

**PART C3: SCOPE OF WORK**

Document reference	SUPPLY AND INSTALLATION OF MECHANICAL ADAPTION AND GEARBOX WITH 90 DEGREE OUTPUT ON VALVES	No of page
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### C3.1 SCOPE OF SERVICES

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## LIST OF SYMBOLS AND ACRONYMS

∅	Diameter
#	Pressure Rating
"	Inch
API	American Petroleum Institute
ALR	Alrode Depot
APT	Airport Depot
CBK	Coalbrook Depot
JMP	Jameson Park Depot
KDL	Kendal Depot
KRP	Klerksdorp Depot
MEY	Meyerton Depot
SBG	Sasolburg Depot
SEC	Secunda Depot
NERSA	National Energy Regulator of South Africa
SAQA	South African Qualification Authority
SSA	State Security Agency
TPL	Transnet Pipelines

# 1. Background

Transnet Pipelines Limited (TPL) own and operate a network of pipelines transporting gas and petroleum products from Durban to inland points.

Transnet Pipelines is the largest multi-product operator in southern Africa, transporting hydrocarbons and methane-rich gas through a network of 3 100 km of petroleum and gas pipeline infrastructure. The pipeline network runs across 5 different provinces in South Africa (KwaZulu-Natal, Free State, Gauteng, North West and Mpumalanga) ensuring security of supply to the inland market. The pipeline network consists of different pipelines of different dimensions and travelling on various routes. Along the pipeline are pump stations located onroute and block valve chambers used to allow sections to be isolated during leaks, testing for leaks etc. Figure 1 below shows the TPL Network:

