

Document Title:

SCOPE OF WORK

Project Title:

**THE PROVISION OF PROFESSIONAL SERVICES FOR THE
DESIGN AND CONSTRUCTION MONITORING OF
WASHAWAYS FOR TRANSNET PIPELINES NORTH REGION
NETWORK ON AN "AS AND WHEN" REQUIRED BASIS FOR
A PERIOD OF THREE (3) YEARS**

REVISION: 02

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Abbreviations

TPL	Transnet Pipelines
SANS	South African National Standards
KZN	KwaZulu-Natal
SHEQ	Safety, Health, Environment and Quality
PPE	Personal Protective Equipment
PDF	Portable Document Format
I&AP's	Interested and Affected Parties
TFR - RNC	Transnet Freight Rail – Rail Network Construction
DFFE	Department of Forestry, Fisheries, and the Environment
BOQ	Bill of Quantities
QCP	Quality Control Plan
DWS	Department of Water and Sanitation
AASHTO	American Association of Highway and Transportation Officials
MDD	Maximum Dry Density
MPP	Multi-Product Pipeline
AVTUR	Jet fuel
DJP	Durban to Johannesburg Pipeline
ORTIA	Oliver Reginald Tambo International Airport
RACI matrix	Responsible – Accountable- Consulted – Informed

1. INTRODUCTION

Transnet Pipelines (TPL) is the largest multi-product pipeline operator in southern Africa, transporting hydrocarbons and methane-rich gas through a network of 3800KM of petroleum and gas pipeline infrastructure of which 3116km is currently operational. The pipeline network traverses five different provinces in South Africa (KwaZulu-Natal, Free State, Gauteng, Northwest and Mpumalanga) ensuring security of supply to the inland. TPL plays a key role in the country's economy, with the core strategic objective of ensuring petroleum product security of supply for the inland market and gas security of supply for the KwaZulu-Natal market using environmentally responsible methods while ensuring optimal efficiencies.

The pipeline infrastructure runs along the servitude transversing through various terrains, rivers, and properties (private, state-owned, and local authorities). Transnet Pipelines have Servitude rights to private property along all the pipeline routes. These rights refer to legal agreements that grant Transnet Pipelines certain rights to access and use private property for the construction, operation, and maintenance of its pipelines. Thus, it is TPL's responsibility to ensure the safety and protection of the pipeline, surrounding communities and the environment. As such, these servitudes need a continuous maintenance.

2. PROBLEM STATEMENT

The pipeline servitude is faced with recurring challenges due to washaway issues caused by unpredictable weather conditions and soil erosion. These washaway incidents pose a significant risk to the integrity and functionality of the pipeline, potentially leading to environmental hazards, service disruptions, and safety concerns for surrounding areas. Below are key issues to note and take into consideration:

- Frequent occurrences of washaway incidents endanger the stability of the fuel pipeline servitude.
- Soil erosion and unpredictable weather conditions exacerbate the vulnerability of the servitude to wash away.
- Potential environmental impacts and safety risks associated with the compromised integrity of the pipeline.

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- Disruptions to fuel supply and operational inefficiencies caused by servitude washaway incidents.

3. PROJECT OBJECTIVES

TPL's objective is to provide pipeline protection works and repairs along the exposed pipelines on an as and when required basis. It also aims to provide efficient and timeous response to washaways that have obtained emergency approval from the Department of Forestry, Fisheries and Environment (DFFE). This is critical as heavy rainfall, flooding and soil erosion pose a significant risk to the integrity of the pipeline infrastructure. This could have severe environmental and safety implications. Furthermore, an exposed pipeline is more vulnerable to theft incidents.

4. BATTERY LIMITS – NORTH REGION

The following are servitude pipeline sections applicable to this contract.

Table 1. Pipeline sections

Pipeline	Province	Section
Gas Line	Mpumalanga	Ingogo to Secunda
Crude Line	Free-State	Quagga to Sasolburg
MPP	Free-State Gauteng Northwest Mpumalanga	Warden to Heidelberg Heidelberg to Secunda Heidelberg to Kendal Heidelberg to Sasolburg Secunda to Kendal Kendal to Witbank Kendal to Waltloo Heidelberg to Alrode Alrode to Langlaagte Langlaagte to Tarlton Tarlton to Rustenburg Meyerton to Sasolburg Sasolburg to Klerksdorp
DJP	Free-State Northwest Gauteng	Harrismith to Kroonstad Kroonstad to Sasolburg
AVTUR Line	Free-State Gauteng	Alrode to Meyerton Alrode to Airport (ORTIA) Meyerton to Sasolburg

5. SCOPE OF WORK

The works will be executed as per the requirements of the applicable various legislations and regulations prescribed in the conditions laid down by the DFFE and DWS. The designs should be cost effective and be sustainable to prevent and mitigate the reoccurrence of washaways along the servitudes due to erosion and flooding, while considering the following constraints:

- Harsh weather conditions and flooding events,
- Limited access to remote areas (hinterlands),
- Environmental regulations and sensitivity,
- High-pressure and high-volume fuel and gas transmission,
- Existing infrastructure and right of way constraints, and
- Need for long-term reliability and durability.

