjacent to the connection studs				
	H2.07.01.01	a) Supply SSD	Each	6		
	H2.07.01.02	b) Install SSD	Each	6		
	Carried forward to summary (Section H)					

Part D - Portion 1 - Cathodic Protection

Supply and installation of gradient control mats (air valve chamber)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION I	**I**	**Supply and Installation of Gradient Control Mats (Air Valve Chamber)**				
	I1	**Preliminary & General**				
	I1.01	For one gradient control mat Installation - to include for all plant, equipment, personnel, site establishment, travelling, concrete testing by SANAS accredited laboratory for all concrete mixes, barricading of trenches dewatering, security for the protection of cables left exposed overnight and removal of all excess and waste materials on completion.	Each	15		
	I2	**Supply and Installation of Gradient Control Mat**				
	I2.01	**Excavation for GCM Installation**				
	I2.01.01	At the designated valve chamber, excavate to the pipe at a point immediately adjacent to the chamber wall to make the cable connection to the pipe, excavate further to the level of the chamber floor to receive the GCM cables from the internal mat. Once the cables have been brought up to ground level, backfill and compact the excavation to a depth of 0.5 m below natural ground level. Excavate an area 1.2 m wide around the chamber to a depth of 0.5 m. Top soil is to be removed and stored separately.				
	I2.01.01.01	a) Excavation of top soil and separate storage	Sum	15		
	I2.01.01.02	b) Excavation of main trench	Sum	15		
	I2.01.01.03	c) Extra over for un-pickable material	m³	15		
	I2.01.01.04	d) Extra over for rock	m³	15		
	I2.02	**Cable Connections to Pipeline**				
	I2.02.01	Remove existing coating to expose an area of sufficient size to make the necessary cable connections. Cable connections are to be by thermit welding.				
	I2.02.01.01	a) Coating Removal for 2 cable connections	Each	15		
	I2.02.01.02	b) 70mm² GCM pipe cable connection	Each	30		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Supply and installation of gradient control mats (air valve chamber)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	I2.03	**Cables**				
	I2.03.01	From the pipeline, the internal GCM and the external GCM the pipe connection and GCM connection cables are to be brought to a point 100 mm below the level of the external GCM. At this position the GCM cables are to be connected to two M10 stainless steel rods which are inserted through the wall c/w insulating sleeves and washers. Connection of the cables to the threaded rods is to be by means of lugs, nuts and washers. Coating of the cable to pipe connection as well as the cable to M10 rod connection is to be carried out. The latter is to be carried out using Stopaq or equivalent.				
	I2.03.01.01	a) Supply coating material for cable connections	Each	15		
	I2.03.01.02	b) Supply insulated stainless steel threaded rods	Each	30		
	I2.03.01.03	c) Supply 70mm² black PVC/PVC pipe cable	m	60		
	I2.03.01.04	d) Supply 70mm² green PVC/PVC GCM cables	m	90		
	I2.03.01.05	e) Install coating material, insulated rods and cables	Each	15		
	I2.04	**Internal Gradient Control Mat**				
	I2.04.01	The crushed stone is to be removed from the chamber floor. The 100x100x4 mm hot dip galvanized weld mesh is to be laid flat on the chamber floor such that the entire floor is covered. The weld mesh is to be cut at least 50 mm clear of any steel work. Any joints between segments of weld mesh are to be made using thermit welds as are the two 70 mm² cable connections. These joints are to be wrapped with Stopaq or equivalent. The two 70 mm² cables are to exit through the chamber wall no more than 25 mm above floor level. The entire weld mesh as well as the cables is to be covered with 75 mm of 40 MPa concrete. The crushed stone is then to be replaced inside the chamber.				
	I2.04.01.01	a) Supply galvanised weld mesh	Sum	15		
	I2.04.01.02	b) Supply coating material for cable and mesh connections	Sum	15		
	I2.04.01.03	c) Supply thermit weld connections for GCM cables and mesh joints	Sum	15		
	I2.04.01.04	d) Install GCM, thermit weld connections and cables	Each	15		
	I2.04.01.05	e) Supply and Install 75mm concrete cover of mesh and cables	Sum	15		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Supply and installation of gradient control mats (air valve chamber)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	I2.05	**External Gradient Control Mat**				
	I2.05.01	The floor of the GCM excavation is to be even, level and compacted. The 100x100x4 mm hot dip galvanized weld mesh is to be laid flat on the excavation floor such that the entire floor is covered and a 1.2 m wide border of mesh is formed around the chamber wall. Any joints between segments of weld mesh are to be made using thermit welds as are the two 70 mm² cable connections. These joints are to be wrapped with Stopaq or equivalent. The entire weld mesh as well as the cables is to be covered with 200 mm of 40 MPa concrete.				
	I2.05.01.01	a) Supply galvanised weld mesh	Sum	15		
	I2.05.01.02	b) Supply coating material for cable and mesh connections	Sum	15		
	I2.05.01.03	c) Supply thermit weld connections for GCM cables and mesh joints	Sum	15		
	I2.05.01.04	d) Install GCM, thermit weld connections and cables	Each	15		
	I2.05.01.05	e) Supply and Install 200mm concrete cover of mesh and cables	Sum	15		
	I2.06	**Backfilling to Natural Ground Level**				
	I2.06.01	Once the concrete has set sufficiently in the trench, backfilling is to be carried out in 200 mm layers with compaction of each layer being carried out to 90% of modified AASHTO density. The separately stored topsoil is to be reinstated at the surface.				
	I2.06.01.01	a) Backfilling	m	45		
	I2.07	**Solid State Decoupler**				
	I2.07.01	Solid state decoupler to be installed inside the valve chamber immediately adjacent to the connection studs .				
	I2.07.01.01	a) Supply SSD	Each	15		
	I2.07.01.02	b) Install SSD	Each	15		
	Carried forward to summary (Section I)					

Part D - Portion 1 - Cathodic Protection

Insulating flange kits

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION J	J	**Insulating Flange Kits**				
	J1	**DN600 Bypass**				
	J1.01	P&G's for one insulating flange installation (to include for all plant, equipment, personnel, site establishment, travelling, dewatering, security and removal of all excess and waste materials) on completion.	Each	1		
	J1.02	**Supply and Install Bolts, Sleeves, Washers**				
	J1.02.01	At the designated location, supply and install bolts, sleeves and washers				
	J1.01.01.01	a) Supply	Set	1		
	J1.01.01.02	b) Install	Set	1		
	J1.03	**Supply and Install Gaskets**				
	J1.03.01	At the designated location, supply and install bolts, sleeves and washers				
	J1.03.01.01	a) Supply	Set	1		
	J1.03.01.02	b) Install	Set	1		
	J2	**DN600 Main**				
	J2.01	P&G's for one insulating flange installation (to include for all plant, equipment, personnel, site establishment, travelling, dewatering, security and removal of all excess and waste materials) on completion.	Each	1		
	J2.02	**Supply and Install Bolts, Sleeves, Washers**				
	J2.02.01	At the designated location, supply and install bolts, sleeves and washers				
	J2.02.01.01	a) Supply	Set	1		
	J2.02.01.02	b) Install	Set	1		
	J2.03	**Supply and Install Gaskets**				
	J2.03.01	At the designated location, supply and install bolts, sleeves and washers				
	J2.03.01.01	a) Supply	Set	1		
	J2.03.01.02	b) Install	Set	1		
	Carried forward					

Part D - Portion 1 - Cathodic Protection

Insulating flange kits

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
	J3	**DN800**				
	J3.01	P&G's for one insulating flange installation (to include for all plant, equipment, personnel, site establishment, travelling, dewatering, security and removal of all excess and waste materials) on completion.	Each	1		
	J3.02	**Supply and Install Bolts, Sleeves, Washers**				
	J3.02.01	At the designated location, supply and install bolts, sleeves and washers				
	J3.02.01.01	a) Supply	Set	1		
	J3.021.01.02	b) Install	Set	1		
	J3.03	**Supply and Install Gaskets**				
	J3.03.01	At the designated location, supply and install bolts, sleeves and washers				
	J3.03.01.01	a) Supply	Set	1		
	J3.03.01.02	b) Install	Set	1		
	Carried forward to summary (Section J)					

Part D - Portion 1 - Cathodic Protection

Insulating flange kits

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SECTION K	**K**	**Other Items**				
	K1	**Road Crossings**				
	K1.01	At each road crossing a 110 mm diameter cable sleeve is to be installed by means of horizontal directional drilling at a depth of 1.5 m	Each	9		
	K2	**Reinstatement of Paving**				
	K2.01	Paving to be reinstated to original condition	m²	100		
	K3	**Reinstatement of lawn**				
	K3.01	**Lawn to be reinstated to original condition**				
	K3.01.01	Install	m²	100		
	Carried forward to summary (Section K)					

Part D - Portion 1 - Cathodic Protection

Summary

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SECTION A		Transformer Rectifier Infrastructure Installations				
SECTION B		Supply and Installation of Transformer Rectifier Units				
SECTION C		Supply and Installation of Horizontal Anode Groundbed				
SECTION D		Supply and Installation of Cross Bonds				
SECTION E		Supply and Installation of Continuity Bonds at Chambers				
SECTION F		Supply and Installation of Monitoring Facilities				
SECTION G		Supply and Installation of Gradient Control Mats (Large				
SECTION H		Supply and Installation of Gradient Control Mats (Medium				
SECTION I		Supply and Installation of Gradient Control Mats (Air				
SECTION J		Insulating Flange Kits				
SECTION K		Other Items				
Total carried forward to summary						

Part E - Section 1 - Trenchless Piping

Pipe jacking

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 LG	**1**	**PIPE JACKING** **Refer to Drawing:** **JW41358-16941-T-017-S11-00-TMS**				
8.2.1	**1.01**	**Jacking Establishment**				
	1.01.01	a) Fixed charges				
	1.01.01.01	Over Marlboro Drive, from Lilium Ave to South Rd, Marlboro Gardens	sum	1		
	1.01.01.02	Over Woodlands Drive via R55 (Woodmead drive), Woodmead	sum	1		
	1.01.01.03	Over South Road, adjacent to Impala road, Marlboro Gardens	sum	1		
	1.01.02	b) Time-related charges				
	1.01.02.01	Over Marlboro Drive, from Lilium Ave to South Rd, Marlboro Gardens	sum	1		
	1.01.02.02	Over Woodlands Drive via R55 (Woodmead drive), Woodmead	sum	1		
	1.01.02.03	Over South Road, adjacent to Impala road, Marlboro Gardens	sum	1		
8.2.2	**1.02**	**Supply of pipes to be Jacked**				
	1.02.01	DN 1800 mm Class 100D In-The-Wall Joint pre-cast concrete jacking pipes (Rocla or similar approved)				
	1.02.01.01	Over Marlboro Drive, from Lilium Ave to South Rd, Marlboro Gardens	m	75		
	1.02.01.02	Over Woodlands Drive via R55 (Woodmead drive), Woodmead	m	40		
	1.02.01.03	Over South Road, adjacent to Impala road, Marlboro Gardens	m	40		
8.2.3	**1.03**	**Jacking of pipes**				
	1.03.01	DN 1800 mm Class 100D In-The-Wall Joint pre-cast concrete jacking pipes (Rocla or similar approved)				
	1.03.01.01	Over Marlboro Drive, from Lilium Ave to South Rd, Marlboro Gardens	m	75		
	1.03.01.02	Over Woodlands Drive via R55 (Woodmead drive), Woodmead	m	40		
	1.03.01.03	Over South Road, adjacent to Impala road, Marlboro Gardens	m	40		
	Carried forward					

Part E - Section 1 - Trenchless Piping

Pipe jacking

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
8.2.4	**1.04**	**Excavation for pipe jacking**				
	1.04.01	Soft excavation	m³	233		
	1.04.02	Intermediate excavation	m³	53		
	1.04.03	Hard rock excavation	m³	53		
8.2.5	1.05	Extra over items 1.01 and 1.0.4 for unforeseen rock or boulders (Provisional)	Stated	1	R300 000.00	R300 000.00
8.2.9	**1.06**	**Stabilization of Unstable Areas or Grouting of Voids where Ordered**				
	1.06.01	a) Provision and establishment of equipment on Site, and removal on completion of operation	Sum	1		
	1.06.02	b) Operation of equipment	Day	24		
	1.06.03	c) Materials used	m³	100		
8.2.10	**1.07**	**Standing time for pipe jacking gang and the jacking equipment covered by item 1.01**	h	40		
	Carried forward to summary (Part E - Section 1)					

Part E - Section 1 - Trenchless Piping

Medium-pressure pipelines

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 L	**2**	**MEDIUM-PRESSURE PIPELINES**				
PSL 8.2.25	**2.01**	**Supply and Installation of pipe through Horizontal Direction Drilling (HDD)**				
	2.01.01	PN16 PE100 HDPE				
	2.01.01.01	DN 200	m	200		
	2.01.01.02	DN 250	m	300		
PSL 8.2.26	**2.02**	**Laboratory testing of HDPE joints**	P.Sum	1	R100 000.00	R100 000.00
	Carried forward to summary (Part E - Section 1)					