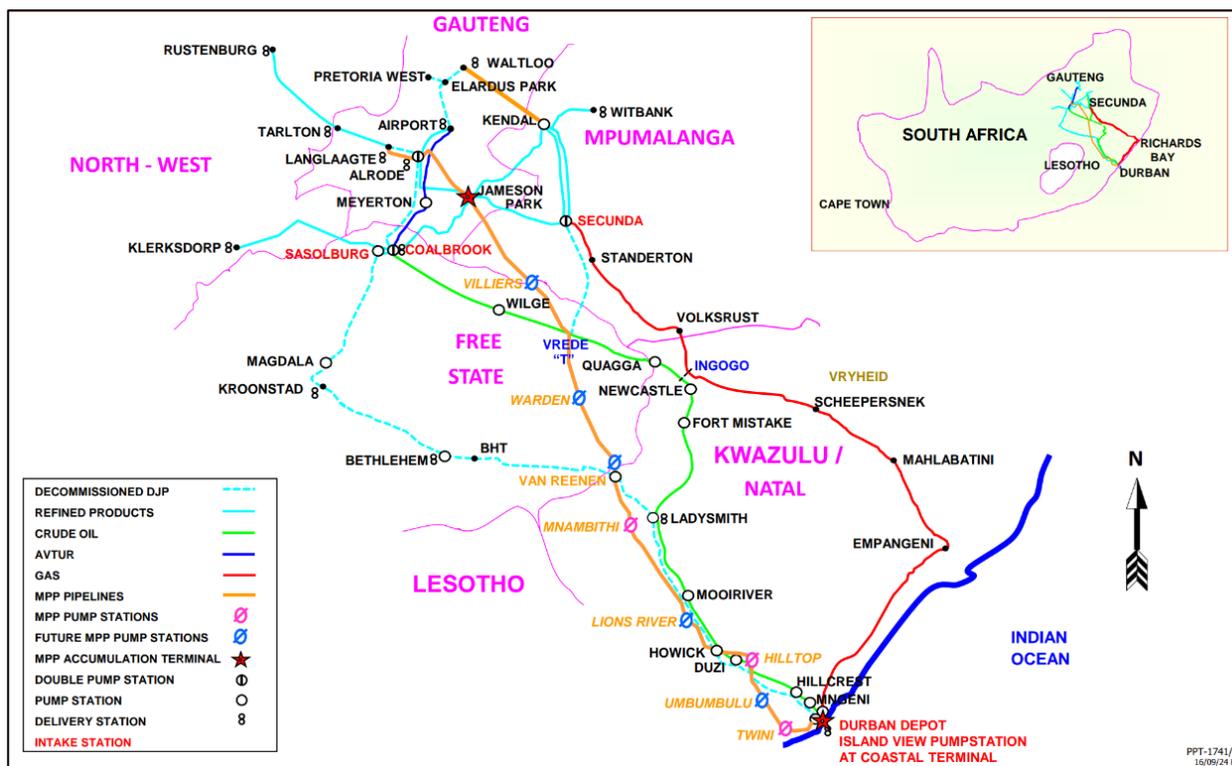


Figure 1: Transnet Pipelines Network

Pipelines operates in a regulated environment and is regulated by the National Energy Regulator of South Africa (NERSA) and governed by the Petroleum Pipelines Act, No 60 of 2003 and the Gas Act, No 48 of 2001. Almost all critical areas of the Pipeline business require regulatory sanction through the issuing of licenses.

## 2. Problem Statement

It is part of operations to open and close specific valves for required operational purposes, which may include response to emergency incidents. Currently the only way to isolate these valves along the pipeline route is for a TPL personnel to enter inside the chamber and manually close or open the valve using a gearbox hand wheel. There are stringent safety requirements and processes to follow in order to go inside a block valve chamber. This process can take time especially during an emergency incident, which requires quick isolation. Hence an alternative operation is required for emergency incident response.

## 3. Purpose

TPL requires an allowance for external operability of the block valves from the chambers. The valves are to be fitted with 90 degree mechanical gearbox and a mechanical adaption system in order to convert to an upright operation by a handwheel with an extended spindle to enable external operation using a universal T-Piece. This will minimize both the time spent and safety requirements to open or close valves during emergency incidents when the valves are externally operable.

## 4. Scope Of Work

### 4.1. Scope Area

4.1.1 This contract scope is for five pipelines as follows:

- a. A 16" pipeline from Secunda through Jameson Park to Alrode (SEC-JMP-ALR)
- b. A 20" pipeline section from Secunda to Kendal (SEC-KDL)
- c. An 18" pipeline from Coalbrook through Jameson Park to Kendal (CBK-JMP-KDL)
- d. An 8" pipeline from Sasolburg to Klerksdorp (SBG-KRP)
- e. A 6" pipeline from Coalbrook through Meyerton and Alrode to Airport depot (CBK-MTN-ALR-APT)

4.1.2 There are sixty-one (61) block valve chambers on these five pipelines that require external operability of valves.

4.1.3 The physical addresses or GPS coordinates on the TPL depots involved shall be shared with the appointed *Contractor* upon award.

## 4.2. Details Of Scope

- 4.2.1 *Contractor* to supply and install 61 off mechanical adaption coupled to a gearbox with vertical output and handwheel with extended spindle for the above pipelines to achieve external operability of the valves.
- 4.2.2 *Contractor* is required to visit site after appointment for site investigation and taking of required measurements on each block valve chamber.
- 4.2.3 During measuring on site, the *Contractor* shall indicate or mark the centre position for the hand wheel with extended shaft. TPL will core drill a  $\varnothing 100mm$  hole on the chamber concrete lid in-line with the centre position of the hand wheel with extended shaft.
- 4.2.4 *Contractor* to ensure that the measuring tools are intrinsically safe.
- 4.2.5 It is the responsibility of the *Contractor* to take and verify any required dimensions, taking into account ergonomics, on each block valve chamber.
- 4.2.6 An average of five (5) block valve chambers can be estimated to be accessed per day for measuring. Below are the estimated travel distances:

Table 1: Estimated Travel Distances

	Start	Through	End	Est. Distance	Valve Type	Quantity
1	Secunda	Jameson Park	Alrode	150km	16" 600# Ball Valve	10 valves
2	Secunda	-	Kendal	100 km	20" 600# Ball Valve	6 valves
3	Coalbrook	Jameson Park	Kendal	160Km	18" 600# Gate Valve	17 valves
4	Sasolburg	-	Klerksdorp	150km	8" 600# Ball Valve	14 valves
5	Coalbrook	Meyerton & Alrode	Airport	110km	6" 600# Ball Valve	14 valves

- 4.2.7 TPL to supply a truck mounted crane with an operator and a work permit issuer for both taking of measurements and for installations on sites.