Moreover, the solutions should prioritize pipeline integrity and safety, environmental protection, cost-effectiveness, ease of maintenance and repair, and adaptability to changing weather patterns and water levels. The appointed *Consultant* will be responsible and accountable for the following works and but not limited to the following:

5.1. Pre-Construction

5.1.1. Conduct site visits to ascertain the nature and complexity of the washaway. This includes newly formed washaways resulting from extreme weather events or other unforeseen factors, as well as recurring washaways caused by the failure of previously installed protection structures that may require repair, remediation, or redesign.

5.1.2. Site condition assessment, that is including geotechnical investigation. Ensure that the site conditions are verified and adequately investigated prior to design. These conditions include but are not limited to:

- The properties of the founding soils,
- The retained material,
- Available fill material,
- Flood lines,
- The groundwater regime including seasonal changes,
- The required geometry of the structure, and

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- Any surcharges that may act on the structure.
 - Failure modes of prior constructed infrastructure
- 5.1.3. Conduct site survey and produce survey reports, levels, maps, etc.
- 5.1.4. Prepare a technical report which is to include geotechnical findings and other site condition assessment findings with recommendations based on the assessment outcomes. The report to be presented to TPL Project Management Team for review, appraisal, and acceptance. The report must be in electronic copy with all supporting documentations.
- 5.1.5. Discuss the rehabilitation works with the TPL Project Management Team.
- 5.1.6. Design suitable solution for the protection of the affected pipeline, where possible, the design to be limited within the servitude area. Ensure that the correct materials are selected and that the properties of the materials are correctly incorporated in the design. Stormwater and groundwater drainage should always be taken into consideration in all designs.
- 5.1.7. Prepare design drawings/ construction drawings with all details of the design following the TPL Drawing Office standards. The construction drawings to be presented to TPL Project Management Team for review, appraisal, and acceptance. The electronic copies of the design/ construction drawings are to be provided. Hard copies are to be issued to the *Employer* and the Contractor in colour print and paper size of A1 or A0, depending on the extent of the design.
- 5.1.8. Prepare a design report indicating all assumptions, limitations and design criteria used.
- 5.1.9. Prepare the scope of works, priced and un-priced BOQ and estimate the construction period. Ensure that drawings contain all the necessary detail and that all materials and construction processes are clearly specified. Regarding fill materials, use standard material specifications (e.g., G5, G6, etc.), or any other material that may comply with the design specification. Compaction requirements should be specified in terms of the required percentage of the Mod AASHTO maximum dry density (typically 93% or 95% Mod AASHTO MDD) and the moisture content at which compaction should take place (typically within 2% of the optimum moisture content). Limitations on compaction directly on top or in proximity of the pipeline. All works are to comply with the standardised earthworks specifications (e.g., the SANS 2001 series specifications).
- 5.1.10. Attend design review meetings with TPL Project Management Team.

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- 5.1.11. Attend all project related meetings as-and-when required by the *Employer*.
- 5.1.12. Develop communication plan (RACI matrix i.e., responsibility assignment matrix), this is including escalation processes.
- 5.1.13. Prepare a baseline risk assessment report and risk register. The report to be presented to TPL Project Management Team for review, appraisal, and acceptance. The report and risk register must be in electronic copy.
- 5.1.14. Stakeholder engagement where necessary.

5.2. During Construction

- 5.2.1. Attend kick-off meeting, discuss the design, and ensure the QCP is aligned with the programme in collaboration with the contractor.
- 5.2.2. Construction monitoring - the Consultant shall carry out site inspections during construction, in consultation with the Project Management Team, to ensure that the design assumptions are verified and that the completed structure fulfils the design intent.
- 5.2.3. Quality control - Perform quality control for construction stages as per QCP document. The Consultant and the Project Management Team should ensure that testing is carried out as required by the specification or the standardised specifications. This applies especially to the properties of the backfill and compaction achieved.
- 5.2.4. Attend weekly and monthly progress meetings as required by the Employer.
- 5.2.5. Attend to the Contractor's queries as-and-when required.
- 5.2.6. Amend designs as-and-when necessary to do so, based on site conditions.
- 5.2.7. Continuous engagement with the TPL Project Management Team.

5.3. Post Construction

- 5.3.1. Compile close-out project documents, thus including,
 - Compiling lessons learnt, etc.
- 5.3.2. Prepare as-built drawings and handover to Employer.
- 5.3.3. Conduct final site inspection and verify that the construction is completed as per design.