Part E - Portion 1 - Trenchless Piping

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 2001 PART CC1	**3**	**CONCRETE WORKS (STRUCTURAL)**				
		SCHEDULED FORMWORK ITEMS				
PSCC1.002	**3.01**	**Smooth**				
	3.01.01	Vertical formwork to				
	3.01.01.01	Foundations (Floor)	m²	20		
	3.01.01.02	Walls	m²	580		
	3.01.01.03	Sump	m²	4		
	3.02.01	Horizontal formwork to				
	3.02.01.01	Slabs	m²	45		
PSCC1.005	**3.02**	**Narrow widths (up to 300 mm wide)**				
	3.02.01	Vertical Smooth formwork to				
	3.02.01.01	Precast slabs	m	60		
PSCC1.006	**3.03**	**Box out holes/form voids**				
	3.03.01	a) Small, circular, of diameter up to 0,35 m				
	3.03.01.01	0 m up to and including 0,5 m	No.	32		
	3.03.02	d) Large, other than circular, areas over 0.1 m^2 up to 2,0 m2				
	3.03.02.01	0 m up to and including 0,5 m	No.	4		
		SCHEDULED REINFORCEMENT ITEMS				
PSCC1.007	**3.04**	**Steel bars**				
	3.04.01	a) Steel bars irrespective of grade and diameter	t	24		
		SCHEDULED CONCRETE ITEMS				
PSCC1.011	**3.05**	**Blinding layer in Grade 15 MPa/19 mm concrete**				
	3.05.01	50 mm thickness	m²	150		
PSCC1.012	**3.06**	**Strength concrete**				
	3.06.01	**Class 30 MPa/19 mm concrete in**				
	3.06.01.01	Foundations (Floor)	m^3	15		
	3.06.01.02	Walls	m^3	90		
	3.06.01.03	Roof slab	m^3	12		
	3.06.01.04	Sump	m^3	2		
	Carried forward					

Part E - Section 1 - Trenchless Piping

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.013	**3.07**	**Unformed surface finishes**				
	3.07.01	a) Steel-floated finish				
	3.07.01.01	Foundations (Floor)	m²	40		
	3.07.01.02	Top of Walls	m²	15		
	3.07.01.03	Roof slabs	m²	45		
	3.07.02	d) Broomed finish				
	3.07.02.01	Blinding layer	m²	150		
	3.07.03	e) Screed in 3:1 Sand and Cement Mix				
	3.07.03.01	Chamber floor screed	m³	5		
PSCC1.015	**3.08**	**Joints**				
	3.08.01	Polysulphide sealant between precast slab	m	30		
PSCC1.019	**3.09**	**HD bolts and miscellaneous metal work**				
	3.09.01	Fabricate and install galvanised mild steel ladders (5 m long) as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	4		
	3.09.02	Fabricate and cast in long inlet airvent (5 m long) as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	4		
	3.09.03	Fabricate and cast in short outlet airvent as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	4		
	3.09.04	Fabricate and cast in galvanised access manholes as per Drawing: JW14358-16941-T-017-S09-00-TMS	No.	4		
	3.09.05	Fabricate and cast in lifting hooks as per Drawing: JW14358-16941-T-017-S10-00-TMS	No.	32		
PSCC1.020	**3.10**	**Colour Mitigation to**				
	3.10.01	Exposed Chambers along roadways	m²	60		
		MISCELLANEOUS ITEMS				
PSCC1.021	**3.11**	**Polythene sheeting under concrete**				
	3.11.01	250 micron green medium density polyethylene dampproof sheeting	m²	150		
PSCC1.023	**3.12**	**FRP items**				
	3.12.01	**a) FRP Grating**				
	3.12.01.01	450 mm x 450 mm x 38 mm deep FRP grating	m²	4		
	Carried forward					

Part E - Section 1 - Trenchless Piping

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.025	**3.13**	**Installation of precast elements**				
	3.13.01	Precast roof slabs	No.	8		
PSCC1.027	**3.14**	**Masonry**				
	3.14.01	110 mm brick wall	m²	10		
	3.14.02	220 mm brick wall	m²	20		
	Carried forward to summary (Part E - Section 1)					

Part E - Section 1 - Trenchless Piping

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 LG		**PIPE JACKING**				
SANS 1200 L		**MEDIUM-PRESSURE PIPELINES**				
SANS 2001 CC1		**CONCRETE WORKS (STRUCTURAL)**				
Total carried forward to summary						

Client:		**Contractor:**	
Witness:		**Witness:**	

Part E - Section 2 - Concrete Pipe Tunnel

Site Clearance

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 C	**1**	**SITE CLEARANCE** **Refer to Drawing:** **JW14358-16941-T-014-S12-00-TMS**				
PSC 8.2.12	**1.01**	**Removal of man-made surfaces and kerbing**				
	1.01.01	c) Interlocking concrete segmental paving blocks, Class 2.6/40MPa (all colours)	m²	220		
PSC 8.2.13	**1.01**	**Backfilling and reinstatement of man-made surfaces re-using removed materials**				
	1.01.01	a) Interlocking concrete segmental paving blocks, Class 2.6/40MPa (all colours)	m²	80		
PSC 8.2.14	**1.04**	**Take down and re-erect existing fences and guardrails**				
	1.04.01	a) Guardrails	m	50		
	1.04.02	b) Diamond mesh fencing	m	50		
	Carried forward to summary (Part E - Section 2)					

Part E - Section 2 - Concrete Pipe Tunnel

Earthworks

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 1200 DB	**2**	**EARTHWORKS**				
PSDB 8.3.3	**2.01**	**Restricted excavation**				
	2.02.01	a) Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose				
	2.02.01.01	Concrete Pipe Tunnel	m³	270		
PSDB 8.3.3	2.02.02	b) Extra over for				
	2.02.02.01	1) intermediate excavation	m³	30		
	2.02.02.02	2) hard rock excavation	m³	30		
PSDB 8.3.3	2.02.02.03	3) Hand excavation where ordered by the Project Manager				
	2.02.02.03.01	a) Soft material	m³	30		
	2.02.02.03.02	b) Intermediate material	m³	30		
	2.02.02.03.03	c) Hard material	m³	30		
PSDB 8.3.3	2.02.02.04	4) Backfill stabilized with 5% cement where directed by the Project Manager	m³	60		
PSDB 8.3.3	2.02.02.05	5) Soilcrete backfill where directed by the Project Manager	m³	60		
PSDB 8.3.6	**2.02**	**Finishing**				
PSDB8.3.6.1	**2.02.01**	**Reinstate road surfaces complete with all courses**				
	2.02.01.01	f) Re-instatement of bricks, concrete pre-cast units and interlocking concrete segmental paving	m²	80		
	Carried forward to summary (Part E - Section 2)					

Part E - Section 2 - Concrete Pipe Tunnel

Concrete works (structural)

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
SANS 2001 PART CC1	**5.00**	**CONCRETE WORKS (STRUCTURAL)**				
		SCHEDULED FORMWORK ITEMS				
PSCC1.002	**5.01**	**Smooth**				
	5.01.01	Vertical formwork to				
	5.01.01.01	Foundations (Floor)	m²	150		
	5.01.01.02	Walls	m²	700		
	5.01.01.03	Plinths	m²	30		
	5.01.02	Horizontal formwork to:				
	5.01.02.01	Floors / Roofs	m²	270		
PSCC1.006	**5.02**	**Box out holes/form voids**				
	5.02.01	d) Large, other than circular, areas over 0.1 m^2 up to 2,0 m^2				
	5.02.01.01	0 m up to and including 0,5 m	No.	3		
		SCHEDULED REINFORCEMENT ITEMS				
PSCC1.007	**5.03**	**Steel bars**				
	5.03.01	a) Steel bars irrespective of grade and diameter	t	30		
PSCC1.008	**5.04**	**High-tensile welded mesh**				
	5.04.01	Mesh Ref 395	m²	25		
		SCHEDULED CONCRETE ITEMS				
PSCC1.011	**5.05**	**Blinding layer in Grade 15 MPa/19 mm concrete**				
	5.05.01	50 mm thickness	m²	120		
PSCC1.012	**5.06**	**Strength concrete**				
	5.06.01	Class 30 MPa/19 mm concrete in:				
	5.06.01.01	Foundation (Floor) / Roof	m^3	75		
	5.06.01.02	Walls	m^3	60		
	5.06.01.03	Plinths	m^3	6		
	Carried forward					

Part E - Section 2 - Concrete Pipe Tunnel

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.013	**5.07**	**Unformed surface finishes**				
	5.07.01	a) Steel-floated finish				
	5.07.01.01	Floor / Roof	m²	210		
	5.07.01.02	Top of Plinths	m²	20		
	5.07.01.03	Top of Walls	m²	70		
	5.07.02	d) Broomed finish				
	5.07.02.01	Blinding layer	m²	120		
PSCC1.015	**5.08**	**Joints**				
	5.08.01	10 mm thick bitumen impregnated fibre board	m²	25		
	5.08.02	10 mm x 10 mm Polyurethane Sealant	m	110		
PSCC1.018	**5.09**	**Grouting**				
	5.09.01	a) Under bases of pipe supports and straps	m³	2		
	5.09.02	c) Pipe box-outs	m³	2		
PSCC1.019	**5.10**	**HD bolts and miscellaneous metal work**				
	5.10.01	Fabricate and install galvanised mild steelbase plate and support bracket as per Drawing: JW14358-16941-T-014-S11-00-TMS	No.	24		
	5.10.02	Fabricate and install galvanised mild steel fastening strap, including bolts as per Drawing: JW14358-16941-T-014-S11-00-TMS	No.	24		
	5.10.03	Fabricate and cast in lifting hooks	No.	60		
PSCC1.020	**5.11**	**Colour Mitigation to**				
	5.11.01	Exposed tunnel sections along roadways	m²	150		
		MISCELLANEOUS ITEMS				
PSCC1.021	**5.12**	**Polythene sheeting under concrete**				
	5.12.01	250 micron green medium density polyethylene dampproof sheeting	m²	120		
PSCC1.024	**5.13**	**Casting pipes and specials in concrete**				
	5.13.01	DN 250 Steel pipe cast into chamber wall	No.	1		
	5.13.02	DN 600 Steel pipe cast into chamber wall	No.	2		
	5.13.03	Fabricate and cast in lifting hooks	No.	60		
	Carried forward					

Part E - Section 2 - Concrete Pipe Tunnel

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	Brought forward					
PSCC1.025	**5.14**	**Installation of precast elements**				
	5.14.01	Precast tunnel sections as per Drawing: JW14358-16941-T-014-S11-00-TMS	No.	26		
	Carried forward to summary (Part E - Section 2)					

Part E - Section 2 - Concrete Pipe Tunnel

PAYMENT REFERS TO	ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SUMMARY				
SANS 1200 C		SITE CLEARANCE				
SANS 1200 DB		EARTHWORKS				
SANS 2001 CC1		CONCRETE WORKS (STRUCTURAL)				
Total carried forward to summary						

Client:		Contractor:	
Witness:		Witness:	

Johannesburg Water (SOC) Ltd
JW14358 - Construction of Woodmead Inlet Bulk
Summary of Schedule of Quantities

ITEM NO	DESCRIPTION	AMOUNT
	SUMMARY	
1	**PART A - GENERAL**	
1.1	Part A - Section 1: Preliminary and general	**R**
2	**PART B - PIPELINES**	
2.1	Part B - Section 1: DN 600 Steel Main Pipeline	**R**
2.2	Part B - Section 2: DN 600 Steel Bypass Pipeline	**R**
2.3	Part B - Section 3: DN 800 Steel Pipeline	**R**
2.4	Part B - Section 4: DN 200 High Impact mPVC Pipeline	**R**
3	**PART C - CHAMBERS**	
3.1	Part C - Section 1 - Scour Valve Chamber 1 and 2: NA13, NA23, NA41, NA64, NA81, NA95, NB10	**R**
3.2	Part C - Section 2 - Air Valve Chambers: Nodes NA15,21,39,45,57,69,85,94,97, NC11	**R**
3.3	Part C - Section 3 - DN 200 Flow Meter and scour Valve Chamber: Node NC3	**R**
3.4	Part C - Section 4 - DN 800 isolation, scour and future tie-in chamber: Node ND2	**R**
3.5	Part C - Section 5 - Hot-Tapping chambers: Node NA1, ND1, ND5	**R**
3.6	Part C - Section 6 - Upgrades to Existing Butterfly Valve Chambers	**R**
3.7	Part C - Section 7 - PRV, NRV and FM chamber: Node NA4, NB11, NC26, NC25	**R**
3.8	Part C - Section 8 - Tie-in chambers: Node NA103, NB12	**R**
4	**PART D - CATHODIC PROTECTION AND AC MITIGATION**	
4.1	Part D - Portion 1 - Cathodic Protection	**R**
5	**PART E - TRENCHLESS PIPING**	
5.1	Part E - Section 1 - Trenchless Piping	**R**
5.2	Part E - Section 2 - Concrete Pipe Tunnel	**R**
	Sub-Total 1 TOTAL FOR SCHEDULE OF QUANTITIES	**R**
	The above prices are Not Firm.	
	In respect of the total value of work done by approved SMME's at 30% of Sub Total 1 (This total shall include all amounts payable to SMME's, including P&G's)	
PSA 8.9	**= R…….... (A)**	
	Allowance as a percentage (maximum 15%) for appointing and handling work done by approved SMME's	
	……..……% (B)	

Client:		**Contractor:**	
Witness:		**Witness:**	

	Sub-Total 2 [Handling fees for subcontracting = (A) x (B)]	**R**
	Sub-Total 3 = Sub Total 1 + Sub Total 2	**R**
ADD	**Escalation @ 10%**	**R**
	Sub-Total 4 = (Sub 3 + Escalation @ 10%)	**R**
ADD	**Contingencies @ 10%**	**R**
	Sub-Total 5 = (Sub 4 + Contingencies @ 10%)	**R**
ADD	**15% VAT**	**R**
	TOTAL	**R**

Clause Number	Tender Data
	Ps = Points scored for comparative price of bid under consideration Pt = Comparative price of bid under consideration Pmin = Comparative price of lowest acceptable bid
	Add to the existing clause: Tender offers will only be accepted if: a) the tenderer submits a valid SARS tax Compliance status Pin for tenders issued by the South African Revenue Services or has made arrangements to meet outstanding tax obligations; b) Proof of CSD registration ie MA xxxxx number; c) the tenderer submits a letter of intent from an approved insurer undertaking to provide the Performance Guarantee to the format included in Part C1.3.1 on page C.31 of this procurement document d) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation; e) the tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector; f) the tenderer has not: i) abused the Employer's Supply Chain Management System; or ii) failed to perform on any previous contract and has been given a written notice to this effect; g) the tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the Employer or potentially compromise the tender process and persons in the employ of the state are permitted to submit tenders or participate in the contract; h) the tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer; i) the Employer is reasonably satisfied that the tenderer has in terms of the Construction Regulations, 2014, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely; and j) the tenderer: i) has sufficiently substantiated his experience in this type work; ii) has the required and experienced key personnel; and iii) Owns the primary equipment to effectively and efficiently execute the work.
C.3.17	The number of paper copies of the signed contract to be provided by the Employer is one.
	There are no additional conditions of tender.