## 4.3. Contractor Shall Supply

- 4.3.1 Below is a list of equipment that the *Contractor* is to supply for both to install on site and to deliver at TPL Alrode Depot as spares:

Table 2: Supply Equipment for Installation and Spare

	Item	Install	Spare	Total
1	Mechanical adaption on 16" 600# Ball Valve	10	2	12
2	Mechanical adaption on 20" 600# Ball Valve	6	2	8

3	Mechanical adaption on 18" 600# Gate Valve	17	2	19
4	Mechanical adaption on 8" 600# Ball Valve	14	2	16
5	Mechanical adaption on 6" 600# Ball Valve	14	2	16
6	Mechanical adaption on 12" 600# Ball Valve	-	2	2
7	1:1 gear ratio gearbox to convert output to 90 degree (Vertical)	61	12	73
8	500mm hand wheel with extended shaft	61	3	64
9	Universal T-piece key to fit the extended shafts	-	15	15

- 4.3.2 *Contractor* to note that all existing ball and gate valves are under API6D standard.
- 4.3.3 A mild steel (S355JR, EN10025, SANS500025) to be used for fabrication of mechanical adaptors.
- 4.3.4 A  $\phi 50mm$  mild steel (S355MH, EN10219, SANS6571) tube to be used for fabricating a universal T-Piece key and the extended spindle on the handwheel.
- 4.3.5 *Contractor* to confirm fabrication sizes during site investigation and taking of measurement.
- 4.3.6 All fabricated material for installation inside the chamber to be galvanized to prevent moisture accelerated corrosion.

## 5. Quality Control

- 5.1. TPL shall inspect the equipment as part of Quality Control prior to installation on sites.
- 5.2. *Contractor* shall install the units on each block valve and ensure that all the valves are operable from outside the block valve chambers.
- 5.3. After installations, each unit on the valve is to be checked for Quality Control and signed off by TPL representative.
- 5.4. Refer to Annexure A: *Contractor* Quality Specification Guideline.

## 6. SHEQ Requirements

*Contractor* shall adhere to the following Health, Safety and Environmental requirements, but not limited to:

- 6.1. Once the safety file is approved Site Access Certificate shall be issued from TPL Project Manager to the *Contractor* to sign and accept the access. Under no circumstances will the *Contractor* be on TPL sites without the signed and accepted certificate.
- 6.2. Each time the *Contractor* is on site, they must be with TPL project assigned representative and Security Escorts. Failure to adhere to this may lead to criminal charges. *Contractor* should note that some of these valves are in privately owned properties and the *Contractor* is not allowed to enter such premises without TPL personnel and TPL security.

- 6.3. Once on site, a Risk Assessment must be conducted together with TPL personnel prior to installation works.
- 6.4. Work Permit process will also apply.
- 6.5. The following PPE are required to enter the chambers at the *Contractor's* cost, but not limited to:
  - a. Flame retardant overall or two-piece
  - b. Hard hat / helmet
  - c. Safety glasses
  - d. Safety boots
  - e. Harness
  - f. Breathing mask
- 6.6. Random alcohol tests are conducted. TPL adheres to Zero Tolerance to alcohol.
- 6.7. Refer to Annexure B: *Contractor* Health and Safety Specification Guidelines
- 6.8. Refer to Annexure C: Transnet *Contractor* Management Procedure

## 7. Security Requirements

*Contractor* shall adhere to the following Health, Safety and Environmental requirements, but not limited to:

- 7.1. *Contractor* has to undergo a security screening process prior to access to site.
- 7.2. *Contractor* shall supply the following documentation to initiate a company screening process:
  - a. Company profile;
  - b. Company registration documents;
  - c. CSD registration document
  - d. SARS tax pin document and VAT number;
  - e. Professional Membership accreditation;
  - f. Recent audited financial statements of the company;
  - g. Company bank letter;
  - h. Lease agreement if company is renting the business site Or proof of ownership of the business premises;
  - i. Copies of an Identity Book or Card of Directors of the company
- 7.3. Company Directors of the *Contractor* are required to complete all the sections and submit the company screening consent form.
- 7.4. Each *Contractor's* employee who will be working on site for this project is required to complete all the sections, with Part B – only the previous charges part, and submit the company screening consent form.
- 7.5. The screening consent form for employees that will be working on site is to be accompanied by a copy of an Identity Book or Card (ID).

- 7.6. *Contractor* to note that SSA takes between three to four weeks on average to complete the screening process.

## 8. Fire And Rescue Standby Services

### 8.1. On-Site Requirements

- 8.1.1. The execution of the works requires the services of fire and rescue standby.
- 8.1.2. *Contractor* shall supply fire and rescue standby services (personnel and all relevant equipment for working in confined space) for the period of the contract during taking of measurements and installations inside block valve chambers.

### 8.2. Fire Personnel Qualifications

- 8.2.1. The execution of the works requires the services of fire and rescue standby.
- 8.2.2. The number of personnel must be minimum of three, for the duration of the work.
- 8.2.3. The following personnel are required on site with the specified SAQA accredited minimum qualifications:

#### Fire Officer: 1-off

- a. Fire Fighter 1 and 2
- b. Hazmat Awareness and Operations
- c. Hazard Identification/Risk assessment Qualification.
- d. Confined Space Rescue
- e. First Aid level 3

#### Fire Fighter: 2-off

- a. Fire Fighter 1
- b. Hazmat Awareness
- c. Confined space rescue
- d. First Aid level 3

- 8.2.4. The *Contractor* is to note that these Fire & Rescue Standby resources cannot serve any other function to the project as their sole purpose is Fire & Rescue Standby services.

## 9. Progress Meetings

- 9.1. Project Progress Meetings (MS Teams) shall be held on a bi-weekly basis after the Project Kick-Off meeting.

## 10. Completion Period

- 10.1. The supply and installation of the units is estimated to be complete in 28 weeks after the following estimates:
  - a. Four (4) weeks of Safety File approval and SSA screening and police clearance.
  - b. Four (4) weeks of site access and measuring.
  - c. Eight (8) weeks of fabrication and delivery.
  - d. Twelve (12) weeks of installation and Quality Control checks.
- 10.2. *Contractor* must submit a Schedule in both PDF & MS Project formats.
- 10.3. Schedule shall indicate key dates and milestones.
- 10.4. Risks should be highlighted, ranked and possible mitigations proposed.

## 11. Work Times

- 11.1. Normal working hours are as follows:  
Monday to Friday: 07h30 to 16h00
- 11.2. *Contractor* must request to work out of normal working hours from the *Employer's* Project Manager when required.
- 11.3. The *Contractor* shall indicate to the Project Manager 24 hours in advance when he requires working outside of the normal working hours.
- 11.4. Allowance is to be made in planning for travelling to sites and the issuing and receiving of permits during installation on sites.
- 11.5. TPL shall provide one team to support both the measuring of measurements and installation of gearboxes on site.

## 12. TPL Depots Addresses

	<b>Depot</b>	<b>Address</b>
1	Airport	90 Springbok Road, Boksburg
2	Alrode	35 Garfield Street, Alrode, 1451
3	Coalbrook	Cnr Jan Haak & Natref Main Gate
4	Jameson Park	Cnr R42 & Poortjie Road, Heidelberg, 1441
5	Kendal	Hooglandbordery Alpha Mine (Fine Area)
6	Klerksdorp	Mahogany Avenue, 2575

7	Meyerton	Bloemendal Road, Meyerton
8	Sasolburg	Cnr Henry & Bergius Road, Sasolburg, 1947
10	Secunda	TPL Secunda Depot behind Sasol Brandspruit Mine