Disclaimer: The *Consultant* to note that *Employer* has designs that are approved and used to apply for Environmental authorization to the DFFE. These designs have been prepared by the predecessor *Consultant*. To that end, the *Consultant* will be required to review the existing designs and, based on the findings, either revise the designs as necessary or provide an alternative design.

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6. KEY STAKEHOLDERS

The washaway remedial works involve numerous stakeholders to ensure the effective protection of Transnet's Pipelines. The *Consultant* will be required to continuously engage with the TPL project management team for the successful completion of these works. The Project Management Team comprises of the TPL Servitude Department and TPL Civil Engineering Department. This team is responsible for management of the defined scope under clause 5 of this document. This team also serves as the primary point of contact for all stakeholders listed below.

The following are key stakeholders for this Contract:

6.1. TPL Servitude Department

The Transnet Pipelines Servitude Department are the custodian of the servitude and are responsible for inspection of the servitude along the pipeline. The department is also responsible for the identification of the washaway sites which need pipeline protection works. The servitude department is the main line of communication with the landowners prior to site visitations and commencement of work by the contractor. They are also responsible for issuing the contractor with an excavation permit and the supervision of works around the pipeline.

6.2. TPL Civil Engineering Department

The Transnet Pipelines Civil Engineering Department is responsible for management of the construction pipeline protection works and the defined scope under clause 5 of this document. The department is responsible for reviewing and accepting the designs submitted by the *Consultant*, as well as evaluating and accepting the quality control plan (QCP) provided by the contractor. The department alongside the TPL Servitude department is responsible for construction management of all washaway sites.

6.3. TPL Environmental Department

The Transnet Pipelines Environmental department is responsible for ensuring compliance with the environmental regulations through applications and communication with the relevant legal bodies (DFFE and DWS). It issues out a notification of commencement to the relevant bodies prior to the commencement of construction. This department is responsible for assessing the environmental management plan and performing environmental audits throughout construction.

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6.4. TPL SHEQ Department

The SHEQ department is responsible for reviewing the compliance file and conducting site inspections as needed, based on the level of risk.

6.5. Consultant

Refer to clause 5.

6.6. Contractor and/or TFR-RNC

Transnet Freight Rail (TFR)-Rail Network Construction (RNC) or any other Contractor appointed by Transnet Pipelines is responsible for the construction works for washaways along the pipeline. The Contractor undertakes construction and is responsible for the development and submission of method statements and quality control plans for each site. The quality control plan will be reviewed and accepted by the TPL Civil Engineering Department and shall guide the construction monitoring activities carried out by the *Consultant*. The Contractor is permitted raise design-related queries, as necessary, through the TPL project management team, to which the Consultant is expected to provide appropriate clarification or response.

7. DOCUMENT CONTROL

All deliverables and intellectual property resulting from the services provided by the *Consultant* to TPL shall be fully owned by TPL after it has been reviewed, appraised, and accepted. However, design liability for designs remains with the *Consultant*.

7.1 Document formats:

- Technical Report and supporting documents – PDF format.
- Design drawings/ Construction drawings – DWG format and PDF format
- Scope of Work – PDF and MS Word format
- BOQ – MS Excel format
- Baseline Risk Assessment report – PDF format
- Risk Register – MS Excel format

7.2 The Contractor, TPL Project Engineer and the Consultant shall sign-off on a quality control document for every stage listed on a QCP, unless stated otherwise.

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7.3 Copies of these quality control documents shall be submitted as part of the handover file to the Employer's Agent, after completion of each site.

7.4 The Consultant shall provide a Material Safety Data Sheet for each toxic, chemical, or hazardous substance that will be specified on design.

8. GENERAL REQUIREMENTS

- 8.1 All drawings to be completed on TPL Consultant title block, which will be issued to the successful bidder.
- 8.2 The Consultant shall supply adequate and competent labour, supervision, tools, equipment, services, PPE, and testing devices for all items necessary to complete the work. Transnet Pipelines reserves the right to terminate the contract at any point if it is found that the Consultant's performance, supervision, tools, equipment, services, testing devices, and materials do not comply with specified requirements.
- 8.3 The Consultant is required to satisfy himself that all tools provided will comply with all specifications as included in the Tender Documents.
- 8.4 The Consultant shall only utilize testing devices and measuring equipment that are certified where applicable and carry a valid calibration certificate as issued by an approved calibration authority.

9. HEALTH AND SAFETY REQUIREMENTS

- 9.1 The Consultant shall always comply with Safety, Health and Environmental requirements prescribed by the relevant legislation as well as the Transnet Contractor Management Procedure (TIMS-GRP-PROC-014).
- 9.2 The Consultant shall comply with the provisions of Occupational Health and Safety Act, 85 of 1993 and relevant regulations as amended.
- 9.3 The Consultant will be responsible for the safety, health, and environmental rules that the Employer may require to be implemented.
- 9.4 The Consultant shall ensure that no employees or persons working on his/her

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behalf are allowed to enter any remediation or affected site, unless that employee or person has undergone safety, health and environmental induction pertaining to the hazards prevalent to the site at the time of entry.