--- END OF PART ---

Employer:		**Contractor:**	
Witness:		**Witness:**	

Johannesburg Water SOC Ltd

CONTRACT JW14358

CONSTRUCTION OF WOODMEAD INLET BULK WATER PIPELINE

VOLUME 1

PART 1: AGREEMENT AND CONTRACT DATA

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

NEC4 Engineering & Construction Contract (ECC4)

Between **Johannesburg Water SOC Ltd**

Reg No. 2000/029271/30 (the *Client*)

and _____

Reg No. _____ (the *Contractor*)

for **Contract No. JW14358: CONSTRUCTION OF WOODMEAD INLET BULK WATER PIPELINE (the *works*)**

Contents: **Page No**

Contract No: JW14358

Prepared By: Johannesburg Water SCO

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

C1 FORM OF OFFER (ACCEPTANCE & AGREEMENT)

C1.1 FORM OF OFFER

C1.1.1 OFFER

The *Client*, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of:

Contract No. JW14358: CONSTRUCTION OF WOODMEAD INLET BULK WATER PIPELINE

The tenderer, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the *Contractor* under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the *conditions of contract* identified in the Contract Data.

Option B	The offered total of the Prices exclusive of VAT is	**R**
	Value Added Tax @ 15% is	**R**
	The offered total of the Prices inclusive of VAT is[1]	**R**
	(in words)	

This Offer may be accepted by the *Client* by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the *Contractor* in the *conditions of contract* identified in the Contract Data.

Signature(s) .....

Name(s) .....

Capacity .....

For the tenderer:

.....
(Insert name and address of organisation) Date .....

Name & signature of witness

.....
(Insert name) Date .....

.....
(Insert signature)

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

C1.1.2 FORM OF ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the *Client* identified below accepts the tenderer's Offer. In consideration thereof, the *Client* shall pay the *Contractor* the amount due in accordance with the *conditions of contract* identified in the Contract Data. Acceptance of the tenderer's Offer shall form an agreement between the *Client* and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

This total is required by the *Client* for budgeting purposes only. Actual amounts due will be assessed in terms of the *conditions of contract*.

The terms of the contract, are contained in:

Part C1 Agreements and Contract Data, (which includes this Form of Offer and Acceptance)

Part C2 Pricing Data

Part C3 Scope

Part C4 Site Information

and drawings and documents (or parts thereof), which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the *Client* during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

The tenderer shall within two weeks of receiving a completed copy of this agreement, including the Schedule of Deviations (if any), contact the *Client*'s agent (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the *conditions of contract* identified in the Contract Data at, or just after, the date this agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any).

Unless the tenderer (now *Contractor*) within five working days of the date of such receipt notifies the *Client* in writing of any reason why it cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the Parties.

Signature(s) .....

Name(s) .....

Capacity .....

for the *Client*

.....

(Insert name and address of organisation)

Name & signature of witness

.....

(Insert name)

.....

(Insert signature)

Date .....

Date .....

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

C1.1.3 Schedule of Deviations to be completed by the *Client* prior to contract award

Note:

1. The extent of deviations from the tender documents issued by the *Client* prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.

2. A tenderer's covering letter must not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid be the subject of agreement reached during the process of Offer and Acceptance, *the outcome of such agreement shall be recorded here and the final draft of the contract documents shall be revised to incorporate the effect of it. Insert particulars in the schedule below.*

3. Any changes or additions to the tender documents arising from the above arrangements and recorded here shall also be incorporated into the final draft of the Contract.

No.	Subject	Details
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

By the duly authorised representatives signing this Schedule of Deviations below, the *Client* and the tenderer agree to and accept this Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules, as well as any confirmation, clarification or changes to the terms of the Offer agreed by the tenderer and the *Client* during this process of Offer and Acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this Form shall have any meaning or effect in the contract between the parties arising from this Agreement.

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

	For the *Contractor* (Tenderer)	**For the *Client* (*Client*)**
Signature(s)	.....	.....
Name(s)	.....	.....
Capacity	.....	.....
On behalf of:	.....	.....
	.....	.....
	(Name and address of organisation)	*(Name and address of organisation)*
Name and signature of witness		
	.....	.....
	(Insert name)	*(Insert name)*
	.....	.....
	(Insert signature)	*(Insert signature)*
Date	.....	.....

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

C1.2 CONTRACT DATA

C1.2.1 Part 1: Data provided by the *Client*

The Contract Data (including variations and additions) shall amplify, modify, or supersede, the NEC4 June 2017 Option B: Priced Contract with Bill of Quantities to the extent specified below, and shall take precedence and shall govern.

Each item of data given below is cross-referenced to the clause in the NEC4 June 2017 Option B: Priced Contract with Bill of Quantities to which it mainly applies.

1 General

11.1 The *conditions of contract* are the core clauses and the clauses for the following main Option, the Option for resolving and avoiding disputes and secondary Options of the NEC4 Engineering and Construction Contract, June 2017 with amendments January 2019.

Main Option	**B: Priced contract with bill of quantities**
Option for resolving and avoiding disputes	**W1: Dispute resolution procedure**
Secondary Options	**X1: Price adjustment for inflation** **X7: Delay damages** **X11: Termination by *Client*** **X13: Performance bond** **X16: Retention** **X18: Limitation of liability** **Z: Additional conditions of contract**

11.2(15) The *works* are **CONSTRUCTION OF WOODMEAD INLET BULK WATER PIPELINE**

10.1 The *Client* is

Name	**Johannesburg Water (SOC) Limited represented by Mr. William Chitsa**
Address for communications	**Turbine Hall, Ntemi Piliso Street, Newtown, Johannesburg**
Address for electronic communications	william.chitsa@jwater.co.za

10.1 The *Project Manager* is

Name	**Nyeleti Consulting (Pty) Ltd represented by Mr. Abe Thela**
Address for communications	**PO Box 1965** **Alberton** **1450**
Address for electronic communications	athela@nyeleti.co.za

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

10.1	The *Supervisor* is	
	Name	**Nyeleti Consulting (Pty) Ltd represented by (TBA)**
	Address for communications	**PO Box 1965 Alberton 1450**
	Address for electronic communications	**TBA**

11.2(16)	The Scope is in	**Part C3: Scope of work and all documents and drawings to which it refers**
11.2(18)	The Site Information is in	**Part C4: Site Information and all documents and drawings to which it refers**

11.2(17)	The *boundaries of the site* are	**as per Part C4 Site information**	
13.1	The *language of this contract* is	**English**	
12.2	The *law of the contract* is the law of	**the Republic of South Africa**	
13.3	The *period for reply* is	**14 Days**	except that
	• The period for reply for	**Payment certificates**	**is as per Clause 51.1**
	• The period for reply for	**Final assessment**	**is as per Clause 53.1**

15.2	The following matters will be included in the Early Warning Register	
	• Unforeseen ground conditions / Geotechnical problems • Unknown existing services and / or underground structures	
15.2	Early warning meetings are to be held at intervals no longer than	**2 weeks**

3 Time

31.2	The *starting date* is	**TBA**
30.1	The *access date is*:	**When the following documentation required is in place but not later than 28 days after the contract date:** • **Approved Health and Safety Plan and File (Clause PS 7)** • **Approval of the Environmental File** • **First programme (Clause PS 5.1.3)** • **Traffic Control Plan (PS 4.2.2)** • **Construction Method Statement (PS 5.1.3)** • **Guarantee from Bank or Insurance Company** • **Insurance of Construction Machinery Plant** • **Insurance of Motor Vehicle Liability**

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

		• **COID Letter of Good Standing** • **Signed Notification to the Department of Labour** • **Construction Permit where applicable** • **Subcontracting plan** • **Labour resource plan**

32.2	The *Contractor* submits revised programmes at intervals no longer than	**1 month**
11.2(2) & 11.2(3)	The *completion date* for the whole of the *works* is	**19 calendar months after access date. Note: Saturdays, Sundays, South African public holidays, and the South African construction industry's annual shutdown are non-working days.**
35.1	Taking over the *works* before the Completion Date	The *Client* **is** willing to take over the *works* before the Completion Date.
31.1	The period after the Contract Date within which the *Contractor* is to submit a first programme for acceptance is	**21 days**

4 Quality management

40.2	The period after the Contract Date within which the *Contractor* is to submit a quality policy statement and quality plan is	**21 days**
43.1	The period between Completion of the whole of the *works* and the *defects date* is	**52 weeks**
44.2	The *defect correction period* is	**21 days** except that
	• The defect correction period for	**Safety, Health & Environment related items is** **48 hours**

5 Payment

51.1	The *currency of the contract* is the	**South African rand**
50.1	The *assessment interval* is	**Monthly and it ends and starts at 12h00 on the 20th day of each successive month**

Delete this clause: The Client shall not pay interest.

The *interest rate* is	**0**	**% per annum above the**	
prime lending rate of the *Contractor*'s			Bank

51.2	The period within which payments are made is	**On or before the 30 Days following the assessment date**

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

6 Compensation events

60.1(13) The place where weather is to be recorded is: **The *Contractor*'s site establishment area**

60.1(13) The *weather measurements* to be recorded for each calendar month are

- the cumulative rainfall (mm)
- the number of days with rainfall more than 10 mm

The *weather measurements* are supplied by: **South African Weather Service 012 367 6000 or info4@weathersa.co.za**

60.1(13) The *weather data* are the records of past *weather measurements* for each calendar month

which were recorded at: ***Johannesburg Botanical Gardens***

and which are available from: the South African Weather Bureau and included in Annexure A to this Contract Data provided by the *Client.* Also see Clause PS 5.9 of the Scope.

63.12 The value engineering percentage is 50%, unless another percentage is stated here, in which case it is: **0 %**

63.15 The *method of measurement* is: Standard System of Measuring Building Work (7th edition) 2015 by the Association of South African QSs

7 Title

There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.

8 Liabilities and insurance

80.1 These are additional *Client*'s liabilities: **None**

Insurances to be provided — The *Contractor* provides these insurances

(1) Insurance against: Loss of or damage to the *works*, Plant and Material

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

Minimum amount of cover is	Replacement cost
The deductibles are	N/A
(2) Insurance against	Loss of or damage to Equipment
Minimum amount of cover is	Replacement cost
The deductibles are	N/A
(3) Insurance against	Loss of or damage to property (except the *works*, Plant, Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the *Contractor*) arising from or in connection with the *Contractor* Providing the Works for any one event.
Minimum amount of cover is	R 10 million in respect of all claims arising from any one occurrence or series of occurrences consequent on or attributable to one source or original cause applying to the Parties separately.
The deductibles are	N/A
(4) Insurance against	Death of or bodily injury to employees of the *Contractor* arising out of and in the course of their employment in connection with the contract for any one event.
Minimum amount of cover is	As prescribed by the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 and the *Contractor's* common law liability for people falling outside the scope of the Act with the limit of cover of not less than R 10 million for any one event.
The deductibles are	N/A
(5) Insurance against	Motor Vehicle Liability Insurance comprising (as a minimum) "Balance of Third Party" Risks including Passenger and Unauthorised Passenger Liability indemnity.

Minimum amount of cover is	Minimum indemnity limit of R 5 000 000
The deductibles are	N/A

9 Termination

There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.

Resolving and avoiding disputes

W1.4(1)	The *tribunal* is	**Arbitration**
W1.4(5)	The *arbitration procedure* is	**the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.**
	The place where arbitration is to be held is	**South Africa**

The person or organisation who will choose an arbitrator if the Parties cannot agree a choice or if the *arbitration procedure* does not state who selects an arbitrator, is

the Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.

W1.1(1) The *Senior Representatives* of the *Client* are

Name (1)	**Mr Enoc Mudau**
Address for communications	**Turbine Hall, Ntemi Piliso Street, Newtown, Johannesburg**
Address for electronic communications	**enoc.mudau@jwater.co.za**
Name (2)	**Mr Joseph Mokoala**
Address for communications	**Turbine Hall, Ntemi Piliso Street, Newtown, Johannesburg**
Address for electronic communications	**joseph.mokoala@jwater.co.za**

W1.2	The *Adjudicator* is (Name)	**the person selected from the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering Panel of Adjudicators by the Party intending to refer a dispute to him. (see www.ice-sa.org.za)**
	Address for communications	TBC

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

Address for electronic communications	TBC
The *Adjudicator nominating body* is:	**the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the South African Institution of Civil Engineers. (See www.ice-sa.org.za) or its successor body.**

X1: Price adjustment for inflation

X1.1(c) The effect of changes in prices or law on the amounts due shall be adjusted on the following basis:

a) No price adjustment over the first 12-month period of the Contract.
b) On the 12-month anniversary date of the signing of the agreement the rates shall be adjusted by twelve-month year on year CPI index (as published in the monthly bulletin PO141.1 of statistics South Africa) ruling on the 12-month anniversary date of the signing of the Agreement and fixed at this value for the following 12-month period. Subsequent 12-month periods shall be dealt with on a similar basis.

The proportions used to calculate the Price Adjustment Factor are:

a = 0.35	linked to the index for	Lo - Labour
b = 0.25	linked to the index for	Po - Equipment
c = 0.30	linked to the index for	Mo - Materials
d = 0.1	linked to the index for	Fo - Fuel
x = 0.1	non-adjustable	"X" Fixed portion
Geographical area	**Gauteng**	
The *base date* for indices is	**1 calendar month prior to the Tender closing date.**	
These indices are	**available from Statistics South Africa.** https://www.statssa.gov.za/	

(a) 'L' is the 'Labour Index' and shall be the price index for 'Consumer Price Index' for the Gauteng Province as published in the Statistical News Release, P0141, Table A "Consumer Price Index: Main indices" of Statistics South Africa.

(b) 'P' is the 'Construction Equipment' and shall be the Producer Price Index applicable to Plant and Equipment (Total) as published in the Statistical Release P0151.1, Table 4 of Statistics South Africa.

•

(c) 'M' is the 'Materials Index' and shall be the Producer Price Index applicable to Civil Engineering Material (Total) as published in the Statistical Release P0151.1, Table 6 of Statistics South Africa.

•

(d) 'F' is the 'Fuel Index' and shall be the Producer Price Index for Final manufactured goods - Coal and Petroleum Products - Diesel as published in the Statistical News Release P0142.1, Table 1 of Statistics South Africa."

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

X7: Delay damages

X7.1	Delay damages for Completion of the whole of the *works* are	**An amount equal to the daily rate for the *Project Manager* and *Supervisor* to provide additional contract administration and site supervision respectively, or R 15 000 (Fifteen thousand Rand) per day, whichever is the greater.**	per day

X13: Performance bond

X13.1	The amount of the performance bond is	**10% of contract Price at award (excl. VAT)**

X16: Retention

X16.1	The *retention free amount* is	R0.00
X16.1	The *retention percentage* is	10% of the contract Price.
X16.3	Retention bond is **not allowed** by the *Client*.	

X18: Limitation of liability

X18.2	The *Contractor*'s liability to the *Client* for indirect or consequential loss is limited to:	**Nil**	
X18.3	For any one event, the *Contractor*'s liability to the *Client* for loss of or damage to the *Client*'s property is limited to:	**the contract Price**	
X18.4	The *Contractor*'s liability for Defects due to his design which are not listed on the Defects Certificate is limited to	**the contract Price**	
X18.5	The *Contractor*'s total liability to the *Client* for all matters arising under or in connection with this contract, other than excluded matters, is limited to:	**the contract Price**	
X18.6	The *end of liability date* is	**5**	years after Completion of the whole of the *works*

Z: *Additional conditions of contract*

The *additional conditions of contract* are:

Amendments to core clauses:

Z2 Identified and defined terms	Add core clause 11.2 (21)

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

Where reference is made to ***Client*** in the contract documents (Tender Procedures, Returnable Documents, Agreement and Contract Data, Pricing Data, Scope of Work, Site Information, and Drawings) it shall mean the same as the ***Client.***

Where reference is made to Engineer or *Client*'s Agent in the contract documents (Tender Procedures, Returnable Documents, Agreement and Contract Data, Pricing Data, Scope of Work, Site Information, and Drawings) it shall mean the same as the *Project Manager.*

Where reference is made to Engineer Representative in the contract documents (Tender Procedures, Returnable Documents, Agreement and Contract Data, Pricing Data, Scope of Work, Site Information, and Drawings) it shall mean the same as the *Supervisor.*

Add core clause 11.2 (22)

A Week is

- 7 Calendar days

Z3 Corrupt Practices

Delete clause 18 and replace with:

Each Party warrants that it and its affiliates and/or Subcontractor have not made, offered, or authorized and will not make, offer, or authorize with respect to the matters which are the subject of this Contract, any payment, gift, promise or other advantage, whether directly or through any other person or entity, to or for the use or benefit of any public official (i.e., any person holding a legislative, administrative or judicial office, including any person employed by or acting on behalf of a public agency, a public enterprise or a public international organization) or any political party or political party official or candidate for office, where such payment, gift, promise or advantage would violate

a) the applicable laws of South Africa;
b) the laws of the country of incorporation of such Party or such Party's ultimate parent company and of the principal place of business of such ultimate parent company; or

Each Party shall defend, indemnify and hold the other Party or Parties harmless by way of a continuing indemnity from and against any and all actions, applications, claims, damages, losses, penalties, costs and expenses arising from or related to, any breach by such first Party of such above mentioned warranty. Such indemnity obligation shall survive termination or expiration of this Agreement.

Each Party agrees to (i) maintain adequate internal controls; (ii) properly record and report all transactions; and (iii) comply with the laws applicable to it. Each Party must rely on the other Parties' system of internal controls, and on the adequacy of full disclosure of the facts, and of financial and other data regarding the operations undertaken under this contract. No Party is in any way authorized to take any action on behalf of another Party that would result in an inadequate or inaccurate recording and reporting of assets, liabilities, or any other transaction, or which would put such Party in violation of its obligations under the laws applicable to the operations under this contract.

No Party shall make any facilitation payments to government officials in the execution of its obligations under this contract. Breach of this clause by the *Contractor* will entitle the *Client* to termination in terms of Section 9, clause 91.8 and recover from the *Contractor* the amount of any loss incurred as a result of such termination.

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

Z4 People

Add clause 24.3

In the event that the *Contractor* wishes to replace a *key person* as referred to in clause 24.1, the *Contractor* gives the *Client* four (4) weeks' notice of such proposed replacement, giving details of the name, relevant qualifications and experience of a person proposed as a replacement and any other details which are necessary to demonstrate that such replacement meet the minimum criteria will be considered for the position. The *Contractor* is not required to give the aforesaid notice in case the replacement was caused by circumstances outside its control, including but not limited to death, immediate dismissal or sudden resignation of a *key person*.

Key Person	Minimum Qualifications	Experience
Contract Manager's	Bachelors Degree (B-Tech/ B Eng/ BSc Civil Eng/ Quantity Surveying/ Construction Management) and Professional Registration, (Pr. Eng. / Pr Tech Eng./ Pr QS / PrCPM / PrCM)	Minimum 1 field welded steel pipeline project of a minimum 600 mm diameter with Cathodic Protection completed as Contracts Manager and of minimum project value R25 million
Site Agent's	BTech in Civil Engineering	Minimum 2 field welded steel pipeline projects of a minimum 600 mm diameter with Cathodic Protection completed in the capacity of site manager (agent) and of minimum project value R25 million
Safety Officer's	National Diploma (Safety /Environmental Management/Environmental Science) / SAMTRAC/ SHEOMTRAC/ SHEMTRAC/ MESHTRAC / NEBOSH / Safety Officers Course and Registration with SACPCMP	Minimum 3 civil/structural engineering projects completed as safety officer with a minimum project value of R25 million in the capacity of safety officer

Add the following clause 24.4

If the *Client* consents to the replacement of a *key person*, such replacement person commences the work of that *key person* in relation to the *works* at least two (2) weeks prior to the *key person* leaving in order to facilitate an appropriate handover of work. The *Contractor* shall be liable for the cost of such replacement *key person* during this two (2) week period.

Add the following clause 24.5

If the *Contractor* replaces a key person without complying with this clause and without the consent of the *Client*, the *Client* may withhold the sum of money

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

	applicable to that *key person* as set out in the Contract Data when assessing the amount due in accordance with clause 50, until the replacement person has completed the handover period described in clause 24.4. Interest shall not accrue on the sum of money withheld by the *Client*.
Z5 Payment	Add clause 51.6: Payment advance for Plant and Materials on site is allowed for Plant and Materials not yet built into the Works. The amount payable is 80% of the value of Plant and Materials. Proof of ownership, surety and session of ownership documentation must be submitted to the *Client* prior to payment.
Z6 Correcting Defects	Add to clause 44.2: Except that the *Client* may correct a Defect after takeover if there is a threat to safety which justifies immediate action to correct the Defect. The *Project Manager* assesses the cost incurred by the *Client* in correcting the Defect and the *Contractor* pays the amount assessed.
Z7 Notifying compensation events	Delete the last paragraph of Clause 61.3 and replace with: If the *Contractor* does not notify a compensation event within four weeks of becoming aware that the event has happened, it is not entitled to a change in the Prices, the Completion Date, or a Key Date unless the event arises from *the Project Manager* or the *Supervisor* giving an instruction or notification, issuing a certificate, or changing an earlier decision.

Amendments to secondary option clauses:

Z8 Performance Bonds	The Performance Guarantee under X13 above shall be irrevocable, on-demand performance guarantee, to be issued exactly in the form of the Pro Forma documents provided for this purpose under C1.3 (Forms of Securities), in favour of the *Client* by a financial institution reasonably acceptable to the *Client*.

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

Additional clauses:

Z9 Penalties

1. Failure to report

a) The *Client* shall levy a penalty on *Contractor*, should the latter fail to provide reporting as required in the Scope in clause PS 6.10 with regard to content and frequency, whilst as per the Pricing Data section no payment for work completed shall be processed.
b) The penalty value shall be R15,000.00 per report per occasion; and
c) If the *Contractor* fails to complete the latter more than three incidents and should the *Client* or his duly authorised representative find that the *Contractor* is hindering his (the *Client's*) deliverables to senior management, he shall reserve the right to:
   i) perform the Works internally or through another *Contractor*; and
   ii) deduct additional costs incurred by the *Client* from monies owed to the *Contractor*. Additional costs incurred by the *Client* shall include all claims from Contract affected parties, claims such as but not be limited to claims from customers, any costs associated with the loss of water, and all costs associated with the procurement of an alternative *Contractor*.
   iii) terminate the Contract;

No liability in terms of this clause shall be attached to the *Contractor* if he can prove to the satisfaction of the *Client* that the nature of the failure is due to fire, war, riot, strikes, act of God, lockout, accident or other unforeseen occurrences or circumstances beyond the *Contractor's* control, provided, however, that in all cases the *Contractor* has notified the *Client* in writing within 24 hours of it first coming to his notice, that delivery shall be delayed or become impossible for the above-mentioned reasons.

2. Failure to pay any labour or SMME

a) The *Client* shall levy a penalty on *Contractor,* should the latter fail to provide payment to any labourer or SMME as required in the specification highlighted in the Scope and specified in the appointment agreements with the *Contractor* and the labourer or SMME.
b) The penalty value shall be R 50,000.00 per incident per occasion; and
c) If the *Contractor* fails to complete the aforementioned more than three incidents and should the *Client* or his duly authorised representative find that the *Contractor* is hindering his (the *Client'*s) deliverables to JW Senior Management, he shall reserve the right to:
   i) perform the Works internally or through another contractor; and
   ii) deduct additional costs incurred by the *Client* from monies owed to the *Contractor*. Additional costs incurred by the *Client* shall include all claims from Contract affected parties, claims such as but not be limited to claims from customers, any costs associated with the loss of water, and all costs associated with the procurement of an alternative *Contractor.*
   iii) terminate the *Contract*.

No liability in terms of this clause shall be attached to the *Contractor* if he can prove to the satisfaction of the *Client* that the nature of the failure is due to fire, war, riot, strikes, act of God, lockout, accident or other unforeseen occurrences or circumstances beyond the *Contractor'*s control, provided, however, that in all cases the *Contractor* has notified the *Client* in writing within 24 hours of it first coming to his notice, that delivery shall be delayed or become impossible for the above-mentioned reasons.

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

3. Failure to meet target participation by local SMME

If the *Contractor* fails to achieve the monetary value of 30% of the project value targeted to SMME target set by the *Client* for contract participation by local SMME *Contractor*s in terms of clause PS3.2 and PSA 8.9 of the *Scope of works*, the *Contractor* shall be liable to the *Client* for a sum calculated in accordance with the Contract Data and the aforementioned Scope as a penalty for such underachievement.

The *penalty* for failing to achieve the monetary value of the target set by the *Client* for contract participation by Targeted Enterprises and local SMME *Contractor*s in terms of clause PS3.2 of the Scope, is 50% of the monetary value by which the achieved monetary value falls short of the target monetary value.

4. Penalties payable

If penalties are payable, they will be deducted prior to the addition of (VAT) but after the calculation of retention.

5. Penalties irreversible

The *Contractor* shall note that all penalties once imposed shall be non-recoverable or reversible, even if the default is remedied.

6. Penalties Environmental
If the contractor fails to achieve the score as stipulated in the Environmental scorecard, the Client will levy Penalties for Contractors not complying with Environmental scorecards above 85% but below 93 % for 2 successive months and then below 85% must be penalised for each month. R10, 000.00/non-compliant report

7. Penalties Health & Safety
If the contractor fails to achieve the score as stipulated in the Health & safety requirements, the Client will levy Penalties for Contractors not complying with Health & safety requirements and scoring above 85% but below 93% for successive 2 months and then below 85% must be penalised for each month. R10, 000.00/ non-compliant report

Z10 Source of instructions

The *Contractor* shall neither seek nor accept instructions from any authority external to the *Project Manager* in connection with the performance of his services under this Contract. The *Contractor* shall refrain from any action which may adversely affect the *Client* and shall fulfil his commitments with fullest regard for the interest of the *Client*. The *Contractor* may only take and comply with *Client's* Health and Safety representative or Environmental representative on matters regarding Health & Safety as well as Environmental.