- 9.5 The Consultant shall ensure that all employees working on site have valid medical certificates of fitness specific to the construction work or/and site condition assessments to be performed and issued by an occupational health practitioner.
- 9.6 The SHE Compliance File and police clearance for everyone working on site are required once the Consultant has been appointed. Site access will only be granted once the SHE Compliance File has been reviewed and approved by the Employer. The Consultant will be subjected to the Transnet Pipelines permit-to-work process related to the on-site risks identified as well as changing conditions. The successful bidder will be subjected to compulsory TPL Inductions, which can take 1 to 2 hours. These inductions are to be conducted at a location determined by TPL.
- 9.7 The following documents are required for Consultant employees to be inducted in TPL sites:
- Employee dossier with applicable documentation.
 - Certified copies of IDs not older than three months.
 - Work permits for foreign nationals.
 - SAPS Police clearance certificate (SAPS 365).
 - Valid certificate of medical fitness for all – issued by Occupational Health Practitioner.
 - Proof of competence.
- 9.8 The appointed Consultant to be screened prior to accessing and executing the scope of services at the TPL sites. The following documentation will be requested from the Contractor:
- Company profile.
 - Company registration documents.
 - CSD registration documents.
 - SARS tax pin document and VAT number.
 - Professional Membership accreditation.
 - Recent audited financial statements of the company.

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- Company bank letter.
- Lease agreement if company is renting the business site or proof of ownership of the business premises.
- Copies of ID of directors

9.9 The appointed Contractor must note that once the requested documents are submitted, SSA will take +/- four weeks to complete the screening.

9.10 The appointed Contractor shall be required to provide the following:

9.10.1 Site Specific Organogram of reporting structure. This document must provide all persons appointed in terms of OHS Act No. 85 of 1993 including contact details. (Rev, date, approval).

9.10.2 Incident /Accident Management Procedure including reporting, recording and investigation of incidents and accidents with a register of reportable injuries to the Provincial Director.

9.11 Everyone working within the TPL servitude will be required to wear the following PPE:

- Safety footwear with steel toe cap, oil and hydrocarbon resistant sole, anti-perforation sole, anti-static, anti-slip sole and breathable leather uppers.
- Socks 100% cotton, antistatic used in conjunction with safety boots and / or shoes.
- Hard hat with chin straps meeting requirements of SANS 1397
- Flame retardant clothing shall always be worn in or close to areas where hydrocarbons are present in any pipeline or vessel.
- Flame retardant clothing shall also apply where there is foreseen exposure to hydrocarbons with the potential to produce flash fire.
- Thermal Jackets – Parka Dromex DW D59-SABS Flame retardant acid resistant 100% cotton (inclusive of the lining of the jacket).

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10. TECHNICAL STANDARDS, SPECIFICATIONS & REGULATIONS

Standards / specifications	Part
Technical Standards	• SANS2001-BE1 Earthworks (General) • SANS 200-BE Site Clearance • SANS2001-CC Concrete works(structural) • SANS2001- CM1 Masonry walling • SANS2001-DP1 Earthworks for buried pipelines and prefabricated culverts • SANS2001-DP8 Pipe jacking • SANS 2001-DP5: Stormwater drainage • SANS2001-BE3 Repair of Sinkholes and subsidence in Dolomite Land • SANS 10160-1_2019 Basis of Structural Design • SANS 10160-5 Basis for Geotechnical Design and Actions • SANS 10100-1 Structural use of Concrete – Design • SANS 10100-2 Structural use of Concrete – Materials and Execution of Work • SANS 10144 Detailing of Steel Reinforcement for Concrete • SANS 282 Bending Dimensions and Scheduling of Steel Reinforcement for Concrete • SANS 10160-2 Self Weight and Imposed Loads • BS 8007:1987 Design of Concrete Structures for Retaining Aqueous Liquids
TPL Specification	• PL 890 Bedding and Padding • PL 103 Drawing Office Standard • TPL-TECH-DO-STD-001 (PL 100) • Transnet's Standard Operating Procedure for Construction Environmental Management • Transnet Contractor Management Procedure (TRN- IMS-PROC-014)

Regulations & Manuals	• Construction regulations 2014 • National Environmental Management Act (Act 107 of 1998) • The Environmental Conservation Act (Act 73 of 1989) • The National Water Act (Act 36 of 1998) • Occupational Health and Safety Act (Act 85 of 1993) • SANRAL Drainage Manual
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All other applicable Standards and Specifications that is not mentioned above should be considered and will be applied.

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