Z11 Confidential nature of documents

All maps, drawings, photographs, mosaics, plans, reports, recommendations, estimates, documents and all other data compiled by or received by the *Contractor* under the Contract shall be the property of the *Client*, shall be treated as confidential and shall be delivered only to the *Project Manager* or his duly authorized representative on completion of the Works; their contents shall not be made known by the *Contractor* to any person other than the personnel of the

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

Contractor performing services under this Contract without the prior written consent of the *Client.*

Z12 Date falling on public holiday or weekend

Where under the terms of the Contract any act is to be done or any period is to expire upon a certain day and that day or that period fall on a day of rest or recognized holiday or weekend, the Contract shall have effect as if the act were to be done or the period to expire upon the working day following such day.

Z13 Taxes

Definitions
The Customs Duties - means any tariff or tax on the importation or exportation of goods or services.

The Sales Tax - means any tax imposed by any government, provincial, municipal, local, taxing or other authority on transactions such as the sale of goods and the performance of services, including importation, commonly referred to, for example, as value added tax, goods and services tax or general sales tax or any other similar taxes.

The Taxes - means any and all taxes, duties, wharfage, fees or charges in connection with the activities of the *Contractor* hereunder imposed by any government, provincial, municipal, local, taxing or other authority, including income tax, capital gains tax, taxes in relation to employment or payroll (including social security contributions and taxes on employment income), taxes in relation to imports, duties, levies, stamp duties, charges, assessments and payments in the nature of taxes, but excludes Customs Duties, Sales Tax and withholding tax.

Z14 Compensation events

Delete clause 60.1(13) and replace with:

Abnormal rainfall or wet conditions occur to the extent that the algebraic sum of all monthly total values of V for the period under consideration has a positive value. The value of V is calculated each month with the formula:

$$V = (Nw - Nn) + ((Rw - Rn)/X)$$

Where

V	Extension of time in calendar days in respect of the calendar month under consideration.
Nw	Actual number of days during the calendar month on which a rainfall of Y mm or more has been recorded.
Nn	Average number of days, as derived from existing rainfall records, on which a rainfall of Y mm or more has been recorded for the calendar month.
Rw	Actual rainfall in mm recorded for the calendar month under consideration.
Rn	Average rainfall in mm for the calendar month as derived from existing rainfall records.
X	20 mm
Y	10 mm/24 hour day

	Monthly values for Nn and Rn are given in Annexure A.
Z15 Subcontracting	1. The *Contractor*'s Tendered rates The *Contractor* shall ensure that rates that are tendered (during Tender Stage) for work items that are likely to be subcontracted, are market related rates. Provision is made in the Bill of Quantities (BoQ) for the *Contractor* to add a mark-up for the sourcing, handling, and management of Subcontractors, SMME's, and the like, for the duration of the contract.
	2. Subcontractors Tendered rates In the event that a rate supplied by the *Contractor* for a specific BoQ work item is not sufficient to cover Subcontractor costs/rates for that specific item, the *Contractor* shall provide a detailed rate breakdown for that specific BoQ item (and each and every subsequent BoQ work item where the rate is not sufficient to cover Subcontractor cost); and shall indicate costs (amongst others) for labour, material, handling, mark-ups, etc. to prove that the rate that was submitted during tender stage was in fact market related; and in balance with other rates that were submitted for work items that will not be undertaken by Subcontractors.
	3. Appointment of Subcontractors a) On or during appointment of Subcontractors, should Subcontractors prove that rates, that have been tendered by the *Contractor* for BoQ work items that are being subcontracted, are not market related, the *Contractor* will be liable to cover the cost of the difference, i.e. the difference in rate tendered by the *Contractor* versus the rate that is being requested by the Subcontractor. This difference in cost will be for the *Contractor*'s account, and no compensation event for additional costs will be entertained by the *Client*. The *Contractor* bears the full and complete risk for the rates that have been tendered by the *Contractor* during the tender stage. b) Should any delays be experienced during the period of the Contract due to the appointment of subcontractors by the *Contractor*, work stoppages by subcontractors, industrial action by subcontractors, etc. such delays shall be assigned to the *Contractor*, and no claims for Extension of Time will be entertained by the *Client*
Z16 Special Conditions	The successful Tenderer must subcontract a minimum of 30% of the value of this contract to an entity(s) described below. The value of the contract for the purposes of this calculation shall be equal to the contract Price (excluding VAT). The subcontractor/s chosen for this purpose must be registered on National Treasury's Central Supplier Database (CSD) and must be from one of the following designated groups: • An EME or QSE which is at least 51% owned by black people; • An EME or QSE which is at least 51% owned by black people who are youth; • An EME or QSE which is at least 51% owned by black women; • An EME or QSE which is at least 51% owned by black people with disabilities;

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

- An EME or QSE which is 51% owned by black people living in rural or underdeveloped areas or townships;
- A cooperative which is at least 51% owned by black people;
- An EME or QSE which is at least 51% owned by black people who are military veterans;
- an EME or QSE .

1. Subcontractors must be chosen from National Treasury's Central Supplier Database which can be accessed on National Treasury's website.
2. The *Contractor* shall identify work packages that will be allocated to Subcontractors, so that the minimum requirement of 30% can be met during the implementation of the project, as follows:
   a. The *Contractor* shall develop a subcontracting plan that sets out the details of the proposed subcontracting arrangements including, but not limited to, competitive bidding process to be used for the appointment of SMME's, scope of work to be allocated, criteria for the selection of Subcontractor(s), Subcontractor agreements, cost of the work to be subcontracted, etc.
   b. The subcontracting plan shall be developed in consultation with the Ward Councillor and / or Community Liaison Officer, who shall assist the *Contractor* in identifying SMME's and other skills that may be available in local and surrounding communities.
   c. The Subcontracting Plan shall be issued to the Project Manager for approval, prior to the engagement of any Subcontractor(s) by the *Contractor*. The activities, time periods, linkages, etc. associated with the development and approval of the Subcontracting Plan shall be included in the Project Programme, which Programme is subject to the approval of the Project Manager. A period of four weeks will be required for the Project Manager to consult with the *Client*, prior to approval of the Subcontracting Plan.
   d. The *Contractor* shall ensure that rates that are tendered (during Tender Stage) for work items that are likely to be Subcontracted, are market related rates. Provision is made in the Bill of Quantities (BoQ) for the *Contractor* to add a mark-up for the sourcing, handling, and management of Subcontractors, SMME's, and the like, for the duration of the Contract.
   e. On or during appointment of Subcontractors, should Subcontractors **prove** that rates, that have been tendered by the *Contractor* for BoQ work items that are being subcontracted, are not market related, the *Contractor* will be liable to cover the cost of the difference, i.e. the difference in rate tendered by the *Contractor* versus the rate that is being requested by the Subcontractor. This difference in cost will be for the *Contractor*'s account, and no Variation Orders for additional costs will be entertained by the *Client*. The *Contractor* bears the full and complete risk for the rates that have been tendered by the *Contractor* during Tender Stage.
   f. In the event that a rate supplied by the *Contractor* for a specific BoQ work item is not sufficient to cover Subcontractor costs/rates for that specific item, the *Contractor* shall provide a detailed rate breakdown for that specific BoQ item (and each and every subsequent BoQ work item where the rate is not sufficient to cover Subcontractor cost); and shall indicate costs (amongst others) for labour, material, handling, mark-ups, etc. to prove that the rate that was submitted during tender stage was in fact market related; and in balance with other rates that were submitted for work items that will not be undertaken by Subcontractors.
   g. Should any delays be experienced during the period of the Contract due to the appointment of subcontractors by the *Contractor*, work stoppages by subcontractors, industrial action by subcontractors, etc. such delays shall be assigned to the *Contractor*, and no claims for Extension of Time will be entertained by the *Client*.

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

h. The *Contractor* will be liable to pay a penalty if the Subcontracting target of 30% has not been met by the end of the Contract. The *Client* will deduct this penalty amount through the Payment Certificate process. The *Client* will have full discretion as to when the penalty will be applied (i.e. the month in which the penalty amount will be deducted). In calculating the total amount that has been (will be) paid to SMME's, all amounts that have been reimbursed to SMME's will be taken into account including P&G's, amounts for actual work done, etc.
i. The penalty amount described above shall be equal to 50% (fifty percent) of the difference between the target Subcontract amount (i.e. 30% of the Contract Price) and the actual amount that has been spent on Subcontractors/SMME's by the end of the Contract.

3. A Subcontracting agreement between the Main *Contractor* and the Subcontractor shall be submitted to JW upon appointment and must include the following minimum information:
   a. Name of Subcontractor and BBBEE status
   b. Subcontractor *domicilium* and registered address of business, as well as status of compliance with all applicable legal requirements.
   c. Area and location of project
   d. Scope of Work issued to the Subcontractor
   e. Value of the Work issued including P&G's (this information must be submitted in a format that is readily auditable).
   f. Assistance provided/to be provided to the Subcontractor by the *Contractor*, e.g. acquisition of materials, machinery, tools, etc.
   g. A Skills Transfer Plan which will indicate, amongst others, the proposed skills that will be transferred to the Subcontractor, individuals that will be identified for skills transfer, the amount that will be spent by the *Contractor* on skills transfer, evidence that will be produced by the *Contractor* (such as training certificates, training registers, etc.), etc.
   h. A specific provision that enables the *Contractor* to pay the Subcontractor's suppliers, labour (skilled, local, etc.) or any other service provider of the Subcontractor, should the Subcontractor fail to do so. This provision shall include (but not be limited to) the following conditions/proviso's:
      - Invoices that are due for payment from suppliers and the like must be invoices that have been approved for payment and be based on work or services that have actually been completed or delivered. Payments that are due to labour will be based on approved timesheets.
      - The *Contractor* is to ensure that any invoice presented for payment is indeed an approved invoice, and that the necessary work or services have been delivered or completed. The approved invoice shall be settled (paid) by the *Contractor* (on behalf of the Subcontractor) by the due date for payment.
      - The *Contractor* will be entitled to deduct payments made to any third party, on behalf of the Subcontractor, from subsequent payments that may become due to the Subcontractor.
      - The *Contractor* will be entitled to bill the Subcontractor a mark-up on the payments made on behalf of the sub-contractor. The mark-up shall not be more than 10% (ten percent) of the amount actually paid (i.e. the amount (excluding VAT) reflected on the invoice that has been settled). The mark-up amount shall be deducted from subsequent payments that may become due to the Subcontractor.
      - Proof of any such payments made on behalf of the Subcontractor shall be issued to the Project Manager, on request, with all

necessary supporting information that the Project Manager may request

- Payments made on behalf of the Subcontractor are not subject to the *Contractor* first being paid by the *Client*. Therefore, the *Contractor* shall pay approved invoices, on behalf of the Subcontractor, irrespective of whether the *Contractor* has first been paid by the *Client*. The *Contractor* will be entitled to levy interest on all payments that have been made in this regard, in accordance with the necessary interest payment provisions contained in the General and Special Conditions of Contract.

4. The successful *Contractor* shall submit periodic SMME/Subcontractor reports to the Project Manager as follows:
   i. Status of progress against the Subcontracting Plan (described above), to the approval of the Project Manager
   j. Subcontractor *domicilium* and registered address of business, as well as ongoing status of compliance with all applicable legal requirements.
   k. Name of Subcontractor and BBBEE status
   l. Area and location of project
   m. Scope of work issued to the Subcontractor
   n. Value of the work issued (this information must be submitted in a format that is readily auditable)
   o. Monthly payments made to the subcontractor (this information must be submitted in a format that is readily auditable)
   p. Assistance provided to the Subcontractor e.g. advance payments, acquisition of materials, machinery, tools, etc.
   q. Performance of the Subcontractor, with evidence to support this performance assessment.

5. Upon completion of the project, the *Contractor* is required to provide a final report to JW on skills transferred to / acquired by the Subcontractor(s) engaged on the Project, description and value of work performed, as well as their overall performance.

The *Contractor* shall also indicate whether the experience gained by the Subcontractor is sufficient to assist the Subcontractor to improve their CIDB grading, with full details of supporting information.

Z17 Liabilities and insurance

Remove the following Client liabilities from clause 80.1

The *Client* will not take on the following liabilities and the *Contractor* must make provision for it:

- Claims and proceedings from Others and compensation and costs payable to Others which are due to

  use or occupation of the Site by the *works* or for the purpose of the *works* which is the unavoidable result of the *works* or

  negligence, breach of statutory duty or interference with any legal right by the *Client* or by any person employed by or contracted to it except the *Contractor*.

- Loss of or damage to the *works*, Plant and Materials due to

  - war, civil war, rebellion, revolution, insurrection, military or usurped power,

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

- strikes, riots and civil commotion not confined to the *Contractor's* employees or
- radioactive contamination.

C1.2.1.1 Annexure A:
W*eather data* obtained from SA Weather Bureau for Johannesburg Botanical Gardens.

The value of V is calculated using the following formula

V = (Nw - Nn) + ((Rw - Rn)/X)

If the algebraic sum of all monthly totals for the period under consideration has a positive value, then the *Contractor* may notify a compensation event.

STATISTICAL INFORMATION: JOHANNESBURG BOTANICAL GARDENS: 1993-2022		
Month	**Nn = Actual number of days during the calendar months in which a rainfall of more than Y-mm has been received**	**Rn Average monthly rainfall**
January	4.5	129.7
February	3.2	105.5
March	2.7	95.7
April	0.9	29.7
May	0.5	18.2
June	0.0	4.7
July	0.1	2.7
August	0.1	4.4
September	0.3	11.9
October	2.0	68.4
November	3.1	86.7
December	4.2	117.7
Year Totals	**21.6**	**675.4**

Only the algebraic sum of all monthly totals for V for the period under consideration is taken into account in assessing the compensation event.

C1.2.2 Part two - Data provided by the *Contractor*

Completion of the data in full, according to the Options chosen, is essential to create a complete contract.

1 General

11.2(13)	The *Contractor* is	
	Name	
	Address for communications	
	Address for electronic communications	
11.2(10) & 52.1	The *fee percentage* is (Upper limit 15%)	%
11.2(20) &16.3	The *working areas* are the Site and	
24.1	The *key persons (Corresponding to cv's submitted)* are:	
	Name (Contracts Manager)	
	Job	
	Responsibilities	
	Qualifications	
	Experience	
	Name (Site Agent)	
	Job	
	Responsibilities	
	Qualifications	
	Experience	
	Name (Safety Officer)	
	Job	
	Responsibilities	
	Qualifications	

Experience	

Name (Environmental Officer)	
Job	
Responsibilities	
Qualifications	
Experience	

11.2(8) The following matters will be included in the Early Warning Register:

3 Time

31.1 The programme identified in Contract Data is: To be submitted within 21 days of the Contract Date

5 Payment

11.2(22) The *bill of quantities* is in: Volume 1, Part 2, C2.2 Bill of Quantities

The tendered total of the Prices is:

W1.1(1) The *Senior Representatives* of the *Contractor* are

Name	
Address for communications	
Address for electronic communications	

Name (2)	

Address for communications	
Address for electronic communications	

Data for Short Schedule of Cost Components

11.2(28) and SSCC 11 — The *people rates* are (*Daywork rates as per item 1.05.01 of the Bill of Quantities*):

Category of person	unit	rate
Foreman	hours	
Welder	hours	
Skilled labour	hours	
Semi-skilled labour	hours	
Unskilled labour	hours	

SSCC 22 — The rates for other Equipment are (*Daywork rates as per item 1.05.02 of the Bill of Quantities*):

Equipment	rate
Excavator (20 t)	
Excavator (30 t)	
Loader (0,5 m³ bucket)	
Tipper truck (10 m^3)	
Walk-behind vibrating roller	
Welding Machine	
Water truck (5 000ℓ)	
Water pump (4 inch)	
Truck Crane (8 t)	
Crane (10 t)	
Crane (20 t)	

SSCC 61 — The rates for Defined Cost of manufacture and fabrication outside the Working Areas by the *Contractor* are:

Category of person	rate
Foreman	
Welder	
Skilled labour	
Semi-skilled labour	
Unskilled labour	

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

SSCC 71 The rates for Defined Cost of design outside the Working Areas are:

Category of person	rate
Senior Design Engineer	
Senior Design Technologist Engineer	
Technician	
Draughtsman	

SSCC 72 The categories of design people whose travelling expenses to and from the Working Area are included in the Defined Cost:

C1.3 FORMS AND SECURITIES

FORMS FOR COMPLETION BY THE CONTRACTOR

THE FOLLOWING FORMS ARE TO BE COMPLETED BY THE CONTRACTOR AFTER THE TENDER HAS BEEN AWARDED TO THE SUCCESSFUL TENDERER

a) Form of Guarantee

b) Blasting Indemnity

c) Agreement in terms of the Occupational Health and Safety Act

d) Occupational Health And Safety Indemnity Undertaking

The forms will be completed by the *Contractor* who will be instructed to do so in the Form of Acceptance. The completed forms will become part of the Contract.

The Form of Guarantee is a pro forma document. The *Contractor* will provide an original document, from a financial institution, with the same text within the time stated in the Contract Data. Only a Bank or approved Insurance Company or Guarantee Corporation is acceptable as Guarantor.

- **C1.3.1 Form of Guarantee**

TO BE PRINTED ON THE OFFICIAL LETTERHEAD 0F THE GUARANTOR.
FORM OF DEMAND GUARANTEE IN RESPECT OF PERFORMANCE

GUARANTEE REFERENCE NUMBER: [***]

FORM OF ON DEMAND PERFORMANCE GUARANTEE

Whereas **[insert the full name of the *Client*],** registration number: **[insert registration number]**, of **[insert full physical address]** (the "***Client***") has awarded a contract for **[insert a detailed description of the contract]**, under contract number: **[insert details]** (the "**Contract**"), to **[insert full names of the *Contractor*]**, registration number **[insert details]**, of **[insert full physical address]** (the "***Contractor***").

And whereas the Contract requires the *Contractor* to provide to the *Client* an on-demand performance guarantee for the due and proper performance by the *Contractor* of its obligations in terms of the Contract.

Now therefore: **[insert full names of the Guarantor]**, registration number **[Insert details]**, of **[insert the full physical address]** (the "**Guarantor**"), duly represented by the undersigned: **[insert the full names of the signatory]**, and **[insert the full names of the signatory]**, acting herein in their respective capacities as: **[insert full title]** and **[insert full title]** respectively, of the Guarantor, and being duly authorized to sign this on demand performance guarantee (this "**Guarantee**") and to incur obligations in relation thereto, in the name, and on behalf, of the Guarantor under, and in terms of, a Resolution of the Board of Directors or other written authority of the Guarantor, hereby irrevocably and unconditionally guarantees and undertakes that:

1. The Guarantor shall pay to the *Client* on demand any sum or sums not exceeding the following aggregate amount: R **[insert the amount]** (the "**Guaranteed Amount**") on presentation of a written demand signed by the *Client* (the "**Demand**"), supported by a written statement signed by the *Client* certifying that the *Contractor*, in the opinion of the *Client* as at the date of issue of such Demand, is in breach of its obligations under the Contract or that a defect had occurred following the performance by the *Contractor* of its obligations under the Contract, and without being required to prove or set out the nature of any such breach or defect.

2. Neither the failure of the *Client* to enforce strict or substantial compliance by the *Contractor* with its obligations under the Contract nor any act, conduct or omission by the *Client* prejudicial to the interests of the Guarantor will discharge the Guarantor from liability under this Guarantee.

3. This Guarantee:

   3.1 automatically comes into full force and effect on the date of signature hereof by the Guarantor.

   3.2 automatically expires, whether or not returned to the Guarantor at the earlier of:

3.2.1 [the *defects date*; or]

3.2.2 90 (ninety) calendar days after the date of termination of the Contract, as notified in writing to the Guarantor by the *Client*; or

3.2.3 **[insert time]** (Central African Time), at the abovementioned address of the Guarantor on **[insert date]**,

(the "**Expiry Date**");

3.3 constitutes the primary obligations of the Guarantor and exists independently of the Contract or any amendment, variation or novation thereof; and

3.4 is governed by the laws of the Republic of South Africa and any dispute arising hereunder shall be subject to the jurisdiction of the South African courts. In respect of such proceedings, each of the Parties specifically consents to the non-exclusive jurisdiction of the High Court of South Africa (Gauteng Local Division, Johannesburg).

4. Any Demand must be presented at the aforementioned address of the Guarantor on or before the Expiry Date. After the Expiry Date, this Guarantee shall become null and void, whether returned to the Guarantor for cancellation or not and any Demand received after the Expiry Date shall be ineffective.

5. The *Client* may require the *Contractor* to extend this this Guarantee or replace it if the guarantee sum has not been paid in full by the date 28 days prior to the Expiry Date. If the guaranteed sum has not been paid in full by the date 28 days prior to the Expiry Date, and the guarantee has not been extended, the Guarantor unconditionally undertakes to pay to the *Client* any amounts which the *Contractor* has not repaid (subject to the guaranteed sum) upon receipt by the *Client*, within such 28 day period, of written demand for payment made in accordance with the terms of the advance payment guarantee.

6. Payments made in terms of this Guarantee shall be in cash, free of any set-off, with-holding, counterclaim or deduction of any nature whatsoever.

7. This Guarantee is transferable by the *Client*, and the Guarantor consents to any transfer of this Guarantee by the *Client* to any of its affiliates or any other person. This Guarantee is restricted to the payment of a sum of money only and limited to an aggregate amount equal to the Guaranteed Amount.

8. The Guarantor warrants that it has the power and has taken all action and obtained all licenses and approvals required for it, to grant and perform its obligations in terms of this Guarantee.

9. The Guarantor acknowledges that the *Client* may make multiple demands under this Guarantee provided that the aggregate amount paid by the Guarantor in terms of this Guarantee shall not, at any time, exceed the Guaranteed Amount.

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

10. The Guarantor's obligations under this Guarantee are of a primary, independent nature and are not ancillary, accessory nor of a collateral nature, to the Contract. Any reference in this Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship.

11. For the purposes of this Guarantee, the abovementioned address of the Guarantor shall be its *domicilium citandiet executandi* for all purposes in connection with this Guarantee.

SIGNED at_____on this_____day of_____20___

Witnesses:

1. _____

For: **[insert name of the Guarantor]**
duly authorized and
warranting such
authorityFull Name:
Capacity:

2. _____

For: **[insert name of Guarantor]**
duly authorized and
warranting such
authorityFull Name:
Capacity:

- **C1.3.2 Blasting Indemnity**

Given by

_____

*Company Registration No.

_____

Address

_____

a *Company incorporated with limited liability according to the company laws of the Republic of South Africa, *Partnership, *Close Corporation, *Public Company (hereinafter called the *Contractor*), represented herein by

_____
in his capacity as the *Contractor*'s

_____ duly authorised hereto by a resolution of the *Contractor* dated

_____ a certified copy of which resolution is attached to this Indemnity.

WHEREAS the *Contractor* has entered into a Contract with the Johannesburg Water (SOC) Ltd (hereinafter called the *Client*) for,

_____
and the Company requires this Indemnity from the *Contractor*

NOW THEREFORE THIS DEED WITNESSETH that the *Contractor* does hereby indemnify and hold harmless the Company in respect of all loss or damage that may be incurred or sustained by the *Client* by reason of or in any way arising out of or caused by blasting operations that may be carried out by the *Contractor* in connection with the aforementioned Contract and also in respect of all claims that may be made against the *Client* in consequence of such blasting operations, by reason of or in any way arising out of any accidents or damage to persons, life or properly or any other cause whatsoever, and also in respect of all legal or other expenses that may be incurred by the *Client* in examining, resisting or settling any such claims; for the due performance of which the *Contractor* binds itself according to law.

THUS DONE AND SIGNED for and on behalf of the *Contractor* at

_____on the_____day of _____ 20_____

in the presence of the subscribing witnesses.

As witnesses

1. _____

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

Signature

2. _____

Duly authorised to sign on behalf of _____

Address _____

_____

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

- **C1.3.3 Health and Safety Contract Between *Client* and *Contractor* In Terms of Section 37(2) Of The Occupational Health and Safety Act No 85 Of 1993**

Written agreement between Johannesburg Water ((Proprietary) Limited (hereinafter referred to as "the

Client) and _____ (hereinafter referred to as "the mandatary") as envisaged by Section 37(2) of the Occupational Health and Safety Act, No. 85, of 1993 as amended.

I

_____

representing

_____ (mandatary) do hereby acknowledge that

_____ (mandatary) is an *Client* in its own right and shall be regarded as the *Client* for purposes of the contract work specified in the body of the principal agreement with duties as prescribed in the Occupational Health and Safety Act, No. 85 of 1993 as amended so as to ensure that all work will be performed or machinery and plant used in accordance with the provisions of the said Act. I furthermore agree to comply with the requirements of the *Client* as contained in the Occupational Health and Safety Specification included with the principal agreement and to liaise with the *Client* should I, for whatever reason, be unable to perform in terms of this agreement.

Signed this _____ day of _____ at _____

Signature on behalf of mandatary _____

Signature on behalf of *Client* _____

Compensation Fund Registration No. of mandatary _____

Good Standing Certificate : ☐ yes ☐ no (tick one box)

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

- **C1.3.4 Health and Safety Contract: General Information**

1. The Occupational Health and Safety Act comprises Sections 1 to 50 and all un-repealed regulations promulgated in terms of the former Machinery and Occupational Safety Act No 6 of 1983 as amended, as well as other regulations which may be promulgated in terms of the OHS Act.

2. 'Mandatary' is defined as including an agent, a contractor or a subcontractor for work, but without derogating from his status in his own right as a *Client* or user of plant and machinery

3. Section 37 of the Occupational Health and Safety Act potentially punishes *Client*s (principals) for the unlawful acts or omissions of mandataries (contractors) save where a written agreement between the parties has been concluded containing arrangements and procedures to ensure compliance with the said Aid by the mandatary.

4. All documents attached or referred to in the above agreement from an integral part of the agreement.

5. To perform in terms of this agreement mandataries must be familiar with the relevant provisions of the Act.

6. Mandataries who utilise the services of their own mandataries (subcontractors) are advised to conclude a similar written agreement.

7. Be advised that this agreement places the onus on the mandatary to contact the *Client* in the event of inability to perform as per this agreement. The *Client*, however, reserves the right to unilaterally take any steps as may be necessary to enforce this agreement.

8. The contractor shall be responsible for the full and proper implementation of the terms and provisions of the Act and its regulations in the area in which the work is to be undertaken by the *Contractor*.

9. The *Contractor* shall be responsible for the well-being, in relation to health and safety, of all persons coming upon or into such area in accordance with that legislation, including the implementation of any directives issued by management of the *Client* in this respect.

10. The work to be done is _____

11. The area in which the work is to be conducted is _____

12. The *Contractor* shall familiarise himself with such area and all risks existing thereon and undertakes to report to the representative of the *Client* any hazard or risk to health and safety which arises during the contract work in the area concerned and over which the *Contractor* may have no control. All necessary and appropriate safety / health equipment shall be issued by the *Contractor* to all persons working on or coming into the area.

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

- **C1.3.4.1 Occupational Health and Safety Indemnity Undertaking**

I, the undersigned _____

in my capacity as _____

of the firm _____

1. Hereby undertake to ensure that I/my firm and/or employees and/or subcontractors and/or his employees -

   1.1 comply strictly with the provisions of the Occupational Health and Safety Act of 1993 (as amended) and/or the regulations promulgated in terms thereof, with specific reference to section 37(2) of the said act, as well as any relevant legislation, in the course of the performance/execution of any service and/or work in, to or on any of the *Client*'s buildings, construction sites and/or premises;
   1.2 ensure that consultants and/or visitors comply with any instructions and measures relating to occupational health and safety, as prescribed by the *Client*; and
   1.3 comply strictly with the statutorily prescribed work systems, operational equipment, machinery and occupational health and safety conditions;

2. And as an independent *Client* and contractor, hereby indemnify, in terms of the above undertakings, the *Client* -

   2.1 in respect of any costs that I/my firm and/or employees and/or subcontractors and their employees may incur of necessity in compliance with the above undertakings; and
   2.2 against any claims that may be instituted against the *Client* and/or any liability that the *Client* may incur, whether instituted and/or caused by me/my firm's employees, agents, consultants, subcontractors and/or their employees and visitors or the *Client*'s *Client*s or neighbours in respect of any incidents related to my/my firm's activities and as a result of which the occupational health and safety of the persons involved have been detrimentally affected; and
   2.3 against similar claims that I, managers or directors of my firm may have against the *Client* and any damages for which I, managers or directors of my firm hold the *Client* liable.

3. My firm's compensation commissioner number is _____ and I confirm that my firm and its subcontractors' fees have been paid up and obligations in respect of the compensation commissioner have been complied with and further that I shall furnish proof thereof in writing on request.

4 I hereby confirm that I have the authority to sign this indemnity undertaking and that the *Client* is not obliged to confirm such confirmation.

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

Signed at _____ This _____ day of _____

_____

Signature Capacity

As witnesses:

1 _____

2 _____

***Client*:**		**Contractor:**	
Witness:		**Witness:**	

miscellaneous items. The Contractor shall provide the Project Manager with a complete breakdown of this tendered sum when requested to do so."

"PSL 8.2.33 **Supplying, Installing and Commissioning Pressure transmitters with GSM Battery operated data loggers** …… Unit: No.

The rate shall cover the cost for the provision of each pressure transmitter, complete with a GSM Battery operated data logger, and the cost of transport, handling, installing, setting up and commissioning of the pressure transmitter and data logger."

"PSL 8.2.34 **Operation and Maintenance Manuals for Valves and Flow Meters** …..... Unit: Sum

The rate shall cover the cost of providing operating and maintenance manuals for valves and flow meters. Different items will be scheduled for each valve type, diameter and class supplied."

"PSL 8.2.35 **Forming Trial joint** …..... Unit: Sum

The sum shall cover the cost of works and the additional cost of handling small quantities for forming 3 trial joints and the disposal of the material as specified in 7.4 (d), drawing JW14358-16941-T-017-S16-00-TMS.

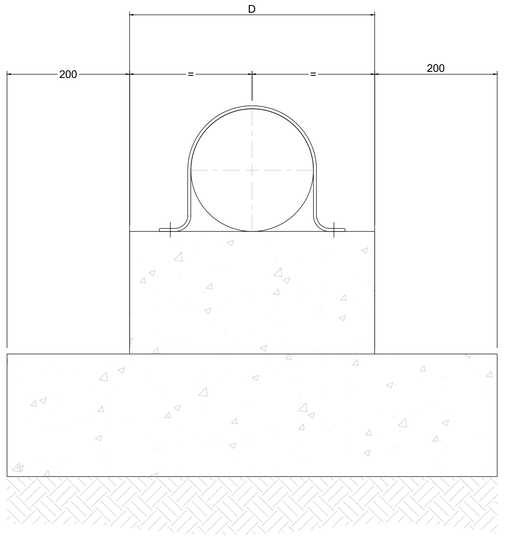
The mastic (epoxy). The heat-resistant mastic infill shall be of a product fully compatible with the main lining system (solvent free liquid epoxy) SFE such as corroglass 600 series or similar approved. The mastic must be able to withstand the external welding heat. it is proposed that the *Contractor* makes use of gas shielded welding techniques to achieve the desired welding temperature. The mastic will be subject to pre-qualification and testing (pqt) to achieve the project requirements. the cut-back shall be as per the suppliers specifications and as agreed with the project manager. A valid potable water certificate must accompany the data sheet of the material to be used.

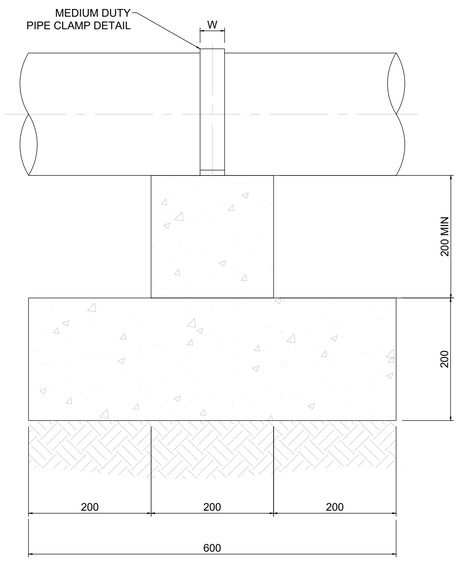
Trial joint test. The engineer / project manager / supervisor may order the construction of a trial joint to test the welding, lining, coating, and hydrostatic pressure test as indicated in this drawing. The joint test shall include 2 DN600 PN16 flanges, 2 DN600 pn16 blank flanges, a 6m long DN 600 6mm steel, API 5l x42 steel pipe, with rigid polyurethane coating (RPU), solvent free liquid epoxy lining (SFE) and corroglass 600 series or similar approved as indicated on the drawing. The contractor shall compile an approved detailed method statement to carry out the trial joint at the pipe manufacturer's premises. The contractor shall carry out a destructive test on the joint in the workshop according to the agreed methodology. The destructive testing of the PQT joint must be witnessed by the JW corrosion engineer or their nominated representative. The *Contractor* shall test different convex heat sink sizes to achieve the required output. In such an event the *Contractor* shall construct the trial joint in the manner specified for the main pipeline and as agreed in the method statement. Payment for such work will be made in terms of 8.3.16.

GENERAL NOTES

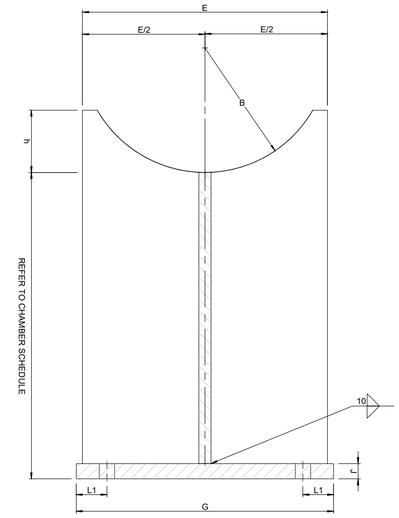
1. ALL DIMENSIONS ARE IN MILLIMETER, UNLESS OTHERWISE SPECIFIED.
2. ALL DIMENSIONS MUST BE CHECKED AND APPROVED ON SITE PRIOR TO FABRICATION.
3. THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS.
4. REMOVE ALL SHARP EDGES AND BURS.
5. ALL SUPPORTS TO BE MANUFACTURED FROM GRADE 350WA (SANS 1431) STRUCTURAL STEEL AND HOT DIPPED GALVANIZED AS PER MECHANICAL SPECIFICATION.
6. REFER TO PROJECT SPECIFICATIONS FOR ANCHOR BOLTS
7. CONCRETE GRADE SHALL BE 35 Mpa/19 mm

PIPE POSITIONING ON PLINTHS				
PIPE SIZE (DN)	PIPE CRS 'A'	PLINTH SIZE		
		'B'	'C'	'D'
50	165	600	400	200
65	185	650	450	200
80	195	650	450	300
100	220	750	500	300
160	275	900	600	350
200	330	1060	700	400

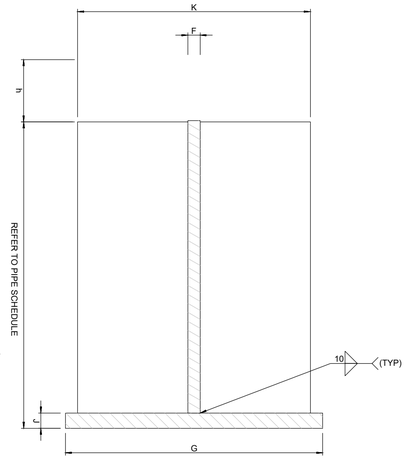




TYPICAL PLINTH DETAIL
NOT TO SCALE

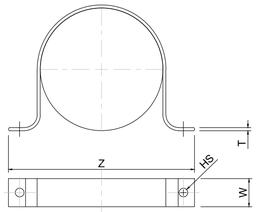


SECTION A-A
NOT TO SCALE

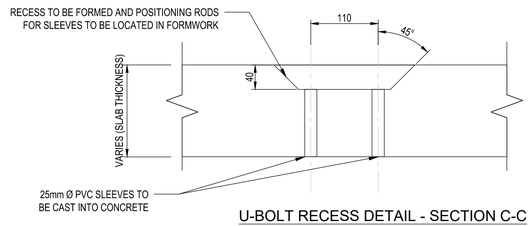


SECTION B-B
NOT TO SCALE

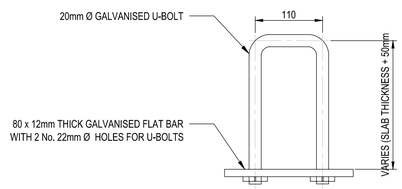
MEDIUM DUTY PIPE CLAMP SIZES			
PIPE SIZE (DN)	L (mm)	W x T (mm)	HS (mm)
50	160	40 x 6	14
65	175	40 x 6	14
80	190	40 x 6	14
100	215	40 x 6	14
160	265	40 x 6	14
200	315	40 x 6	14



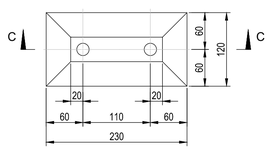
MEDIUM DUTY
PIPE CLAMP DETAIL
NOT TO SCALE



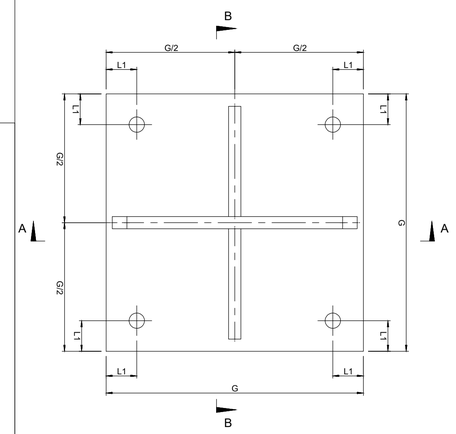
U-BOLT RECESS DETAIL - SECTION C-C
(SUPPLIED BY CONTRACTOR)
SCALE 1:2



LIFTING HOOK (U-BOLT) DETAIL
(SUPPLIED BY CONTRACTOR)
SCALE 1:2



U-BOLT RECESS DETAIL - PLAN
(SUPPLIED BY CONTRACTOR)
SCALE 1:2



STEEL PIPE SUPPORT PLAN VIEW
NOT TO SCALE

DIMENSIONS TABLE										
PIPE SIZE	B	E	F	G	J	K	L1 (mm)	DIA (mm)	Bolt Size (GRADE 8.8)	h (mm)
DN 100	R 58	200	15	250	15	100	50	Ø 18	M16	13
DN 150	R 84	250	15	300	15	120	85	Ø 22	M20	30
DN 200	R 110	280	20	360	25	150	95	Ø 26	M24	47
DN 250	R 137	340	20	360	25	150	90	Ø 26	M24	65
DN 300	R 162	340	20	360	25	150	100	Ø 26	M24	72
DN 350	R 178	380	20	420	25	180	100	Ø 26	M24	109
DN 400	R 203	400	20	420	25	180	100	Ø 26	M24	124
DN 450	R 229	435	25	450	30	205	110	Ø 32	M30	130
DN 500	R 254	445	25	480	30	210	110	Ø 32	M30	140
DN 550	R 280	475	25	520	30	225	115	Ø 32	M30	140
DN 600	R 305	515	25	550	30	230	120	Ø 32	M30	140

FOR TENDER

CONSULTING ENGINEERS
Nyeleti Engineered to Excel
Woodhill Office park
53 Phillip Engelbretcht Drive
Alberton
1450

CLIENT
Johannesburg Water SOC LTD
Turbine Hall
65 Ntemi Piliso Street
Newtown, Johannesburg

DESIGNED	T.FOSA	
DRAWN	Y.GOVENDER	
CHECKED	P.SEKOAILA	DATE: 2024-09-09
	SIGNATURE	
	ECSA REG. No	
APPROVED BY:	P.GROBLER	DATE 2024-09-09
	SIGNATURE	
	ECSA REG. No	950304

Johannesburg Water

Turbine Hall
65 Ntemi Piliso Street
Newtown, Johannesburg

TEL: (011) 688-1400
FAX: (011) 688-1529

Joburg

WOODMEAD WATER UPGRADE

STANDARD DETAILS - PIPE SUPPORT DETAILS

AMENDMENTS

SCALE	REV:	DESCRIPTION	APPROVED	DATE:
VARIES	A	ISSUED FOR TENDER	P.GROBLER	2021-06-07
AS SHOWN	A	ISSUED FOR TENDER	P.GROBLER	2024-09-06

DRAWING No. JW14358-16941-T-017-S10-00-TMS

CONTRACT No.: JW14358

UR1305B — PROJECT No.

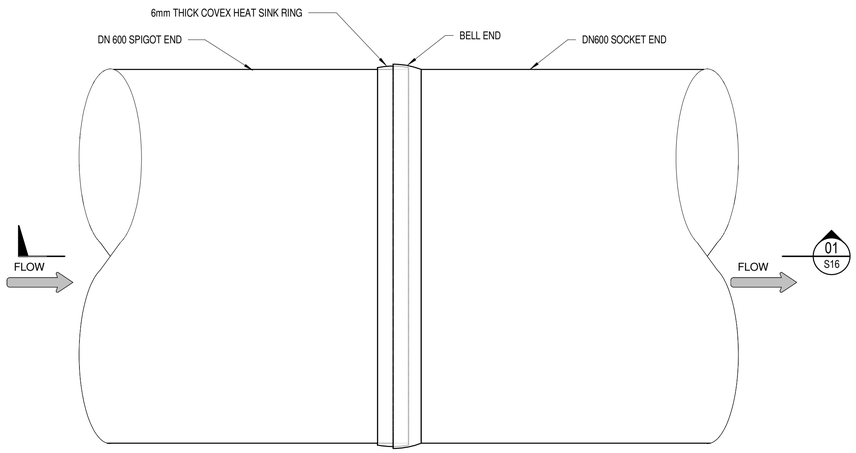
B — REV.

A1 — SHEET 1 OF 1

ORIGINAL PAGE SIZE

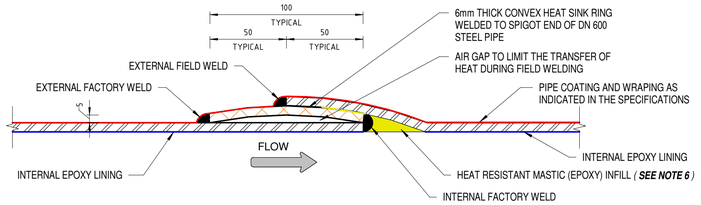
FILE No.

T:\16941 Woodmead Water Upgrade\08 - Drawings\02 - Tender Drawings\07_Water\05_Details\JW14358-16941-T-017-S10-00-TMS.dwg



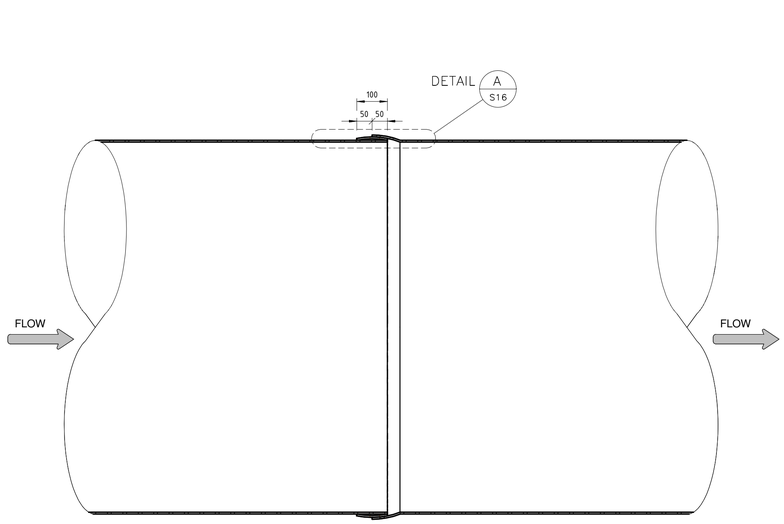
DN 600 PIPE CONVEX HEAT SINK STEEL RING JOINT

SCALE 1 : 10



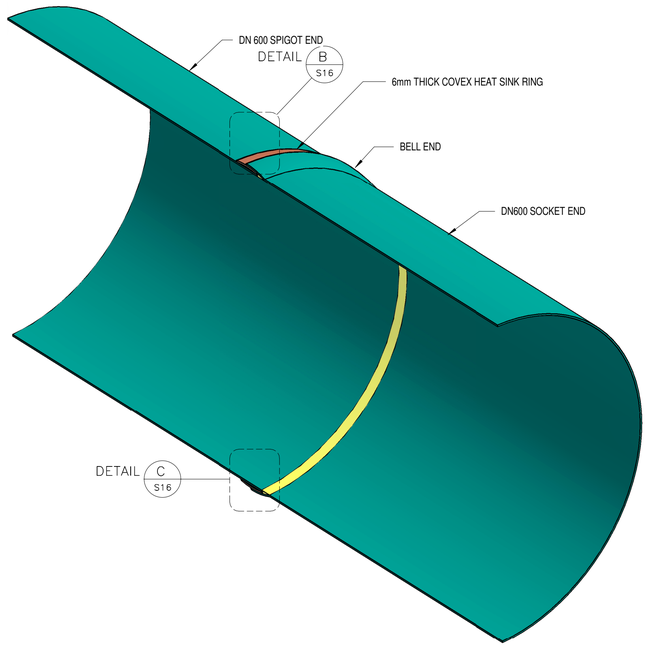
DETAIL A

SCALE 1 : 2



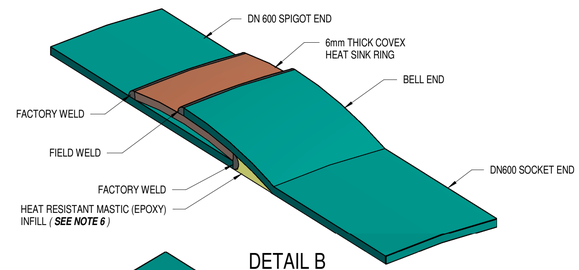
SECTION 01

SCALE 1 : 10



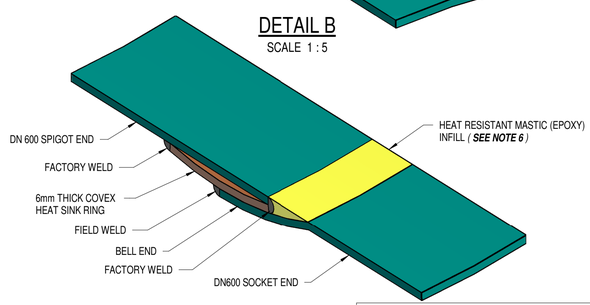
DN 600 PIPE CONVEX HEAT SINK STEEL RING JOINT - ISOMETRIC VIEW

SCALE



DETAIL B

SCALE 1 : 5



DETAIL C

SCALE 1 : 5

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. ALL LEVELS ARE IN METRES ABOVE SEA LEVEL UNLESS OTHERWISE SHOWN
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATIONS SET OUT IN THE CONTRACT DOCUMENT.
4. ALL MECHANICAL EQUIPMENT IS TO BE VERIFIED WITH THE ENGINEER ON SITE PRIOR PURCHASE AND INSTALLATION TO ENSURE AND ALLOW FOR NECESSARY RECESS ON CONCRETE AND REINFORCEMENT ADJUSTMENTS

PIPES AND CONVEX HEAT SINK PIPE JOINT NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE PARTICULAR SPECIFICATION PSL3.4 IN THE SCOPE OF WORKS AND DOES NOT SUPERSEDE IT IN ANYWAY.

2. THIS DRAWING OUTLINES THE PROPOSED JOINT PROCEDURE FOR THE DN 600 STEEL MAIN AND DN 600 STEEL BYPASS PIPELINE ONLY. ALL OTHER PIPELINES SHALL BE WELDED AS PRESCRIBED IN THE SCOPE OF WORKS AND DRAWINGS.

3. THE DN 600 STEEL PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH SANS 719 DIMENSIONS AND SHALL BE GRADE API 5L X42 AND HAVE A YIELD STRENGTH OF 289 MPA. THE WALL THICKNESS OF THE PIPES SHALL BE 6 mm AND AS SPECIFIED ON THE RELEVANT DRAWINGS.

4. THE CONVEX HEAT SINK STEEL RING SHALL BE MANUFACTURED IN AN APPROVED PIPE MANUFACTURING WORKSHOP AND SHALL BE GRADE API 5L X42 AND HAVE A YIELD STRENGTH OF 289 MPA. THE WALL THICKNESS OF THE PIPES SHALL BE 6 mm AND AS SPECIFIED ON THE RELEVANT DRAWINGS.

5. INTERNAL FIELD JOINTS SHALL BE REPAIRED AND PROTECTED WITH A PRODUCT FULLY COMPATIBLE WITH THE MAIN LINING SYSTEM (SOLVENT FREE LIQUID EPOXY). A VALID POTABLE WATER CERTIFICATE MUST ACCOMPANY THE DATA SHEET OF THE MATERIAL TO BE USED.

6. HEAT RESISTANT MASTIC (EPOXY) INFILL SHALL BE OF A PRODUCT FULLY COMPATIBLE WITH THE MAIN LINING SYSTEM (SOLVENT FREE LIQUID EPOXY) SUCH AS CORRO GLASS 600 SERIES OR SIMILAR APPROVED. THE MASTIC MUST BE ABLE TO WITHSTAND THE EXTERNAL WELDING HEAT. IT IS PROPOSED THAT THE CONTRACTOR MAKES USE OF GAS SHIELDED WELDING TECHNIQUES TO ACHIEVE THE DESIRED WELDING TEMPERATURE. THE MASTIC WILL BE SUBJECT TO PRE QUALIFICATION AND TESTING (PQT) TO ACHIEVE THE PROJECT REQUIREMENTS. THE CUT-BACK SHALL BE AS PER THE SUPPLIERS SPECIFICATIONS AND AS AGREED WITH THE PROJECT MANAGER. A VALID POTABLE WATER CERTIFICATE MUST ACCOMPANY THE DATA SHEET OF THE MATERIAL TO BE USED.

7. **TRIAL JOINT TEST.** THE *ENGINEER / PROJECT MANAGER / SUPERVISOR* MAY ORDER THE CONSTRUCTION OF A TRIAL JOINT TO TEST THE WELDING, LINING, COATING, AND HYDROSTATIC PRESSURE TEST AS INDICATED IN THIS DRAWING. THE JOINT TEST SHALL INCLUDE 2 DN600 PN16 FLANGES, 2 DN600 PN16 BLANK FLANGES, A 6m LONG DN 600 6mm STEEL, API 5L X42 STEEL PIPE, WITH RIGID POLYURETHANE COATING (RPU), SOLVENT FREE LIQUID EPOXY LINING (SFE) AND CORRO GLASS 600 SERIES OR SIMILAR APPROVED AS INDICATED ON THE DRAWING. THE *CONTRACTOR* SHALL COMPILE AN APPROVED DETAILED METHOD STATEMENT TO CARRY OUT THE TRIAL JOINT AT THE PIPE MANUFACTURER'S PREMISES. THE CONTRACTOR SHALL CARRY OUT A DESTRUCTIVE TEST ON THE JOINT IN THE WORKSHOP ACCORDING TO THE AGREED METHODOLOGY. THE DESTRUCTIVE TESTING OF THE POT JOINT MUST BE WITNESSED BY THE JW CORROSION ENGINEER OR THEIR NOMINATED REPRESENTATIVE. THE CONTRACTOR SHALL TEST DIFFERENT CONVEX HEAT SINK SIZES TO ACHIEVE THE REQUIRED OUTPUT. IN SUCH AN EVENT THE CONTRACTOR SHALL CONSTRUCT THE TRIAL JOINT IN THE MANNER SPECIFIED FOR THE MAIN PIPELINE AND AS AGREED IN THE METHOD STATEMENT. PAYMENT FOR SUCH WORK WILL BE MADE IN TERMS OF **8.3.16.**

8. **QUALITY CONTROL PROCEDURES FOR PIPE MANUFACTURING**
   a. THE CONVEX HEAT SINK SHALL BE FABRICATED IN ACCORDANCE WITH A QUALITY CONTROL PLAN AND PROCEDURE (QCP) PREPARED BY THE MANUFACTURER AND APPROVED BY THE PROJECT MANAGER OR AN APPROVED INSPECTION AUTHORITY (AIA) APPOINTED BY THE PROJECT MANAGER. THIS QCP SHALL COVER DETAILS SIMILAR TO THE QCP FOR STEEL PIPES AS LISTED IN SUBCLAUSE PSL 3.4.3.1.

   b. SHOP DRAWINGS FOR THE MANUFACTURING OF CONVEX HEAT SINK RING JOINT SHALL BE PREPARED BY THE MANUFACTURER AND SUBMITTED TO THE PROJECT MANAGER FOR APPROVAL PRIOR TO COMMENCEMENT OF THE WORKS.

   c. VERIFICATION OF RAW MATERIAL CERTIFICATES, WITNESSING OF INSPECTIONS AND TESTS AND/OR VERIFICATION OF INSPECTION RECORDS MAY BE CARRIED OUT BY THE PROJECT MANAGER OR AN APPROVED INSPECTION AUTHORITY (AIA), AT THE DISCRETION OF THE PROJECT MANAGER. THE PIPE MANUFACTURER SHALL GENERATE RECORDS AS REQUIRED BY THE QUALITY CONTROL PROCEDURE.

   d. ALL WELDS SHALL BE CARRIED OUT BY A CODED WELDER AS PER PSL 5.2

REFERENCE DRAWINGS

FOR TENDER

THE MASTER HELD AT NYELETI CONSULTING, BEARS THE ORIGINAL SIGNATURE OF APPROVAL

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	DESIGNED	MT FOSA	10/09/2024
	DRAWN	MT FOSA	10/09/2024
	CHECKED	P GROBLER	10/09/2024
		SIGNATURE	
		ECSA REG. No	
	APPROVED BY:	P.GROBLER	10/09/2024
		SIGNATURE	
		ECSA REG. No	950304

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Joburg

WOODMEAD WATER UPGRADE
STANDARD DETAILS - PIPE JOINT DETAILS
SHEET 1

AMENDMENTS

SCALE	REV:	DESCRIPTION	APPROVED	DATE:
AS SHOWN	A	FOR TENDER	PG	10/09/2024

DRAWING No.: JW14358-16941-T-017-S16-00-TMS

CONTRACT No.: JW14358

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